

## **Alternatives to Improve the Efficiency of the Monitoring Program**

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The Alameda County Avian Monitoring Team produced a memo to Alameda County on how the monitoring under the Alameda County Avian Protection Program can be modified to reduce costs or to be more efficient. In my opinion, several modifications that could reduce costs and increase efficiency were not included in that memo. Below is a list of those options and some comments on the specifics in the memo. I apologize if some of my comments appear rushed or insufficiently considered, but I received the memo only yesterday and only had the opportunity to review it the night before the scheduled Scientific Review Committee (SRC) meeting.

### **1. Goals and Objectives**

On the whole I think the memo could have been more effective by relating cost saving measures to goals and objectives. It is very difficult to assess costs and efficiencies of a monitoring program without clearly stated goals and objectives in mind. I realize that the first paragraph of the memo mentions cost savings as *the* objective, but that's not the type of objective that needs to be considered at the fore of an assessment of the efficiency of a monitoring program.

### **2. Monitoring Team Structure**

The monitoring team structure should be replaced. Instead of two or three firms working as a team, all that is really needed is one organization performing the field work and data management. Guidance and oversight should be provided directly by the SRC, and all reports should be prepared and authored by the SRC. The SRC is composed of research scientists who have already demonstrated competence at performing the fatality monitoring, behavior monitoring and peripheral studies, having completed major studies in the Altamont Pass and elsewhere and having produced numerous reports that passed peer review. This transfer of responsibility to the SRC would save the wind companies a great deal of money because the SRC would no longer have to review the monitoring team's reports and would likely come to agreement on the report's readiness much more quickly. Furthermore, the SRC would be capable of producing reports that could be prepared for submission to scientific journals, which has been an SRC recommendation since inception.

The SRC could provide oversight to the monitors and could prepare reports using subcommittees of shifting membership, so that all SRC members can be involved equally while not all working at the same time. In this way, the SRC would be much more aware of difficulties being experienced by monitors, such as whether an SRC-recommended protocol is not working effectively. The SRC would be aware if methods have changed, e.g., it could avoid the situation that developed around the utilization monitoring whereby the behavior surveys were terminated without the SRC's knowledge (the 10-min utilization surveys continued but the 20-min behavior

surveys were dropped about two years ago). The SRC is also composed of members who have demonstrated experience with managing and analyzing the types of data being collected in the Altamont Pass. After reviewing the data and analyses conducted to date, I am convinced that the SRC should be more directly involved with data management and analysis, and that such involvement would greatly improve efficiency.

### **3. Access to Wind Turbine Information**

To detect the effects of mitigation measures, the SRC needs access to more resolute information on turbine operations and exactly when and where measures were implemented. It is pointless to consider statistical power in the number of turbine strings proposed for monitoring when information is unavailable on turbine operations and mitigation implementation. When the SRC first considered sample size requirements and first relied on power analysis, it did so with the understanding that information would be provided on turbine operations and mitigation. Without this information, there is a huge loss of efficiency. Therefore, the efficiency of the monitoring can be increased substantially, nearly immediately as well as retroactively, if the needed information is provided to the SRC.

#### **Specific Comments on the Memo**

Modifying Existing Protocol, pages 2-12: Perhaps the sample size can be reduced to generate fatality rate estimates with satisfactory power, but doing so will likely reduce the opportunities to detect the effects of specific mitigation measures. If the wind companies and the County want to know the effectiveness of the mitigation measures, then I would not recommend giving up any of the current sample being monitored. That stated, I'm more interested in seeing the Altamont Pass repowered then further testing of the effectiveness of the mitigation measures.

Tale 5 and encompassing discussion: I don't think it is useful to combine unadjusted fatality rates for all raptors. Small raptors are removed and missed by searchers at higher rates than are large-bodied raptors, so the mixing the two groups without adjustments for search detection and scavenger removal make no sense to me.

Increasing the search interval, page 8: Already, we are using a search interval that is twice as long as recommended by the California Energy Commission and California Department of Fish and Game (statewide guidelines), and which we have already concluded to be too long for detecting the effects of mitigation measures. Converting to a 60 day search interval would, for example, eliminate any possibility of testing for the effectiveness of a seasonal shutdown.

Discontinuing collection of information on non-native species: The SRC already addressed this proposal, so I won't comment on it here other than to say that another option would be to reduce the information collected rather than to forego collection of any information on these species. However, the sample sizes generated from these species offer superior opportunities to improve our methodological tool kit for use on the species that we care more about.

Discontinuing collection of bird use data, page 9: The bird utilization surveys were never sufficiently funded, which is why I am digitizing the data collected over the last four years.

These data are going to be some of the most important data collected by the monitoring team. Not only can they improve our interpretation of the fatality patterns through time and space, but they can instruct turbine siting in repowering. Dropping these surveys would be a mistake. Rather, more effort should be directed to them.

Use of dogs, pages 9-10: The foundation remains weak for concluding that searcher detection will improve and monitoring costs can be decreased with the use of dogs. A team of Norwegians used dogs, but did not compare the costs and detection rates with human searchers. In the US, results have been mixed, with best results achieved in searches for bats. To be confident that dogs will indeed improve detection rates and reduce costs, I would need to see comparisons made between dogs and humans in the Altamont Pass.

### **Cost Implications**

The following are my responses by number presented in the memo.

1. What would be the point of performing the other research projects if there was no monitoring for which the research was intended to benefit?
2. Any savings in labor costs would need to be weighed against the costs of endless disagreements and deliberations over the meaning of the monitoring results.
3. By increasing the search interval, the same consideration would be needed as pointed in (2) above: the results would be inconclusive, resulting in endless debate.
4. I find this cost saving hard to believe. \$28,000 per year? At 0.5 hours per bird and assuming double the rate of \$24 per hour (making it \$48/hour), the cost of handling the 329 starlings and rock pigeons in 2009 would have been \$7,896. Even if the data logging was terminated, the feathers would still need to be picked up, correct? Maybe I'm missing something.
5. The alleged savings in stopping the bird use monitoring would need to be compared to the costs of never having utilization rates to interpret the fatality rates.
6. I agree on the cost assessment of using dogs in this section of the memo.
7. I agree with the assessment of using electronic data collection systems. I wonder why, however, that the notebook computers and software routine developed by Lee Neher and intended for use in the bird utilization surveys, were taken out of service as soon as the development phase was over. It would have saved a lot of money had those tools been implemented.