The coterminous United States (U. S.) currently contains an estimated 660 million acres of rangeland, and the Western U. S. encompasses approximately 72% of those acres according to a recent inventory reported by Reeves et al. (2018). Nearly 43% of U.S. rangelands are owned and managed federally (U. S. Forest Service, 2019). Rangelands provide forage for livestock grazing, recreation opportunities, ecosystem services such as wildlife habitat, clean water, carbon sequestration, and expansive open spaces, as well as land that fosters energy production (Reeves and Mitchell, 2012). The many uses and ecosystem services derived from rangelands translates into economic significance in the West.

Mitchell (2000) documents the historical role of rangeland use and management on Native American cultures, westward expansion, cattle ranching, environmental conflicts, and related policies in the U. S. He highlights how rangelands have played a principal role in Western agricultural endeavors and related economies. Their economic importance continues in the West today. The lack of arable lands in much of the West means rangelands have been, and continue to be, a principal source of forage for livestock. Thus, cattle ranchers and many local economies have become dependent on both private and public rangelands for their livelihoods. Moreover, rangelands provide a significant source of wildlife habitat, and federal lands receive increasing attention regarding habitat provision for threatened or endangered species. Additionally, climate change and its interactions with forage productivity, invasive species and provision of ecosystem services garners increased attention from policymakers, land managers, and researchers. It is not surprising that numerous conflicts exist between the many competing interests concerned with the best way to
manage and use rangelands in the West. Apprehensions regarding potential deterioration of rangelands have led to much research and recommended strategies regarding grazing management designed to improve rangeland health and ecosystem services, but often the economic implications of those strategies are not well understood. Resource health concerns, and conflicts associated with other uses, have led federal agencies to examine stocking rates and grazing permits on public rangelands often resulting in less forage being available for ranchers dependent on these lands. Furthermore, federal policies regarding management of public rangelands to address threatened or endangered species continue to evolve creating uncertainty for those utilizing impacted areas. This special issue of Western Economics Forum contains the findings and insights of scholars focusing on conservation practices, grazing management, and resource policies affecting western rangelands.

In this issue, Rashford et al. examine the important topic of targeting conservation easements. The authors demonstrate a propensity score matching model using available land value assessment data to estimate spatially explicit conservation costs and risk of loss on land parcels in areas where land market transactions data is sparse. This is often the case in many parts of the Western U.S. They combine the results of the model with a set of parcel-level biological characteristics to determine the cost-effective efficiency of different strategies for allocating limited conservation funds on a case study in Sublette County, Wyoming. They argue that more efficient easement targeting could be as simple as selecting land parcels based on a systematic consideration of cost, attractive development characteristics (risk of loss), and high biological benefits.

In the article by Peck et al., the availability and accuracy of seasonal climate outlooks is summarized in the context of the limitation it imposes on being able to effectively implement flexible stocking practices. The authors go on to describe Grass-Cast, a new grassland productivity forecast software that translates climate outlooks into more applicable summer forage outlooks. These forage outlooks provide helpful “sideboards” on potential forage production which enable producers to implement flexible stocking strategies with less worry about forage demand, potentially exceeding forage supply.

Torell, Lee and Steele discuss the need to better integrate species ecology, climate change and human decision making into economic research and management decisions regarding rangeland usage. Specifically, they develop a bioeconomic framework, which incorporates a state and transition model (STM) with climate change scenarios in an economic model to evaluate plant production under different stocking rate assumptions. They conclude that stocking decisions based on a take half – leave half rule of thumb will likely have negative impacts on rangeland health and ultimately reduce economic returns to ranchers. They argue that rangeland systems susceptible to
invasive species must be analyzed in this manner if we are to improve our understanding of how to manage them best.

Cumming et al. conduct research to understand the carrying capacity of Nebraska’s rangelands. They examine capacity on a statewide basis to evaluate the potential for increasing cattle production, which is an important endeavor for Nebraska’s economy. Their analysis essentially uses a forage supply versus forage demand framework. This research is the first of its kind for the state and is foundational for guiding further research in how to better utilize Nebraska’s rangeland resources. The authors conclude that opportunities to expand cow-calf production primarily will have to come from practices and/or technology adoption, which improves current levels of harvest efficiency in the state and better utilization of other forage resources such as crop residues.

The article by Windh et al. studies the fencing and water infrastructure costs, and labor costs, for five grazing management scenarios. In addition to comparing rotational grazing to season-long continuous grazing, they consider the cost impacts of using temporary electric cross fencing versus permanent barbed-wire cross fencing and the impact of having contiguous pastures versus noncontiguous pastures. They conclude that fencing, water, and labor costs can increase substantially with the implementation of a rotational grazing system, especially in a scenario with noncontiguous pastures. The authors detail important cost differences between the management scenarios and, thus, provide a baseline for future discussions with ranchers who are considering making these changes to their grazing management system.

Ashwell et al. use a linear, dynamic simulation model to quantify economic reasons to adopt prescribed grazing practices in a Major Land Resource Area (MLRA) in Northern Montana. They specifically evaluate the profit maximizing incentives to invest in infrastructure to implement rotational grazing with or without annual rest pastures. Their results show that while adoption of prescribed grazing practices enhances the productive capacity of the treated rangelands, the effect on profitability is not uniform across all types of ranches. Ranches with large tracts of land and relatively poor initial water distance efficiency stand to gain the most.

The analysis conveyed in the article by Lewin et al. shows both the social and economic impacts of declining livestock grazing permits on federal lands. They use Owyhee County in Idaho as the case study. This county is the second largest county in Idaho with over 75% of land area being federal public rangeland. The beef industry is important to rural communities and their related economies within the county. The authors evaluate both the economic consequences and the social cohesion impacts associated with policy decisions to reduce federal grazing. Their results document that the reduction in permits has had significant negative impacts on both the social and economic well-being within the county.
The research reported by Taylor, Rimbey, and Tanaka investigates the potential economic impact of management alternatives for Greater Sage Grouse in the Western U. S. on federal rangelands. The authors’ analysis aims to quantify the effects of the sage grouse management on livestock grazing which ultimately impacts ranch profitability and the aggregate economic impacts in the Western U. S. The authors utilize information from specific Land Use Plans in the region, ranch level budgets, and an economic input-output model called IMPLAN to accomplish their research objective. The authors find the management alternatives under consideration could result in a loss of total earnings, over a 40-year period, to the region ranging from $332 million for an alternative of some reduced grazing during certain months to $3.8 billion if all grazing were stopped on the affected federal lands.

The findings contained in this issue underscore the continued importance of rangelands to society in the Western U. S. We believe contents of this issue highlight the importance of understanding the economic implications of decisions being made regarding this valuable resource.

References


