

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Monitoring acoustical environments and noise, and studying their significance to wildlife

Discipline: Interdisciplinary
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Effective Dates: 6/15/2013 - 12/31/2014
Funding Amount: \$600,551

Investigators and Agency Representative:

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Project Abstract: Noise is an increasingly pervasive pollutant in protected natural areas. Data collected by CSU Research Associates in 22 National Park units (Lynch et al. 2011) show that noise is audible about one quarter of the time (hourly median value across all hours and sites), and some wilderness sites can have hourly noise audibility levels exceeding 50%. Chronic noise exposure can have many potential effects on wildlife behavior and ecology, and numerous scientific papers provide evidence of changes in wildlife behavior, fitness, distribution, and community structure (Patricelli and Blickley 2006; Slabbekoorn and Ripmeester 2008; Fahrig and Rytwinski 2009; Barber et al. 2010; Benítez-López et al. 2010, Brown et al. 2012). Noise has also been shown to affect plant communities, through its effects on wildlife (Francis et al. 2009). Although the broad outlines of noise impacts to wildlife are clear, more detailed understanding is needed to identify priorities for noise management in protected natural areas, and to devise efficient and effective mitigation.

The research and development goals are:

- to develop and test innovative methods for monitoring acoustical environments and analyzing the resulting data,
- to stimulate observational and experimental research that addresses fundamental issues regarding the effects of noise on wildlife behavior and ecology,
- to expand the scientific basis for evaluating the potential effects of noise exposure on wildlife,
- to promote collaborative conservation working groups consisting of academic professionals and natural resource managers to provide scientific input to decision makers regarding the impacts of anthropogenic disturbance and associated noise,
- to further the career development of research associates, graduate students, and postdoctoral researchers, expanding their command of acoustical monitoring and understanding of auditory perception,
- to expand educational and research opportunities for undergraduates by providing opportunities for participation in research,
- to provide opportunities for project participants to produce peer-reviewed papers and outputs for scientific conferences reporting these research results,
- to stimulate interdisciplinary research and education at CSU by promoting development and use of innovative instrumentation to study ecological systems, encouraging collaboration with wildlife conservation, biology, ecology, and engineering students and faculty, and possibly hosting scientific

Outcomes with Completion Dates: December 31, 2014

Keywords: soundscapes, acoustic monitoring, wildlife, NPS-Natural Sounds Program, Colorado State University