RESEARCH SUMMARY

CONSERVATION INNOVATION TO REDUCE PREDATOR CONFLICTS ON WORKING LANDS

OUR GOAL IS TO PRODUCE RELIABLE INFORMATION ON THE COSTS AND EFFECTIVENESS OF TECHNIQUES USED TO REDUCE CONFLICT WITH LARGE CARNIVORES.

Beginning in spring 2021 and extending for at least three years, the research team will focus on **evaluating three commonly employed nonlethal predation management techniques on working lands – fencing, range riders, and livestock carcass management** – with the opportunity for analysis at the landscape scale because data will be obtained from at least seven western U.S. states with independent producers and local landowner groups representing more than 600 producers.

Although there are many other techniques and practices used throughout the western U.S., these three techniques are commonly employed and offer an excellent opportunity for the research team to develop a system to effectively carry out research at a landscape scale. Developing this system will enhance the ability to evaluate other practices and techniques (e.g., livestock guard dogs and drone technology) in subsequent years and will allow these techniques to be formally considered as “practices” by landowners and the Natural Resources Conservation Service (NRCS).

This research is one part of a bigger NRCS Conservation Innovation Grant that broadly aims to reduce the financial and social burden of expanding carnivore populations on livestock operations through innovation and evaluation of techniques that reduce predator conflict on working lands between carnivores and agriculture, leading to more resilient ranches and connected landscapes.

USDA United States Department of Agriculture
Natural Resources Conservation Service

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TARGETED FIELD TRIALS

To accomplish our research goals, we will use existing data from a variety of sources (livestock producers, government agencies, and cooperating NGOs) and **carry out targeted field trials aimed at filling gaps in knowledge** that existing data can not address.

Importantly, we will co-produce this knowledge in a unique partnership between livestock producers, conservation organizations, USDA-National Wildlife Research Center (NWRC), universities, agencies, and others who are collectively committed to finding best practices. Ideally and valuably, we intend for state and federal agencies to be a key part of all components of the project.

To evaluate the costs and efficacy of the three predation management techniques, we will collect data from existing systems using these techniques and also conduct experiments where we implement or remove a technique at specific sites.

FENCING

Fencing projects are primarily temporary electric fencing (e.g., turbo fladry) but may also include permanent or semi-permanent fencing. We anticipate analyzing data from around 80 fencing projects each grant year.

CARCASS MANAGEMENT

Carcass management typically involves the removal of carcasses for composting. Efficacy metrics will reflect spatially differentiated risk mitigation within the approximately 15 landowner groups each year that practice carcass management.

RANGE RIDING

Range riding differs in its application by region and by livestock operation due to several variables including vegetation, topography, predator population, livestock risk level (e.g. type of livestock), and road density and quality. Variations in the application include the time of day riding, number of days/week or hours/day riding, use of consistent or variable schedule for riding, and use of directional or aggregative herding. We will have at least 20 range riders partnering in this project with significant diversity of experience and ecological type. Some of these sites have collected data for over a decade, while others are using range riders for the first time.

BEFORE-AFTER CONTROL IMPACT FRAMEWORK

Data collected from all three predation management techniques will include costs and variables related to the application of the tools, livestock depredations, and known predator activity (via camera traps and shared data agreements with state agencies). Obtaining data prior to implementation of range riding, fencing, or carcass management will enable us to opportunistically use a before-after-control-impact framework in data analyses (i.e., BACI; comparing results before and after the tool is applied and where the tool is applied versus sites where the tool is not applied as controls). As such, finding and using records will be a high priority in this research. In general, we will use a modeling strategy known as mixed-effects (allows for both fixed and random effects) for analyses that provides flexibility in utilizing non-parametric data (i.e., not normally distributed) and addressing other challenges such as repeated measures (e.g., daily logs recorded by range riders). To assess costs, we will use a relatively straightforward cost/benefit modeling effort that includes costs of equipment, personnel, and time spent by producers and other personnel. Costs will be contrasted with benefits to livestock producers such as livestock saved, habitat permeability for predators, and increased communication between livestock producers, range riders, and wildlife managers.

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DATA APPLICATION AND RESULTS SHARING

The research team will develop relationships between researchers, livestock producers, and agency and NGO personnel (year 1); further build the rancher network (year 1); acquire historical data applicable to our research questions and follow a protocol developed by the research team (year 1); and implement priority field trials (years 1, 2, and 3).

CONTINUOUS REPORTING

Research activities will be reported continuously to partners and more formally on an annual basis at rancher-led peer gatherings. Data utilized in this project will be kept in ways that protect the privacy of individual rancher participants (i.e., names and addresses redacted). Formal statistical analysis and interpretation of data gathered and utilized in this research will be done by the research team, but will include input from the participating livestock producers and NGO personnel.

COMMUNITY OF PRACTICE AND TECHNICAL GUIDE

Results will be disseminated and discussed annually at producer-led community gatherings aimed at developing a community of practice through peer-to-peer knowledge exchange that also is used to further develop and adapt the work as needed. This iterative process will be used to ultimately produce a Technical Guide, completed in year three, and articles published in peer-reviewed journals. **Results, the Technical Guide, and other publications will be used for recommendations to NRCS to provide long-term access to conflict reduction techniques.**

RESEARCH TEAM

The research team consists of researchers, livestock producers, and staff from NGOs.

Researchers include Julie Young and Stewart Breck with USDA-WS-National Wildlife Research Center, Kyran Kunkel with University of Montana, Seth Wilson with Blackfoot Challenge, Rae Nickerson with Utah State University (Ph.D. student), and Matt Hyde with Colorado State University (Ph.D. student).

Jared Beaver, with Montana State University Wildlife Extension, will lead extension outreach.

Livestock producers will participate in monthly meetings to assist with study design, data collection, and analysis and interpretation of results.

Personnel from NGOs include Gary Burnett from Heart of the Rockies and Alex Few from Western Landowners Alliance; they will play a critical role in integrating the research into the other goals of the Conservation Innovation Grant.

For more information contact the research team at cigresearch2021@gmail.com.

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