

Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Monitoring wildlife responses to noise at the Maxwell Ranch Wind Farm

Discipline: Natural Resources
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Effective Dates: 9/1//2009-12/31/2012
Funding Amount: \$30,028

Investigators and Agency Representative:

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Project Abstract: Many wind farm studies have focused on literal impacts - organisms with blades and towers - but noise presents another potential environmental problem. Hearing is the panoramic alerting sense for many organisms, queuing attention to potential threats or opportunities. Evolutionary studies reinforce this point: many lineages of vertebrates have lost sight, but no cases of lost hearing are known. Hearing almost certainly evolved before intentional vocalization (Fay & Popper 2000), providing acoustical surveillance before being exploited for communication. The noise generated by wind turbines substantially degrades auditory awareness below 1 kHz, with some additional effects extending up to 5 kHz. Animals will react to this loss of sensory awareness. At Altamont Pass wind farm, ground squirrels under active turbines exhibited elevated vigilance, stronger reactions to alarm calls, and slower resumption of normal activities after reacting to a disturbance or alarm (Rabin et al. 2006). Studies of other low-frequency noise sources have shown that birds increase the pitch of their songs (Slabbekoorn & Peet 2003, Brumm & Slabbekoorn 2005) and shift their singing activity to quieter evening hours in loud, urban centers (Fuller et al. 2007). Other effects include reduced bird densities near roadways (Reijnen et al. 1997), reduced pairing success (Habib et al. 2007), increased visual scanning, and reduced foraging success (Quinn et al. 2006). Noise impacts have also been documented in ungulates (Landon et al. 2003) and bats (Schaub et al. 2008).

The noise-related impacts of wind farms can have significant consequences beyond the area where the noise is perceptible. Degradation or fragmentation of regional habitat can affect the viability of many wildlife populations within parks, and wind farms can also affect migratory or dispersing organisms. Thus, a wind energy project does not need to be visible from a National Park unit or other protected natural area to pose a potential threat to natural resources. This project will investigate the responses of wildlife to noise generated by wind energy development. CSU's 11,000-acre Maxwell Ranch is our proposed study site, which is being evaluated by Wind Holdings LLC for development as a wind farm.

Outcomes with Completion Dates: Due Date for Final Report and/or Final Products: 31 January, 2012

Keywords: NPS- WASO Natural Sounds Program, Colorado State University, Maxwell Ranch Wind Farm, noise, wildlife