



Rangeland Health Assessments and Remedial Measures

Andrew Pantel M.Sc., P.Ag. and Doug Fraser M.Sc., P.Ag.
Range Branch, British Columbia Ministry of Forests and Range



Abstract

Monitoring is the collection and analysis of repeated measurements or observations to assess changes in condition, to assess progress towards a management objective, or to support management change or continuation (Elzinga et al. 1998). Monitoring rangelands assists in assessing management practices and/or environmental variation over time.

Remedial measures or management changes are implemented if monitoring reveals the functioning of the system is not meeting the goals for the site. The objective of this poster is to outline the role of monitoring in developing remedial measures to improve the overall health of rangeland in British Columbia.

Four Range Health Assessment Forms

Range staff use four range assessment checklists to monitor upland health, stream health, wetland health and compliance of range use plans. The health assessment checklists monitor the resource objectives outlined in the Forest and Range Practices Act for soils, forage, water, fish, wildlife and biodiversity. The compliance checklist is tier one monitoring that provides information about year to year use, seral stage of plant communities and suggests if more detailed monitoring is required. The tier two rangeland assessment forms provides detailed information regarding the current plant community and environmental conditions of the site.



Figure 1. Four Range Health Assessment Forms.



Figure 2. Grazed plant communities are compared to ungrazed plant communities.

Procedure

- Gather background information including, monitoring records, species composition, aerial photos, soils and geography, historical livestock use and disturbance events.
- Select sites within primary, secondary and tertiary range.
- Assess rangeland health (see riparian function checklist).
- Compare plant community and environmental conditions to a reference site or ungrazed community
- Determine zones of use (calculate stubble height and browse)
- Establish permanent photo-points
- Describe plant community and seral stage

Uplands Function Checklist										
Range Unit: Range Agreement Holder: <i>Alexis Cr. Ranch; AL Meadows</i> Range Agreement Number: _____										
UTM Coordinates: BEC Subzone: _____										
Name of Upland Area: <i>Anahim Cr.</i>										
Date: <i>September 21/00</i>										
Hectares: _____		Location: _____								
Observers: <i>Group</i>										
Yes	No	N/A								
PARAMETERS										
HYDROLOGIC AND SOILS										
	<input checked="" type="checkbox"/>	Organic material (plant litter, standing vegetation) protects soil surface from raindrop impact and evaporative effects of sun and wind.								
	<input checked="" type="checkbox"/>	Water will easily infiltrate the soil surface (absence of physical soil crusting, capping).								
	<input checked="" type="checkbox"/>	Subsurface soil conditions support infiltration (compaction layers are uncommon).								
	<input checked="" type="checkbox"/>	Standing vegetation and plant litter detain overland water flow and trap sediment.								
	<input checked="" type="checkbox"/>	Non-stream ephemeral drainages are stable (sufficient vegetation is present to protect against downcutting).								
BIOTIC/VEGETATION										
	<input checked="" type="checkbox"/>	The plant community is showing good vigour.								
	<input checked="" type="checkbox"/>	There is recruitment of desirable plant species (new seedlings).								
	<input checked="" type="checkbox"/>	The plant community reflects a fully occupied root zone.								
	<input checked="" type="checkbox"/>	Seeps, springs, and ephemeral drainages support vigorous stands of phreatophytic plants.								
	<input checked="" type="checkbox"/>	Biological breakdown of plant residues/organic material is apparent (decomposition as opposed to oxidation), <i>lack of litter</i> .								
	<input checked="" type="checkbox"/>	Biological breakdown of livestock dung is rapid.								
	<input checked="" type="checkbox"/>	A diversity of vertebrate and invertebrate life is evident								
EROSION/DEPOSITION										
	<input checked="" type="checkbox"/>	Evidence of rills, gullies, pedestalling and other excessive soil movement is uncommon.								
	<input checked="" type="checkbox"/>	There is little visual evidence of pedestalling of plants or rocks. Pedestals present are sloping or rounding and accumulating litter.								
<table border="0"> <tr> <td>Check one</td> <td>Notes:</td> </tr> <tr> <td>PFC</td> <td>Is the desired plant community present (diversity -- species, comp., age classes, structure, form)? <i>No</i></td> </tr> <tr> <td>At risk <input checked="" type="checkbox"/></td> <td>Soils types and textures? <i>silty-clay</i></td> </tr> <tr> <td>Non-functional</td> <td><i>-should be a Deschampsia meadow and has been reduced to Poppr and other low growing species</i></td> </tr> </table>			Check one	Notes:	PFC	Is the desired plant community present (diversity -- species, comp., age classes, structure, form)? <i>No</i>	At risk <input checked="" type="checkbox"/>	Soils types and textures? <i>silty-clay</i>	Non-functional	<i>-should be a Deschampsia meadow and has been reduced to Poppr and other low growing species</i>
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Figure 3. Riparian Health Checklist

% of "Yes" answers	Rating
80%	PFC
61-79%	Slightly at risk
41-60%	Moderately at risk
20-40%	Highly at risk
20%	Non-functional

High Risk Wetland PFC Wetland



Figure 4. Assigning risk to plant communities.

Remedial Measures

Properly Functioning Condition (PFC) is the minimum target for which we manage. The Desired Plant Community (DPC) is determined based on society's goals for that site. If the site meets PFC and DPC then we recommend continuing management practices. If a site is at risk, then a decision to modify management would normally be made. The Remedial Measures Model will guide you in developing properly functioning of uplands and riparian zones. The model is a series of steps to assess and identify the tools and actions that will result in eventual improvement of deteriorated ecosystems. The Remedial Measures Model depends on sound resource assessment to lead the user to the best remediation tools and actions. A reassessment following one rotation through the model will reveal if the chosen management tool is moving the site toward your intended goal.

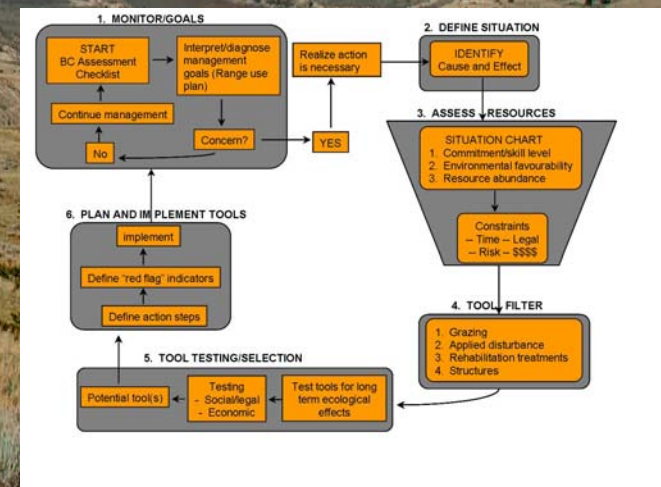


Figure 5. Use the Remedial Measures Model to identify risk and implement management tools.

References
Elzinga, C.L., D.W. Salzer and J.W. Willoughby. 1998. Measuring and monitoring plant populations. USDI Bureau of Land Management, National Applied Resource Sciences Center, Denver Colo. BLM Technical Reference 1730-1.
Fraser, D.A. 2007. Rangeland Health Field Guide. B.C. Min. For. Range, Range Br., Kamloops, B.C.