

9. APPENDIX



PHOTO BRIAN WIKEEM

APPENDIX 1

IDENTIFICATION OF KEY BUNCHGRASSES

These bunchgrasses are used in the manual to assess bunchgrass cover.

BlueBunch Wheatgrass



Rough Fescue

Idaho Fescue



Short-awned Porcupinegrass



Spreading Needlegrass



For identification of other grasses and plants, refer to the following guides:

Plants of Southern Interior British Columbia, Edited by Parish, Coupe, Lloyd. Printed 2006. ISBN 1-55105-057-9

or

The Eflora website: www.eflora.bc.ca

APPENDIX 2 COLLECTING PLANT SPECIMENS FOR LATER IDENTIFICATION

Grasses

Collecting a grass sample for proper identification:

- 1 Record date and location of collection site, as well as any habitat features you can note such as "moist streamside" or "dry south-facing slope."
- 2 Record growth form. Does the sample appear to be growing in a defined "bunch" or does it appear to be growing throughout a given area forming "sod-like structure?"
- 3 Carefully remove a portion of the grass with several intact leaves, seed heads and roots, if possible.
- 4 Roll the grass sample loosely in a newspaper tube and tape the ends off or place in a plastic bag. DO NOT PRESS THE SAMPLE. This is very important for proper keying and identification of grass samples. If the sample is too long for the paper tube or bag, gently fold it in half before placing it in a tube or bag. It is best to identify samples as soon as possible. However, if this is not possible, allow the sample to dry in the tube or bag and key out at the earliest convenience.

Note: Pressing or squashing grass samples will alter features required for keying and identification.

Other Plants

Collecting other plant samples for proper identification:

- 1 Record date and location of collection site, as well as any habitat features you can note such as "moist streamside" or "dry south-facing slope."
- 2 Record or note flower color. The colour often fades when drying sample.
- 3 Carefully remove a portion of the plant with intact leaves, flower head, and some roots if possible.
- 4 Gently place sample in a plastic bag. If not identified immediately, press sample between pieces of paper in a large book (an old telephone book works well) and weight it down. Make sure to change the paper to prevent mold if the plant is moist or succulent. Keep in a dry place out of direct sunlight until it can be keyed out at a later date.

APPENDIX 3

PREPARING LITTER SAMPLES

Litter includes residual plant cover from previous year's growth (dead plant material) and may be found standing next to current growth, or on the ground. Material on the ground may be freshly fallen material or material that is partially broken down.

Please note:

- Litter samples in pre-weighed bags are not a requirement to complete your field assessment. However, litter bags that represent key litter weight thresholds are an easy reference in the field and will assist you in determining litter scores.
- Once prepared, Litter samples in ziplock bags will last for years!

Steps for Preparing Litter Samples

- 1 Preparing your litter samples must be done well in advance to completing your field assessment. Plan on a week or two prior to your planned monitoring date.
- 2 You will require up to six large ziplocks bags and a black permanent pen to label bags. You will also need a weight scale. A decent digital kitchen scale will work.
- 3 Collect litter. Outside of your monitoring site, find a grassland area with ample litter. Hand-rake and fill six large ziplock bags with litter. Ensure you hand-rake dead plant material only.
- 4 Take litter bags home and empty contents on a flat surface indoors in a warm dry place.
- 5 Dry litter for a minimum of two days to ensure all moisture has evaporated. If samples are moist or wet, dry for an additional two days or oven dry samples (at low heat).
- 6 Using dry litter only, prepare four litter bags with the following weight thresholds. The weight thresholds are based on the booklet you are using in the field for the grassland community you are assessing:
Booklet 1
 - 1) For 750 kg/ha make a litter bag with 18.75grams of litter
 - 2) For 600 kg/ha make a litter bag with 15 grams of litter
 - 3) For 300 kg/ha make a litter bag with 7.5 grams of litter
 - 4) For 150 kg/ha make a litter bag with 3.75 grams of litter

Booklet 2

- 1) For 1500 kg/ha make a litter bag with 37.5 grams of litter
- 2) For 1000 kg/ha make a litter bag with 25 grams of litter
- 3) For 500 kg/ha make a litter bag with 12.5 grams of litter
- 4) For 250 kg/ha make a litter bag with 6.25 grams of litter

Booklets 3, 4 and 5

- 1) For 2000 kg/ha make a litter bag with 50 grams of litter
- 2) For 1000 kg/ha make a litter bag with 25 grams of litter
- 3) For 500 kg/ha make a litter bag with 12.5 grams of litter
- 4) For 300 kg/ha make a litter bag with 7.5 grams of litter

The litter weight thresholds above (i.e., 750 kg/ha) are addressed in Question 2 of each booklet.

- 7 Once the four bags are weighed, label each bag with the corresponding litter weight threshold (i.e., 750 kg/ha).
- 8 Each ziplock bag represents the corresponding threshold and will help you decide which litter weight category you fit into.
- 9 You are now ready. Don't forget to take your samples into the field!

When completing your assessment in the field, you will compare the amount of litter you collected from your plot to the litter sample bags. This will help you estimate your litter weight category.

APPENDIX 4

TRAINING

Training is an essential first step for all first time users of the *Grasslands Monitoring Manual for British Columbia: A Tool for Ranchers*. Training will ensure the appropriate application of this tool and it will assist you in selecting monitoring sites, using the booklets and score sheets, and will assist you in interpreting your results.

For More Information about Training or Upcoming Workshops

Please visit the GCC website at: www.bcgrasslands.org (click link to Grassland Monitoring Manual), or contact the Grasslands Conservation Council of British Columbia at 250-374-5787 or email GCC@bcgrasslands.org

APPENDIX 5

RIPARIAN MONITORING AND OTHER REFERENCES

Riparian Monitoring

- 1 Fraser, D.A. 2006. *Range Resources Assessment Procedures*. Ministry of Forests and Range, Range Branch, Kamloops, B.C. Rangeland Health Brochure 9.
On website: www.for.gov.bc.ca/hra/publications/brochures/RangelandHealthBrochure9.pdf
Or: www.bcgrasslands.org (click link to Grassland Monitoring Manual). Directions for Riparian Function Checklist – Lakes, Ponds, and Wetlands: go to Appendix 1, page 12.
- 2 Fitch, L., B.W. Adams, G. Hale. 2001. *Riparian Health Assessment for Streams and Small Rivers – Field Workbook*. Lethbridge, Alberta: Cows and Fish Program. 90 pages.
On website: www.cowsandfish.org/riparian/health.html
- 3 Ambrose, N., G. Ehlert, K. Spicer-Rawe. 2004. *Riparian Health Assessment for Lakes, Sloughs, and Wetlands – Field Workbook*. Modified from Fitch, L., B.W. Adams, and G. Hales, 2001. *Riparian Health Assessment for Streams and Small Rivers – Field Workbook*. Lethbridge, Alberta: Cows and Fish Program. 90 pages.
On website: www.cowsandfish.org/riparian/health.html

Other General References

Range Management in BC

- 1 Fraser, D.A. 2006. *Range Resources Assessment Procedures*. Ministry of Forests and Range, Range Branch, Kamloops, B.C. Rangeland Health Brochure 9.
On website: www.for.gov.bc.ca/hra/publications/brochures/RangelandHealthBrochure9.pdf
- 2 Ministry of Forests and Range. 2006. *Range Management in British Columbia: Under the Forest and Range Practices Act and other Legislation*.
On website: www.for.gov.bc.ca/hfd/pubs/bro.htm

Plants General

- 1 Parish, R., R. Coupe, D. Lloyd. 2006. *Plants of Southern Interior British Columbia*. Lone Pine Publishing.
- 2 Eflora website: www.eflora.bc.ca
- 3 Looman, L. 1990. *Prairie Grasses: Identified and described by Vegetative Characteristics*. Canadian Government Publishing Centre. Agriculture Canada.

Invasive Plants

- 1 Cranston, R., D. Ralph, B. Wikeem, 2005. *Field Guide to Noxious and Other Selected Weeds of British Columbia*. Province of British Columbia.
On website: www.agf.gov.bc.ca/cropprot/weedguid/weedguid.htm
- 2 *Weeds BC: Identification and Management*. Ministry of Agriculture and Lands.
On website: www.weedsbc.ca

Grasslands of British Columbia

- 1 Wikeem, B.M., S.J. Wikeem. 2004. *The Grasslands of British Columbia*. Grasslands Conservation Council of British Columbia
On website: www.bcgrasslands.org
- 2 Grasslands Conservation Council of British Columbia Website: www.bcgrasslands.org

References: Grassland Monitoring Manual

- 1 Adams, B. W., G. Ehlert, C. Stone, D. Lawrence, M. Alexander, M. Willoughby, C. Hincz, D. Moisey and A. Bogen. 2003. *Rangeland Health Assessment for Grassland, Forest and Tame Pasture Field Workbook*. Publication Number T/044. Alberta Sustainable Resource Development, Public Lands Division, Lethbridge, AB.
- 2 Campbell, C.W., and A.H. Bawtree. (eds.). 1998. *Rangeland Handbook for BC*. BC Cattlemen's Association. Noran Printing, Kamloops, BC.
- 3 Dyksterhuis, E.J. 1949. *Condition and Management of Range Land Based on Quantitative Ecology*. Journal of Range Management.
- 4 Dyksterhuis, E.J. and E.M. Schmutz. 1947. *Natural Mulches or "Litter" of Grasslands: With Kinds and Amounts on a Southern Prairie Ecology*.
- 5 Grasslands Conservation Council of British Columbia. 2004. *A Conservation Risk Assessment: Final Report*. Grasslands Conservation Council of BC, Kamloops, BC.
- 6 Hall, F.C. 1997. *Ground-Based Photographic Monitoring*. USDA Forest Service. Portland, OR.
- 7 Hutchinson, D.E. and H.W. Pritchard (ed.). 1972. *Resource Conservation Glossary*. Soil Conservation Society of America. Ankeny, Iowa.
- 8 Kothmann, M.M. (Chairman). 1974. *A Glossary of Terms Used in Range Management*. Society for Range Management. Denver, CO.
- 9 McLean, A. and L. Marchand. 1968. *Grassland Ranges in the Southern Interior of British Columbia*. Canadian Department of Agriculture. Publication No. 1319. Ottawa, ON.
- 10 Ministry of Forests. 2004. *Invasive Plants Regulation*. BC. Reg. 18/2004.
- 11 Osborn, B. 1954. *Effectiveness of Cover in Reducing Soil Splash by Raindrop Impact*. Journal of Soil and Water Conservation. 9(2):70-76.
- 12 Pyke, M., D.A. Herrick, P. Shaver, J. Pellant. 2000. *Rangeland Health Attributes and Indicators for Qualitative Assessment*. Journal of Range Management. 55(6): 584-597.

- 13 Range Inventory Standardization Committee. 1983. *Guidelines and Terminology for Range Inventories and Monitoring*. Society for Range Management.
- 14 Wikeem, B.M., S.J. Wikeem. 2004. *The Grasslands of British Columbia*. Grasslands Conservation Council of British Columbia. Kamloops, BC.
- 15 Wikeem, B.M., A. McLean, A. Bawtree, D. Quinton. 1993. *An Overview of the Forage Resource and Beef Production on Crown Land in British Columbia*. Canadian Journal of Animal Science. 73:779-794.
- 16 Wikeem, B.M., R.F. Newman, A.L. van Ryswyk. 1989. *Effect of Fertilization Date and Litter Removal on Grassland Forage Production*. Journal of Range Management. 42(5):412-415.
- 17 Willms, W.D., S. Smoliak, A.W. Bailey. 1986. *Herbage Production Following Litter Removal on Alberta Native Grasslands*. Journal of Range Management. 39:182-186.

APPENDIX 6

ABUNDANCE RATINGS

The following abundance ratings are used in the manual and are meant as general guides only.

Abundance Rating

| Trace | Infrequent | Common | Frequent | Abundant |
|--------|------------|----------|----------|-----------|
| 1 – 5% | 6 – 20% | 21 – 40% | 41 – 60% | 61 – 100% |