

# Management Strategy Evaluation for Informing Decisions about Wolf Management and Conservation

Hannah Sipe\*, Montana Cooperative Wildlife Research Unit, Wildlife Biology Program, University of Montana, Missoula  
Sarah Sells, Wildlife Biology Program & Ecology and Evolution Program, U. S. Geological Survey, Montana Cooperative Wildlife Research Unit, University of Montana, Missoula

Justin Gude, Montana Fish, Wildlife and Parks, Helena

Kevin Podruzny, Montana Fish, Wildlife and Parks, Helena

Molly Parks, Montana Fish, Wildlife and Parks, Missoula

Michael Lewis, Montana Fish, Wildlife and Parks, Helena

Alexander Metcalf, Wildlife Biology Program, Department of Society and Conservation, WA Franke College of Forestry and Conservation, University of Montana, Missoula

Elizabeth C. Metcalf, Wildlife Biology Program, Department of Society and Conservation, WA Franke College of Forestry and Conservation, University of Montana

\*Indicates Presenter

\*\*Indicates Student Presentation

Decisions about wildlife conservation and management are often challenged by limited information about how potential actions will likely impact management goals. Adaptive management can reduce this uncertainty and lead to better outcomes by iteratively applying management, monitoring outcomes, updating models, and making management decisions based on the updated information. Management strategy evaluation (MSE) is a simulation approach for evaluating the efficacy of various management actions under different states of the world within an adaptive framework. This flexible approach can incorporate common features for wildlife management decisions that are challenging and complex (e.g., competing interests among stakeholder groups and various forms of uncertainty). Although fisheries management frequently uses MSE to inform adaptive management, there are few terrestrial wildlife applications. We discuss the mechanics behind MSE and how it can be adapted to inform wildlife conservation decisions using a case study of the controversial and complex decision problem of wolf harvest and management in Montana. Our application shows how incorporating social and ecological aspects into a MSE framework, along with all relevant forms of uncertainty, can offer useful predictions about how management goals are likely to be influenced by various management actions over long time scales.