

## Project Summary

### Rocky Mountains Cooperative Ecosystem Studies Unit

**Project Title:** Quantitative Approaches to Disease Spread Modeling

**Discipline:** Natural  
**Type of Project:** Technical Assistance  
**Funding Agency:** USGS  
**Other Partners/Cooperators:** Montana State University  
**Effective Dates:** 9/15/2013 - 9/14/2018  
**Funding Amount:** \$24,904

**Investigators and Agency Representative:**

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**Project Abstract:** This project is to review the most current spatial spread models and place them in the context of the history of such models in order to provide a unifying framework to understand how best to combine the strengths of disease mapping and spatial epidemiology to improve future predictive and inferential disease models.

The goal of this research is to develop a better understanding of the effects of disease in wildlife populations. Objectives include:

1: Identify, prioritize, and detect contaminants and pathogens of emerging environmental concern.

- Strategic Science Action –Develop approaches and tools that identify vulnerable environmental settings, ecosystems, and species.

2: Reduce the impact of pathogens on the environment, fish, wildlife, and people.

- Strategic Science Action–Determine the biotic and abiotic factors that control the ecology of infectious diseases affecting natural populations of aquatic and terrestrial species and potential transmission to other animals and humans.
- Strategic Science Action–Establish how natural and anthropogenic environmental changes affect the distribution and severity of infectious diseases in natural populations of aquatic and terrestrial species and potential transmission to other animals and humans.

3: Prepare for and respond to the environmental impacts and related health threats of natural and anthropogenic disasters.

- Strategic Science Action–Enhance methods to anticipate, prepare for, and identify environmental, ecological, and related health impacts of future disasters.

**Outcomes with completions dates:** September 14, 2018

**Keywords:** review, spatial spread models, USGS, Montana State University