April 2012

Fort Keogh
Researcher

In cooperation with

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Introduction
Dr. Mark Petersen, Research Leader

So long 1902 Bridge

Due to high water and ice jams over the years, the 1902 bridge over the Yellowstone River was about to fall into the river and had to be removed. Copp Construction out of Billings, Montana, was selected to dismantled it and did so by building a temporary bridge next to it and then took it apart span by span using cranes. It is sad to see it go but it was great the weather cooperated and it was accomplished safely.

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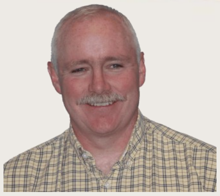

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Notes of Interest

A Gateway to Better Grazing

By Don Comis
October 27, 2011

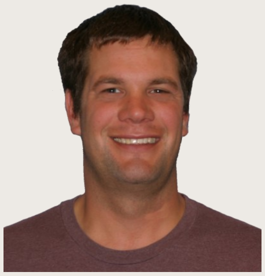
Location, location, location: It's not just a mantra for real estate agents, but ranchers as well, according to Agricultural Research Service (ARS) scientist Matt Rinella.

Rinella, a rangeland ecologist at the ARS Fort Keogh Livestock and Range Research Laboratory at Miles City, Mont., studied 7,200 hours of cattle-traveling activity data on mountainous range in Oregon. He used data downloaded from Global Positioning System (GPS) collars worn by up to 52 cattle in a herd of 500. The herd grazed for 50 days a year for 18 years in the experimental site.

He and colleagues from the U.S. Forest Service Pacific Northwest Research Station in La Grande, Ore., studied the dataset to see if it offered clues for solving a perennial problem of ranchers and other grazing land managers: how to get livestock to graze pastures evenly.

Rinella gridded the 5,864-acre study pasture into cells, each grid cell representing 9.9 acres. Then he identified the 10 most heavily grazed grid cells for further analysis. The stocking rate was based on the size of the pasture, but in reality cattle often ignored large portions of the pasture and focused grazing in and around the heavily grazed "hotspots."

Rinella was struck by how simple it can be to dramatically even out grazing in large mountainous pastures. In odd-numbered years, the cattle had entered the pasture along the east side. In even-numbered years, they entered through the southernmost gate.



In even-numbered years, grazing in the hotspots was down 50 percent, compared to odd years.

Rinella figured the reason was the distance and ease of access to the hotspots. Cattle entering the east gate had two roads that would take them to their favorite areas in two days. Conversely, when they entered through the south gate, they were much farther from those areas, with difficult mountainous terrain to cross, and no roads. So it took them weeks longer to locate and settle into the overgrazing-prone hotspots when they entered through the south gate.

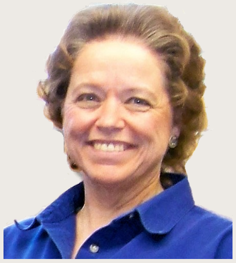
Switching the entrance gates each year evened out the grazing quite a bit, without the expense of fencing, water troughs, herding or other methods typically used to overcome patchy grazing.

This made Rinella think that ranchers and other land managers could benefit by putting GPS collars on a few of their cattle. This would allow them to identify areas at risk of overgrazing and experiment with simple, cost-effective methods for encouraging livestock to graze more evenly. The key to this problem could very well be the one that opens their gates.

ARS is the principal intramural scientific research agency of the U.S. Department of Agriculture (USDA). Findings from this research, which supports the USDA commitment to sustainable agriculture, were published this year in the journal *Ecological Modeling*.

Retirements

Dr. Michael D. MacNeil, Quantitative Geneticist, retired on December 15, 2011, after 28 years of Federal service of which the last 24 yeas were spent at Fort Keogh. Mike worked to impove beef cattle through genetic selection. His research using Line 1 Hereford cattle led not just to better genetic selection and line breeding, but also greater confidence on the part of the beef breeders in theoretical and applied genetic manipulation. His efforts to identify quantitative trait loci in beef cattle and his work to establish a national cattle evaluation system have brought untold benefits to beef breeders and consumers alike.



Sue Miles also retired on December 15, 2011, after more than 10 years with the federal government including 2 years with the Air Force. Sue decided it was time to cut back on working and spend more time with the grandsons! She will be teaching at Miles Community College part time, working with the Barn Player's, and maybe working part-time too. Sue has been a very effective front desk person as well as a poster designer/builder and master of many other trades as they became necessary. Her bubbly personality and bright smile will be missed by all those that walk in the front door at Fort Keogh!

Fort Keogh Outreach Activities

Recent Publications

Endecott, R.L., Cox, S.H., Rubio, C.M., Loest, C.A., Hawkins, D.E., Petersen, M.K. 2012. Effects of supplements with increasing glucogenic precursor content on reproduction and nutrient partitioning in young postpartum range cows. Livestock Science 145:109–118.

Funston, R.N., Summers, A.F., Roberts, A.J. 2011. Implications of nutritional management for beef cow/calf systems. Journal of Animal Science. Online first doi:10.2527/jas.2011-4569.

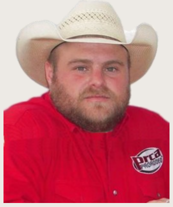
Reinhart, K.O., Johnson, D., Clay, K. 2012. Effects of trees on their recruits in the southern Appalachians, USA. Forest Ecology and Management. 263:268-274.

Funston, R.N., Martin, J.L., Larson, D.M., Roberts, A.J. 2012. Nutritional aspects of developing replacement heifers. Journal of Animal Science. 90:1166-1171.

Sawyer, J.E., Mulliniks, J.T., Waterman, R.C., Petersen, M.K. 2012. Influence of protein type and level on nitrogen and forage utilization in cows consuming low-quality forage. Journal of Animal Science. Online: http://jas.fass.org/content/early/2012/01/27/jas.2011-4782.

Geary, T.W. 2012. Effects of adrenocorticotropic hormone and flunixin meglumine on pregnancy retention in beef cows. Journal of Animal Science 90:207-211.

Russell, M.L., Vermeire, L.T., Hendrickson, J.R., Ganguli, A.C. 2012. Fire Season and Frequency Effects on Native Grass Bud Banks in the Northern Great Plains. Society for Range Management Abstract #0057.



Assistant's Corner

by Brad Eik

Salmon returns and consumer fitness: growth and energy storage in stream-dwelling salmonids increases with spawning salmon abundance

Muscha, J.M., Mulliniks, J.T., Roberts, A.J., Waterman, R.C., Paterson, J.A., Petersen, M.K. 2012. Variability in range cow mineral use is associated with season and daily high temperature in Northern Great Plains. Society for Range Management Meeting Abstract #0261.

Pohler, K.G., Geary, T.W., Atkins, J.A., Perry, G.A., Jinks, E.M., Smith, M.F. 2012. Follicular Determinants of Pregnancy Establishment and Maintenance. Cell and Tissue Research. DOI 10.1007/s00441-012-1386-8. Online.

Dufek, N.A., Vermeire, L.T., Waterman, R.C., Ganguli, A.C. 2012. Fire and nitrogen fertilization effects on Purple Threeawn in vitro fermentation and gas production. Society for Range Management. Meeting Abstracts #0160.

Strong, D.J., Vermeire, L.T., Ganguli, A.C. 2012. Fire and nitrogen effects on purple threeawn invaded plant communities. Society for Range Management Meeting Abstract #0117.

Roberts, A.J., Funston, R., Mulliniks, T., Petersen, M.K., Macneil, M.D. 2011. Feed efficiency -how should it be used for the cow herd?. Range Beef Cow Symposium Proceedings XXII:122-131.