



Taking the pulse of current range

by Don Gayton, Dry Forests and Grassland Ecology Extension Specialist

Range management has always been a dynamic science, as changeable as the grasslands that are its realm. The recent Society for Range Management (SRM) Annual Conference in Albuquerque, New Mexico, reflected the discipline's forward movement. When I attended my first SRM conference some 30 years ago, the talks were all about herbicides, cultivated grasses, and killing sagebrush. Now, range managers hold animated discussions about ecological resilience, patch dynamics, state, and transition models. Over the four days of simultaneous sessions at Albuquerque, I took the pulse of current range science, listening to papers covering ecology, grazing, invasive plants, hydrology, economics, restoration, and a host of other topics.

One entire conference session was devoted to invasive annual grasses. British Columbia is relatively free of cheatgrass and its unsavory relatives, which are the scourges of the American West, but that could change soon. As Washington State University weed expert **Dr. Richard Mack** says, no matter what climate change scenario you throw at cheatgrass, it seems to thrive.

Conference speakers explained how cheatgrass has fundamentally altered the native sagebrush grasslands of the US Great Basin, which rarely burned in the past. Now, with a continuous carpet of highly

flammable cheatgrass underneath, the sagelands are exposed to frequent, highly destructive fires.

I had a chance to ask the cheatgrass expert panel what they would recommend to keep the green menace from overwhelming our BC grasslands. Their response was blunt: keep your grasslands in the healthiest possible state, and perform early detection/rapid response management for any new outbreaks of cheatgrass or its relatives.

One of the more startling messages coming out of the cheatgrass session revolved around nitrogen. Traditionally, farmers and ranchers have tried to maximize soil nitrogen to increase productivity, but evidence is accumulating that cheatgrass (as well as other weeds) invasions actually favour surplus nitrogen, and that our native grassland species are most competitive under low nitrogen conditions.

Many range jurisdictions are now trying to restore degraded grasslands by reseeding native species. One researcher reported that the remnant native grasses in highly weed-invaded sites are more competitive than the same grasses from uninvaded sites; in other words, the weed invasion became a genetic "selection pressure," against which only the most aggressive of the native genotypes could survive. Unfortunately, choosing these successful native remnant grasses as seed sources for revegetation projects can be a disappointment, since one consequence of vegetative competitiveness is reduced seed production.

A relevant SRM paper from Montana showed the results of controlling forest ingrowth (in this case juniper) on subsequent native forage production. Using a tree shearer mounted on a bobcat, moderately and severely ingrown sites were treated and subsequent forage production was monitored. The forage production increase on the moderately ingrown site was sufficient to pay for the shearing treatment, but was not enough on the severely ingrown site. The Montana research certainly suggests that ranchers and rangeland managers should recognize and treat forest ingrowth as early as possible.

Thompson Rivers University professor **Wendy Gardner** also attended the Conference, along with a gaggle of range-minded graduate, undergraduate, and high school students. I offer Kudos to Dr. Gardner for encouraging the next generation of range managers and scientists. I also got to chat with fellow SRMers from the Cranbrook area, and from Alberta.

A series of automated curtains extend over these grassland research plots each night, reducing night-time cooling and, thus, simulating one of the major predicted effects of climate change.



Don Gayton photo



science, now and into the future



Moore and Gayton inspect one of La Sevilleta's many remote meteorological stations.

Another interesting new aspect at the SRM conference was the emergence of meta-analysis. Over time, individual papers on such topics as range hydrology or range burning have now accumulated to the point that experts in the field can compare data and conclusions from two, three, and four decades worth of research papers. Using this information, they can draw general conclusions that are not bound to a single site or experimental design.

A unique asset of SRM is its ability to bring ranchers, land managers, scientists, and ecologists together under one big conference tent. Conversations are lively and disputes not uncommon, but everyone subscribes to the overarching goal of the sustainable use of native grasslands.

Long-term ecological monitoring has been an interest of mine for several years, and subsequent to the SRM Conference, I had the privilege of spending a day at La Sevilleta Long Term Ecological Research (LTER) station, an hour's drive south of Albuquerque. La Sevilleta is a large grassland reserve at the confluence of desert, grassland, and woodland biomes, and is part of a nationwide LTER network. My host, **Doug Moore**, the Station's me-

eteorologist, walked me through a few of the Station's many projects: determining the influence of climate change on grassland biomass production; understanding the dynamics of an unpalatable shrub invasion into grassland; and re-introducing extirpated prairie dogs and Mexican grey wolves.

The American LTER sites all collaborate on developing standard data collection and storage methodologies, and certainly provide lessons for countries (such as our own) which have no co-ordinated, nationwide long-term ecological monitoring effort. La Sevilleta's excellent website is at <http://sev.lternet.edu/> and a link to the nationwide LTER program can be found there as well.

As we toured La Sevilleta, I had the chance to botanize a bit, and was struck by how many grassland "old friends" I saw 2000 km south of the BC Interior. The presence of red threeawn, sand dropseed, ricegrass, rabbitbrush, and sagebrush—species that are common to both places—reminded me of our BC Interior grassland's ecological roots in the Great Basin biome. This fact will be of increasing importance to land managers as climate change expands the BC envelope for Great Basin flora and fauna. 🌲