

Nine Canyon Wind Energy Project

Some individuals have posed questions about the bird-bat fatality study conducted at Phase I of the Nine Canyon Wind Energy Project (Nine Canyon) (Erickson *et al.* 2003) and fatality studies conducted at other wind energy projects. The following text provides some background regarding Nine Canyon and responds to the most frequently asked questions. The full study report is available at

http://www.west-inc.com/wind_reports.php.

Project Description and Background Information

Nine Canyon, developed by Energy Northwest, is a 64 MW project located in an agricultural landscape in Benton County, Washington. Construction of Phase I of the project (48 MW) was completed in fall 2002, and Phase II (16 MW) of the project was completed in December 2003. The entire project consists of 49 1.3 MW Bonus turbines mounted on tubular towers and one permanent ungued diagonal lattice meteorological tower. Forty-three of the 49 turbines are located in cultivated agricultural lands. There is no open water, wetlands or riparian corridors near the wind facility (see report cover for photograph of site). A one-year ecological baseline study that included diurnal surveys, nocturnal radar surveys, habitat mapping, and focused sensitive species surveys was conducted prior to permitting and building both Phases of the project, but at different times. The county permit for Phase I of the project stipulated that Energy Northwest fund a monitoring study to assess the impacts of the project on birds and bats. A protocol was developed by Energy Northwest and its consultants in collaboration with a Technical Advisory Committee (TAC) comprised of representatives from the United States Fish and Wildlife Service, Washington Department of Fish and Wildlife, the local Audubon chapter, two landowners and Energy Northwest. The final monitoring protocol was approved by the TAC and was implemented. The results of the one-year monitoring program were summarized in a report which was reviewed and approved by the TAC. WEST, the consulting firm that assisted in the development of the protocol and conducted the study, has made this report readily available. The report has been distributed through various Internet list servers as well. The following Q&A will specifically refer to the Phase I final report (Erickson *et al.* 2003), which included the study of the 37 wind turbines within the Phase I project.

Questions and Answers

We have assembled a list of questions we have received and have written responses to the most commonly asked questions. We believe both the questions and our response will be informative to those individuals interested in avian wind power interactions and will improve our understanding of a very complex issue. We plan on updating the list of questions and responses on our web site

(www.west-inc.com) as new questions arise or new information is made available.

Q: Why are the scavenger removal rates (estimate of 11 days for small birds and 33 days for large birds) at Nine Canyon so low?

A: Estimates of scavenging and carcass removal rates have varied among wind project studies (Morrison 2001) and other studies (e.g., Balcom 1986); however, these rates are similar to rates observed at other projects in the western U.S. The project facilities for Nine Canyon are located primarily in cultivated agricultural land (primarily dryland wheat, some non-native grassland - see photo on cover of report). The agricultural fields are very large, with very little edge habitat or diversity of vegetation near the wind turbines; cover for scavengers and predators is very limited. The turbine strings are not located along riparian corridors or other areas providing cover that might concentrate scavengers. Carcass removal studies were conducted in all four seasons to estimate the rates at which carcasses are scavenged and removed from the project site. These studies used protocols similar to those employed in monitoring programs at other sites. Intact carcasses of house sparrows, rock doves and other legally obtained birds were placed in the field and checked daily for the first 4 days, then less frequently beyond that, to a maximum of 30 days. The condition of the carcass (intact, scavenged, feather spot) was monitored [until the carcass no longer could be identified as a whole intact carcass, a scavenged carcass or a feather spot (10 or more body feathers or 2 primaries). A carcass or feather spot found during carcass searches was considered a fatality caused by the wind facility, unless another cause of death could be determined. Although the abstract in the monitoring report provides estimates of the mean removal rate, Figure 8 and text in the results section within the body of the report describe the fate of birds as a function of day since placement. For example 60% of the moderate to large sized carcasses (e.g., rock doves and hen mallards) had not been removed by day 30 of the trial. Many of the carcasses showed signs of scavenging in the first few days of the trial, but these scavenged carcasses often remained for many days after placement. We believe an assessment of scavenging and carcass removal rates should be included in the design of the fatality studies.

Q: Why were searches only done at intervals of two weeks (one month in winter)?

A: A Technical Advisory Committee comprised of representatives from the USFWS, the state wildlife agency, Audubon, the developer, and two landowners, provided input into the protocols for the study, and approved the protocol used. The searches were conducted out a distance of at least 90 m from each turbine.

Searches of these areas on average took approximately 2 hours for each turbine, or around 80 hours each search period for the 37 turbines, or approximately 1400 hours for the one-year study. Searchers were on site approximately 4 days each search period to complete the searches on all 37 turbines. The decision to search twice monthly during the spring, summer and fall, and once monthly during the winter was made based on the relative low carcass removal rates, the effort necessary to search all 37 turbines, and the lower anticipated mortality rate in winter (using the baseline data and regional information). The estimates of fatality rates included counts of intact carcasses, intact but scavenged carcasses, and heavily scavenged carcasses and feather spots. All carcasses found in search plots were classified as turbine fatalities, although the cause of death could not be determined in many cases. Some of the fatalities observed, such as low flying ground nesting birds (e.g., horned larks, pheasants) may have been predator kills or vehicle kills and not turbine kills.

Q: Why were the carcass removal trial birds not placed in the carcass search plots?

A: Carcass removal trial birds were placed along the new gravel roads within the wind project in vegetative conditions similar to turbine locations and along the outside edge of the plots. They were not placed in the carcass search plots because we did not want to greatly increase the food source within the carcass search plots which could result in an increase in the scavenger activity and create an increase in the scavenging rates. Furthermore, we were concerned that feathers from the trial carcasses might get spread around a fairly large area, or the carcass might get moved, and evidence from trial carcasses might get mistaken for actual carcasses. Removing all feathers from an area can be quite labor intensive as well. Over the duration of the one-year study carcasses were placed near all of the search plots throughout the project.

At projects where a sample of turbines (instead of all turbines) is searched, we have placed carcass removal trial birds at turbines that are not being searched. For example, except for a few trial carcasses, most of the 300+ trial birds used at the Stateline Wind Project were located at turbines not searched.

Q: Are the trial carcasses representative of actual fatalities caused by the wind facility?

A: We believe the trial carcasses are reasonably representative of actual fatalities and the protocol for the carcass removal trials are designed to simulate actual fatalities as much as possible. It would be preferred to use “fresh” trial carcasses in carcass removal trials, although this is not practical in most cases. We have used primarily rock doves and house sparrows to represent moderate/large and

small birds. Native bird carcasses that meet suitability criteria for trials are used when available. They are obtained from local wildlife rehabilitators and state agencies or are collected as road-kills (all authorized with permits). The trial carcasses have been frozen, but most have been in the freezer for less than 6 months. The carcasses are left at room temperature for a period of approximately 8 to 24 hours before the trial begins.

In most studies, including Nine Canyon, small birds were used to represent bats for carcass removal. In a few studies, very fresh bat carcasses (estimated to be killed the previous night) were available to be used in some trials (see Erickson et al. 2004 and Johnson et al. 2003). These two studies suggest similar to lower scavenging rates on bat carcasses compared to small bird carcasses, but the sample sizes are low, limiting generalizations. We recommend that some effort be put forth to better quantify the differences in scavenging rates between bats and birds.

Q: Do these results provide an estimate of the mortality expected at Nine Canyon or at future wind developments with similar characteristics?

A: Permitting of wind projects typically includes an assessment of the expected impacts of the project on birds, bats and other wildlife. Predictions of mortality from a proposed wind project are usually made based on baseline data and existing information regarding the habitat, bird species composition and use of the site, topography and other factors. A one-year baseline study that included diurnal surveys, nocturnal surveys, habitat mapping, and focused sensitive species surveys was conducted prior to issuance of a permit for the project. The results of the Nine Canyon monitoring study are one source of information that may aid in predicting impacts of projects with similar characteristics, such as the vegetation and landscape characteristics (cultivated agricultural landscape), bird species assemblages, topography, project size, etc. The results of the bird-bat monitoring studies are not intended to be a substitute for pre-project baseline information, but an additional tool to aid in predicting impacts.

References

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