



Rangeland Fragmentation

This project has influenced the way public and private land management decisions are made by developing standardized tools for assessing the social, economic, and ecological aspects of rangeland fragmentation in the western U.S.

Who cares and why?

One of the most serious challenges facing the western U.S. is the loss of rangelands to development. Rangelands provide important habitat for wildlife, grazing land for the economically important livestock industry, recreational opportunities, and other ecosystem goods and services. Changes in tenure and ownership have promoted new attitudes towards land that are shifting the direction of land use and management. Grazing has been curtailed as working rangelands are subdivided for development, and private lands are experiencing increasing rates of subdivision. The intermixing of small, unmanaged parcels with extensive rangelands hampers wildland fire protection and invasive weed species control and impedes the capabilities of public land management agencies. Fragmentation can also result in the degradation or loss of important ecosystems. Failure to address issues of rangeland fragmentation could decrease the sustainability of agricultural operations and rural communities in the western U.S. and have serious implications for rural communities, local governments, agricultural operations, and natural resources in the region.

What has the project done so far?

W-1192 researchers have developed and tested surveys, models, and other tools that have been used to determine levels and trends of fragmentation across the western U.S. and to assess the social, economic, and ecological impacts of fragmentation. By standardizing these tools, researchers have accounted for differences across states and provided a blueprint for expanding study areas. Using these tools, researchers have looked at how fragmentation affects conservation practices for watersheds, encounters between wolves and cattle, the spread of invasive weeds and other shifts in vegetation, the incidence and impacts of wildfires, costs of grazing, and the amount of meat available from grazing livestock. Other studies have focused on how property size affects landowners' values, goals, and practices. Researchers have also evaluated rangeland sales, categorized the



Rangelands provide important grazing land for cattle; however, encroaching housing development and fences marking private property boundaries and public land allotments are dividing the landscape, potentially limiting grazing area as well as wildlife habitat. Top photo by Wink Crigler. Middle photo by Mark Brunson, Utah State University. Bottom photo by Rob Lee, Flickr.

reasons why buyers purchase rangelands, and identified factors that affect the market value of western ranches. Additionally, W-1192 researchers have provided economic analyses for revised forest plans for the Shoshone National Forest and Bridger-Teton National Forest. Overall, W-1192's efforts have provided insight into the relationships between land fragmentation and wildlife habitat, livestock production, land conservation, and public perception of the meaning and value of rangelands.



W-1192 research has explored the impacts of rangeland fragmentation on the incidence and spread of wildfires, noting that it is often more difficult to manage wildfires when rangelands are divided into small, intermixed private and public parcels. Photo by Jeff Clark, Oregon BLM.

Impact Statements

Helped policymakers evaluate the social, economic, and ecological impacts of proposed rangeland management policies and make more informed decisions.

Helped appraisers, brokers, ranch buyers and sellers, and others make reasonable estimates of ranch value.

Kept land managers abreast of trends in land use changes affecting rangelands, helping them tackle issues before they get too serious.

Provided research that helped settle conflicts between public lands and gas and oil industry in Wyoming.

Reduced oak tree cutting and increased oak tree planting among California landowners, thus helping conserve an important ecosystem and natural resource.

Compiled databases, making up-to-date information easier to access.



Invasive weeds, like the gold-colored cheatgrass shown above, are often more difficult to control when rangelands are fragmented. If they are not managed effectively, these weeds can choke out native plants, like the sagebrush pictured above, which provide important food and habitat in the rangeland ecosystem. Photo by Neil Rimbey, University of Idaho.

What research is needed?

Additional collaborative efforts are needed to address the role of tourism in public lands and its impact on livestock grazing. Researchers also need to assess the impact of climate change and emerging carbon markets on rangeland fragmentation and how this interaction influences various western land management issues. Sharing experiences and resources among cooperating states is imperative to ensure that these broad, multi-faceted issues are addressed in a comprehensive way.

Want to know more?

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