

**Altamont Pass Wind Resource Area
Avian Monitoring Team**

**Burrowing Owl and American Kestrel
Mortality Survey and Scavenger Rate Study Protocols
23 July 2007**

INTRODUCTION AND OBJECTIVES

The avian fatality monitoring program currently being conducted at Altamont Pass Wind Resources Area (APWRA) by the Monitoring Team (TEAM) involves field searches of 2,500 turbines once each month. This fairly long search interval (approximately 30 days) can potentially result in underestimated mortality rates due to a sampling bias resulting from undocumented scavenger removal of carcasses from the search area between search events. This potential sampling error is especially likely to occur for small-sized birds such as burrowing owls and American kestrels that can be quickly and completely removed undetected from turbine survey areas during the inter-survey period.

To more fully evaluate this sampling bias, the Scientific Review Committee (SRC) has requested that the TEAM conduct a special short-term study of scavenging rates for these two species using much shorter mortality survey intervals. The protocol for this study is described below. The principal product of this effort will be a correction factor more accurate than ones used in the past that will aid in more accurately calculating annual mortality for these two target species and other similar sized birds.

Mortality Survey Protocol

Two hundred-fifty turbines will be selected for intensive bird mortality surveys. The turbines will be selected based on a review of the historical locations where burrowing owls and American kestrels have most frequently been killed by turbines in the APWRA. Figure 1 shows the locations of the turbines selected by the TEAM and SRC for this study.

Surveys of each turbine will be conducted according to the standard monthly survey protocol currently being used for the 2,500 turbines, but each turbine will be surveyed every other day. Surveys will be conducted during two separate 2-month periods: September/October 2007 and March/April, 2008.

We will have six field biologists working full-time (176 hours/month) for four months in a one-year period (4,224 person-hours minimum). Standard field methods for finding bird carcasses around wind turbines will be used. SRC-approved sampling as conducted in overall monitoring program will also be utilized in this study. The field biologists will work 15 days/month and sample 250 turbines. This sampling rate will yield 3,750

turbine survey events per month. A total of 15,000 sampling events will be provided for the entire task. The surveys will be completed at an average rate of 2.5 events/person/hour. That will require a minimum of 1,500 person-hours per month for a total of 6,000 hours in field hours, training, data collection, and demobilization of the project.

Data will be collected on all birds found. Data from all burrowing owl and American kestrels that are found as 'fresh' during the standard monitoring surveys also will be used in the scavenger rate study if they are in reasonable condition. However, it is unlikely that sufficient numbers of freshly killed individuals will be found during the standard mortality surveys to meet the sampling size needs for the scavenger rate study.

Scavenger Rate Study Protocol

All birds found during this focused study will be recorded and processed using standard documentation procedures used for the long-term mortality study. Each burrowing owl and American kestrel found during the mortality surveys will be uniquely marked to allow accurate tracking of scavenging activity and/or movement of the carcasses, and then replaced at the location where it was originally found. GPS coordinates of the will be recorded. Extreme caution will be taken to minimize any observer bias such as handling birds, since this might ultimately attract some scavengers to the carcasses.

The location and condition of all study carcasses will be determined during each survey event to accurately characterize and quantify scavenging activity. The results of this study will be analyzed using standard statistical protocols for determining scavenging rates

All survey records, photographs, and other data collected in the field will be compiled and maintained and entered into a centralized database at the University. The TEAM will provide a September/October interim progress report to the County summarizing the results of the study, and a draft annual report on or before July 15, 2008. A final summary report with complete analysis of data will be provided on September 15, 2008.