

Rocky Mountain Research Station Science You Can Use *(in 5 minutes)*

MAY 2019



Homes on the Range: Helping to Understand Residential Development of U.S. Rangelands

A Changing Landscape

When the words to the classic folk song “Home on the Range” were written in 1872, U.S. rangelands were much more extensive than they are today. Over the past three centuries in the coterminous United States, one-third of rangelands — once covering a billion acres — have been modified or converted to other land uses. This shift is projected to continue, because privately owned rangelands, which are the most likely to be converted to other uses, represent more than 60 percent of America’s rangelands.

Residential Development and Spatial Analysis

Residential development has had a particularly significant impact on rangeland ecosystems, including wildlife habitat reduction and fragmentation, altered hydrology and water quality, and decreased availability of natural and recreational goods and services. It’s a growing issue,

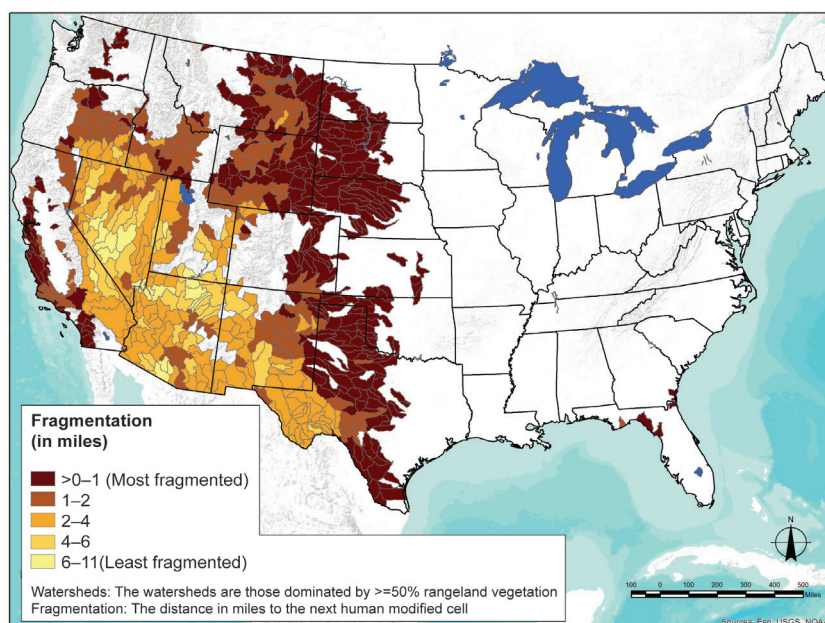
as an additional 5.6 million acres of U.S. rangelands are expected to make way for residential development in the next two decades or so, with more than 1 million of those acres in California and Texas alone.

To better understand where and how residential development is likely to affect U.S. rangelands, a team of scientists is collaborating on an ongoing project known as [Rangelands on the Edge](#), which estimates past and projected rangeland conversion while evaluating landscape-level rangeland threats. It’s similar to another Forest Service project called [Forests on the Edge](#), which also has the key goals of increasing awareness of ecosystem values and challenges while creating tools for strategic planning.

Where to Find the Findings

People can find a report based on this project, entitled “[Rangelands on the Edge: Quantifying the Modification, Fragmentation, and Future Residential Development of U.S. Rangelands](#).” The lead author, a research ecologist for the Rocky Mountain Research Station named Matt Reeves, explains, “Landscape change is inevitable and there will be tradeoffs. This research provides a springboard for having discussions about what we want the future to look like.”

According to the spatial analysis described in the report, continued rangeland conversion will affect some areas more



Rangelands on the Edge quantifies and maps aspects of rangeland conversion, including watershed fragmentation. The darkest red color on the map represents the most fragmented rangeland watersheds.





Much of the decline in rangeland area is due to land use changes associated with exurban development, agriculture, and grazing (Photo by Carrie MacLaren, courtesy of 1000 Friends of Oregon).

than others. California and Texas are likely to be most affected, followed by Florida, Arizona, and Colorado. States with less dense human populations, such as Wyoming, Montana, and North Dakota, will be impacted less although localized changes may be significant. Also, further rangeland conversion is most likely around urban areas. The report also indicates that residential development impacts are reduced by concentrating housing in specific areas while setting aside and managing open spaces through conservation easements and land purchases.

Planning for Wildfire, Wildlife Management, and More

Reeves hopes the research will guide a wide range of planning related to highway placement, wildlife migration corridors, watershed impacts, residential wildfire prevention, and more. Reeves uses California wildfires as an example: “If you compare expected residential growth in light of local vegetation types such as flammable chaparral, you can create ‘what-if’ scenarios in terms of projected development and wildfire potential. Then you can discuss how to make those communities more resilient to fire.”

Reeves also describes an issue he’s seen in western Montana: “Here in the Bitterroot Valley, the human population is expanding while agricultural and

KEY FINDINGS

- Through a project called Rangelands on the Edge, RMRS scientists and collaborators are studying past, current, and projected changes to rangelands related to residential development in the conterminous United States.
- A recently published report on the project includes maps and analysis of variables such as housing density, road and soil characteristics, topography, proximity to population centers, and land cover, use, and ownership.
- This information can help refine planning and development decisions related to residential locations, land cover, highway placement, watershed management, and minimizing the effects of rangeland fragmentation.
- While past U.S. rangeland conversion has been driven by agricultural development, especially in the Great Plains region, the greatest projected residential development is in the arid Southwest and California, especially near urban areas. Of more than 5.3 million acres of projected residential development through 2030, nearly 2.5 million acres are in California and Texas. Certain smaller urban centers such as Bozeman, Montana, will also continue to experience rapid changes.
- Scientists are available to help interpret findings on a local level. Additional information can be obtained by contacting Matt Reeves at mreeves@fs.fed.us.

rangeland resources are being diminished. As a result, there’s been an increase in motor vehicle collisions with elk as they’re squeezed into corridors that might require them to cross a road. Our research can help develop travel management plans that consider wildlife corridors and include carefully placed overpasses, underpasses or fences.”

Reeves hopes the work will enable more informed decision-making related to U.S. rangeland development. He explains, “While there’s some urgency about this issue, there’s also opportunity. We believe that this research is the first step in more localized research, which will help bring people to the table.”

FURTHER INFORMATION

Reeves, Matthew C.; Krebs, Michael; Leinwand, Ian; Theobald, David M.; Mitchell, John E. 2018. *Rangelands on the Edge: Quantifying the modification, fragmentation, and future residential development of U.S. rangelands*. RMRS-GTR-382. Fort Collins, Colorado: USDA Forest Service, Rocky Mountain Research Station. www.fs.fed.us/rm/pubs_series/rmrs/gtr/rmrs_gtr382.pdf.

Rocky Mountain Research Station researchers work at the forefront of science to improve the health and use of our Nation’s forests and grasslands. More information about Forest Service research in the Rocky Mountain Region can be found here: <https://www.fs.fed.us/rmrs/>



Subscribe online to future Science You Can Use editions at <https://www.fs.fed.us/rmrs/science-you-can-use-bulletin>

