Understanding cattle grazing personalities may foster sustainable rangelands

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A cow at the Sierra Foothill Research and Extension Center in Browns Valley being tracked as part of research by Ph.D. Maggie Creamer and Associate Professor Kristina Horback into cattle grazing personalities. Credit: Maggie Creamer/UC Davis

Not all cattle are the same when it comes to grazing. Some like to

wander, while others prefer to stay close to water and rest areas.

Recognizing those personality differences could help ranchers select herds that best meet grazing needs on rangelands, leading to better animal health and environmental conditions, according to a new paper from the University of California, Davis, published in the journal *Applied Animal Behaviour Science.*

"Cattle can actually be beneficial for the rangelands," said lead author Maggie Creamer, who recently earned her Ph.D. in animal behavior at UC Davis. "Vegetation in rangelands actually need these kinds of disturbances like grazing."

Ranchers can add elements to the rangeland such as water, mineral supplements and fencing to influence where cattle graze, but little research has been done on how those efforts affect individual cows. Considering personalities could save money.

"If you're spending all this money to add a management tool in order to change the distribution of your animals, that's a huge cost to ranchers," said Creamer. "Thinking about other tools, or selecting certain animals with these grazing traits, might be a better way to optimize the distribution on rangeland rather than spending a bunch of money for something that may ultimately not pan out for all your animals."

Effects of grazing

Livestock graze on an estimated 56 million acres in California, and healthy rangelands host native vegetation and animals, foster nutrient cycling and support carbon sequestration.

Uneven grazing can degrade water quality, soil health and habitats. Optimizing grazing—including the even spread of cow pies—can

improve the ecosystem while also reducing fuel loads for wildfires.

To better understand individual grazing patterns, researchers went to the UC Sierra Foothill Research and Extension Center in Browns Valley and tracked 50 pregnant Angus and Hereford beef cows fitted with GPS collars.

The research

The cattle, which were tracked from June to August over two years, had access to 625 acres of grasslands and treed areas ranging in elevation from 600 to 2,028 feet. In the second year, a new watering site was added at a higher elevation.

Across the two years, the cows showed consistent and distinct grazing patterns even when water sources changed. Age and stage of pregnancy did not affect patterns, though cattle tended to clump near water and rest sites on hotter days.

The cows that ventured into higher elevations and farther from watering sites had more variability in their grazing patterns than those that stayed at lower elevations near water. That suggests it may be harder for non-wanderers to adjust to some landscapes.

"Thinking about the topography of your rangeland and your herd of cows can benefit both the animals and the sustainability of the land," said Creamer, who next month begins work as a postdoctoral scholar in North Carolina.

Gauging personalities

Keying in on personality type may sound difficult, but the researchers

also found some clues as to how to pinpoint the wanderers and homebodies. Unlike cattle at feedlots, the breeding cow population, especially on rangelands in California and other western states, live largely "wild" lives and are rarely handled, save for vaccinations and weaning.

Research due to be published later this year found that paying attention to individual cow reactions during those events can help determine personalities. The cows that appeared more passive during those handling interactions tended to be nomadic.

"We found that you can maybe predict those hill climbers if you kind of look at how they act when the veterinarian or rancher handles them," said senior author Kristina Horback, an associate professor in the Department of Animal Science at UC Davis.

Informing practices

For ranchers, the findings could be invaluable, said Dan Macon, a livestock and natural resources Cooperative Extension advisor in Placer and Nevada counties for UC Agriculture and Natural Resources.

"Any time we can improve our understanding of cattle behavior, particularly at the individual level, it can improve how we handle livestock and manage the landscape," he said.

Macon said that during the recent drought, it was hard to get cattle into higher country, but if ranchers could have selected the nomads, it may have saved money in terms of ranch labor and other efforts.

"If you ask a rancher who has been attentive to their cattle over many years, they know the personalities," Macon said.

For Creamer and Horback, the research opens new doors into understanding herd behavior and dynamics, one that could be a cheaper alternative to high-tech solutions.

"Animal science tends to look overlook the mind of the animal when searching for solutions to challenges," Horback said. "It's always been a direct line to genetics for immunity or nutrition, but nothing about the mind of the animal. And that's such a loss. There's so much we can learn from behavior in the end."

More information: Maggie Creamer et al, Consistent individual differences in cattle grazing patterns, *Applied Animal Behaviour Science* (2024). DOI: 10.1016/j.applanim.2024.106176

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