



FIELD NOTES FROM TRM RANCH

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B&C JOINS THE GLACIER INSTITUTE AND THE NATURE CONSERVANCY ON SHORT COURSE AT TRM RANCH

Crown of the Continent
An Ecosystem in
Transition
Is sustainability possible?

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The Nature of Fescue Prairie

The grasslands that characterize the landscape on the Theodore Roosevelt Memorial Ranch are part of the fescue prairie that is the western edge of the Northern Great Plains. Geographically, fescue prairie includes the fescue-aspen park lands in southeastern Alberta and southwestern Saskatchewan as well as the fescue-limber pine savannas along the east slopes of the Rocky Mountains in Montana and Wyoming.

Climate is the single-most important environmental factor controlling the regional extent and botanical composition of fescue prairie. Compared to other grasslands of the Great Plains, fescue prairie is only found in regions with high soil moisture such as the foothills on the Rocky Mountain Front. Here, conditions are relatively more favorable due to lower temperatures and greater amounts of precipitation than in regions further east. But the combination of overall low annual precipitation, high summer and low winter temperatures, and drying winds still make soil moisture the most limiting factor for plant growth. Locally, the botanical composition and productivity are often further modified by the influence of soil type and topography.

The amount and timing of spring precipitation determines the duration of plant growth for the fescue prairie. Rough fescue, the dominant grass species, grows only during times of sufficient soil moisture. On the Front, winters and summers

are drought periods, especially at times of high winds. The influence of snow melt on soil moisture is minimal except in areas that receive moisture from melted snowdrifts. Most of the annual precipitation occurs between April and July. During that time, spring rains saturate soil with water and growth of rough fescue is most rapid. Like other cool season grasses, such as Idaho fescue and bluebunch wheatgrass, spring growth of rough fescue is about a month earlier than warm season plants such as blue grama that occur further east on the Great Plains. By July, warm air temperatures and frequent strong winds dry soils and, as a result, plants are forced to stop growing. Throughout the summer months, rough fescue seeds ripen and cure. Sometimes fall precipitation is sufficient to replenish soil moisture to a level at which rough fescue responds with additional growth.

The local variations in topography and soils have created microclimates that provide habitat for plants and animals typically not associated with grasslands. On the TRM Ranch for example, aspen growth in moist areas provides habitat for ruffed grouse. Similarly, on southwestern-facing slopes that are subject to high winds and warm temperatures, soils are too arid for rough fescue to grow. Here, limber pine savannas replace the more uniform fescue prairies providing suitable habitat for blue grouse. Spring is a good time to observe how vegetation commu-

nities change with topography on the TRM Ranch and how this has created a diversity of habitats that support a variety of plants and animals. Aspen stands reverberate with the sound of drumming ruffed grouse; blue grouse can be heard in the limber pine savannas; and the sound of sharptailed grouse display on dancing grounds echoes in the distance.

The great variation in amounts and timing of spring precipitation from year to year is characteristic for fescue prairie; years of high precipitation often follow years of low precipitation. As a direct result, annual forage productivity varies greatly. I examined the influence of spring precipitation on productivity for fescue prairie using data from the Sun River Wildlife Management Area, 30 miles south of the TRM Ranch. Estimates suggest that annual forage productivity can vary by as much as 250%. The total amount of May precipitation best explains these differences; in years of higher May precipitation forage yields are greater than in years of lower precipitation.

Recognizing that productivity of fescue prairie can vary dramatically from year to year as a function of spring precipitation is essential for an understanding of plant and animal adaptations to the Front ecosystems. Only by understanding this ecological relationship is it possible to best coordinate and sustain use of resources provided by fescue prairie.

Join us for an intellectual and physical field trip throughout the Crown of the Continent, from heavily wooded slopes west of the Continental Divide, to the rugged, high alpine and the dry, high plains of the "east side," while we discuss among ourselves, and with local residents, how regional social, economic, and ecological sustainability can be achieved.

In a time of rapid social and economic transition worldwide, local and regional efforts are being undertaken to address the future sustainability of large areas, including their human communities and bio-physical resources. Incorporating such concepts as biodiversity, ecosystem management, and sustainability, there is an emerging acknowledgment that the long-term social and economic health of

resource-dependent communities is intimately connected to the ecological health of associated wildlands.

While intense community polarization has, unfortunately, been the past hallmark of discussion and policy-making regarding natural resource issues, there is a significant and hopeful recognition that consensus-based community dialogue and projects can provide a partial basis for resolution of contentious issues.

This workshop will provide the basis for understanding the extent, components, and functioning of the Crown of the Continent Ecosystem, some of the significant issues being addressed, and local, regional, and even national, initiatives to resolve issues and provide a basis for long-term sustainability.

Location:

Big Creek Outdoor Education Center
Columbia Falls, Montana

Theodore Roosevelt Memorial Ranch
Dupuyer, Montana

Cost:

\$585 - includes room, meals, speakers and instructors, transportation

Please call The Glacier Institute office at 406.756-3911 for more information.

Dr. Lex Blood, The Glacier Institute
Dr. Hal Salwasser, Boone and Crockett
Marilyn Wood, The Nature Conservancy
Plus other selected instructors