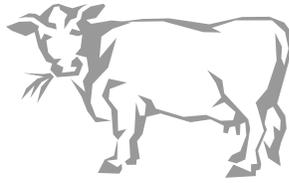


Wetland Ways



4

Interim Guidelines for Wetland Protection and Conservation in British Columbia

March 2009

Chapter Four

GRAZING

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These interim guidelines will be updated using experience from pilot testing and feedback from user groups. If you would like to comment on these guidelines, please send your comments to wsp@gov.bc.ca

Cover photos: Judith Cullington



CHAPTER 4: GRAZING

4.1. INTRODUCTION

This chapter provides guidelines for the protection and management of wetlands that are on or near to grazing lands. It is intended to be read in conjunction with [CHAPTER 2: GENERAL GUIDELINES](#). See also [CHAPTER 3: AGRICULTURE](#) for issues and guidelines relating to other forms of agriculture.

Grazing livestock in British Columbia takes place on both private and Crown lands. Access to Crown land is primarily provided through the [Range Act](#) or [Land Act](#), while range management activities are controlled through range use plans or range stewardship plans which are requirements of the [Forest and Range Practices Act](#). Grazing livestock drink from surface water sources such as streams, rivers, ponds or open ditches. Animal manure in and near surface water and sedimentation of the water from livestock disturbing the bed and banks of the watercourse can adversely affect water quality. Minimizing livestock access to surface water can improve animal health and protect wetlands and downstream water quality.

Primary environmental concerns from grazing activities related to wetlands and associated riparian areas are:

- ♦ Uncontrolled livestock access to riparian areas resulting in impacts to vegetation, bank stability and water quality; and
- ♦ Land clearing and development that result in impacts to vegetation, bank stability and water quality.

Much of the information in this chapter can be found in an expanded form in the Canada–British Columbia [Environmental Farm Planning Reference Guide](#) and other associated guides. The Environmental Farm Planning Program is delivered by the B.C. Agriculture Council. There are several chapters with specific information relating to farms and wetlands, including [Stewardship Areas](#), [Water](#), and [Biodiversity](#).

Planning for Biodiversity A Guide for B.C. Farmers and Ranchers provides information to assist farmers in conducting a biodiversity assessment of their property and identify opportunities for enhancing biodiversity values. <http://www.bcac.bc.ca/EFPPages/documents/index.html>

RANGE PROGRAM

The B.C. Ministry of Forests and Range allocates and administers hay cutting and grazing agreements and grazing leases on Crown range across the province. Program activities focus on healthy and sustainably managed rangelands that are capable of supporting the interests of clients, stakeholders and partners. Sustainable management is achieved through ecological monitoring activities, managing invasive plant species, advocating sustainable range management practices, assisting in the restoration of degraded rangeland and providing extension services. <http://www.for.gov.bc.ca/hra/>



All B.C. legislation can be found at <http://www.bclaws.ca/>.
Federal legislation can be found at <http://laws.justice.gc.ca/>.

4.2. LEGISLATION

See [CHAPTER 2](#) for additional legislation that applies to all land managers. Legislation that applies to grazing land use and activities includes the following.

- ♦ [*Environmental Management Act*](#): Several regulations under this Act apply to farms.
 - ◇ [*Agricultural Waste Control Regulation*](#): Establishes the Code of Agricultural Practice for Waste Management which sets out requirements for using, storing and managing agricultural waste in a manner that does not cause pollution.
 - ◇ [*Code of Practice for Soil Amendments*](#): Provides consistent provincial requirements for use of industrial residues for use as soil amendments and protects surface and groundwater from contamination.
 - ◇ [*Organic Matter Recycling Regulation*](#): Provides guidance for compost and bio-solid producers to protect soil and water; governs facilities, distribution and sales and land application.
- ♦ [*Farm Practices Protection \(Right to Farm\) Act*](#): Permits farmers to carry out farming operations using normal farm practices relating to nuisances from dust, noise etc., but requires farmers to comply with other specified legislation. Defines farm operations as including clearing, draining, irrigating or cultivating land.
- ♦ [*Forest and Range Practices Act*](#): The holder of an agreement to graze livestock under the Range Act or cut hay on Crown range must prepare and obtain approval of a range use plan or a range stewardship plan for the area on which the grazing or hay cutting will occur.
- ♦ [*Land Act*](#): Provides for the administration of all Crown land not otherwise managed by another agency. Allows disposition through leases, licences, and Crown grants. It establishes fees for occupation of Crown land and provides for maintenance of a Crown land registry.
- ♦ [*Range Act*](#): Provides for agreements granting rights over Crown range in the form of grazing licences, grazing permits, hay cutting licences and hay cutting permits.
- ♦ [*Water Act*](#): Primary provincial statute regulating water resources in BC. Establishes licensing requirements including fees and through regulation manages changes in and about a stream. ('Stream' includes wetlands.)



PHOTO: DUCKS UNLIMITED WEBSITE
<HTTP://WWW.DUCKS.CA/INDEX.HTML>



4.3. OBJECTIVES

As outlined in [CHAPTER 2](#), there are three major objectives for the protection and management of wetlands:

- ◆ Protect and maintain habitats and species;
- ◆ Protect and maintain water qualities; and,
- ◆ Protect and maintain water quantities.

This can be achieved by:

- ◆ Knowing what you have (inventory and mapping) (see [CHAPTER 2](#));
- ◆ Protecting wetlands with buffer zones; and,
- ◆ Minimizing impacts from external activities, such as agriculture and grazing.

Following the guidelines in this document will help landowners and land managers demonstrate that they have applied due diligence. Monitoring the impacts of activities will assist in meeting the objectives. For more information, see [CHAPTER 12: MONITORING AND REPORTING](#).



Maintain habitats and species. PHOTO: JUDITH CULLINGTON



4.4. GUIDELINES

4.4.1. Livestock Watering

Historically, cattle grazed on an open range system with few fences and unrestricted access to wetlands. In some cases, this led to increased erosion and siltation, which reduced plant cover, decreased water quality and ultimately led to the loss of productive rangeland and wildlife habitat. New tools such as equipment to allow off-site watering and knowledge of sustainable grazing management practices will help livestock managers improve productivity and the health of wetlands and riparian areas.

Livestock water use is determined by a number of factors including size, type of animal, air and water temperature, condition and others. When identifying surface water supply for off-site watering ensure that sufficient water is available for both livestock and maintenance of features and functions of the wetland. Assess water availability at critical times of the year for wetland wildlife such as spring breeding and rearing periods and summer/early fall low flow periods. See the B.C. Ministry of Agriculture and Lands [Livestock Watering Factsheet](#) for information on watering requirements.



This cattle nose pump allows for watering livestock without disturbance to the wetland.
PHOTO: SARMA LIEPENS



MEASURE WATER AVAILABILITY

- Use the methodologies outlined in the B.C. Ministry of Agriculture and Lands [Measuring Water Flow](#) fact sheet to determine water availability from wetlands with defined outlets. Determining water availability for wetlands without a defined outlet is problematic as water loss is difficult to measure.
-  Avoid using small isolated wetlands for stock watering wherever possible, to prevent drawdown that could impact wetland species and processes.

4.4.2. Access to Surface Water

Managed livestock water supply can provide significant health and yield benefits to ranchers and farmers, while providing improved wetland functions and features including wildlife habitat, water quality and improved downstream water supply. Providing an alternative water source can dramatically reduce the amount of time livestock spend in and around wetlands.

AVOID DIRECT ACCESS TO WETLANDS

Riparian damage and loss of habitat can occur if access sites are not adequately sited and managed to reduce bank erosion and instability. Impaired water quality also reduces livestock weight gain and profitability. Where no alternative exists, the following practices are recommended.

-  Avoid direct access to streams and wetlands as much as possible.
-  Do not provide livestock access to surface water where sensitive species or habitats are present, especially at critical times of the year, including breeding and rearing areas for species at risk. Check with [local B.C. Ministry of Environment](#) staff for more information. Note that some species may only utilize the areas at certain times of the year, which may require more than one assessment.
- Plant dense shrubs to discourage livestock from entering riparian areas. This provides a natural barrier, as well as habitat and shade for wildlife.

DESIGNATE SPECIFIC WATERING SITES

- Control direct access to wetlands and streams by designating a specific watering site and fence off the remaining shoreline. Fencing should also restrict access to wetted areas outside the watering site.

B.C. Ministry of Environment offices: see <http://www.env.gov.bc.ca/main/regions.html>

Fisheries and Oceans Canada offices: see http://www.pac.dfo-mpo.gc.ca/pages/default_e.htm



Farm pond before fencing: trampled by livestock
PHOTO: SARMA LIEPENS



Farm pond after fencing
PHOTO: SARMA LIEPENS

- Choose a watering site that is stable with gravel, or apply gravel to softer sites. Livestock often prefer an access point that has a stable bottom, so supplying a quality access point to water will often reduce impacts to the wetland perimeter.
- To reduce maintenance on the access point, install geo-grid/geo-textile to keep gravel from mixing with softer soils. Extend the geo-grid under the fenced area to prevent gravel migration.
- Consider using dugouts. Dugouts typically capture runoff and may be used year round if sufficiently sized and on less permeable sites. Dugouts can be located closer to forage and thus eliminate requirements for direct access to natural water sources. Direct access to dugouts should be managed in a similar manner to natural water sources.

4.4.3. Off-site Water Sources

Water quality will improve if livestock are discouraged from entering surface water. Livestock often show a preference to water troughs over surface water. Alternative water may come from streams, wells or groundwater springs.

This document is not intended to provide a detailed review of technical design specifications for livestock water supply systems, whether direct access or offsite. A comprehensive series of fact sheets on Livestock Watering can be found on the [B.C. Ministry of Agriculture and Lands website](http://www.al.gov.bc.ca/regional/). Persons interested in installing livestock watering systems should contact their [nearest B.C. Ministry of Agriculture and Lands office](#).

B.C. Ministry of Agriculture
and Land regional offices:
see
<http://www.al.gov.bc.ca/regional/>



Table 1: Alternative Livestock Watering Facilities

Water Delivery Type	Advantages	Disadvantages
Gravity (pipeline/siphon)	<ul style="list-style-type: none"> - installation is inexpensive - power is not required since gravity delivers water to the trough -consistent clean water supply which leads to better livestock weight gain -no operating cost for pumping 	<ul style="list-style-type: none"> - winter use may be limited by freezing if pipes only shallowly buried -siphoning systems may develop airlocks - gravity systems may airlock if not laid on a continuous grade
Nose Pump	<ul style="list-style-type: none"> - livestock powered, no outside energy required -excellent for remote area-the pump is non-polluting -installation is inexpensive 	<ul style="list-style-type: none"> -the pump will freeze in sub-zero temperatures Only one animal can drink at a time -livestock have to learn to operate the pump -calves must be 8 weeks or older to operate
Stream Powered Pump	<ul style="list-style-type: none"> -only uses running water as energy source -excellent for remote areas -easy to install - no operating costs -non-polluting -can be easily moved and re-installed 	<ul style="list-style-type: none"> - the pump may be dislodged or damaged by stream debris - winter use is limited; ice in the stream may damage the pump and feeder hoses may freeze
Hydraulic Ram*	<ul style="list-style-type: none"> - energy source is free and renewable -excellent for remote areas -no motor thus non-polluting -low operating costs 	<ul style="list-style-type: none"> - system will freeze in sub-zero temperatures - efficiency limited by site conditions Water hammer effect creates noise
Wind-Powered Systems	<ul style="list-style-type: none"> - uses renewable energy source -excellent for remote areas -non-polluting 	<ul style="list-style-type: none"> - minimum winds speed of 12 kph (8 mph) required -low wind conditions may not meet peak water demands -co-siting of windy site and water supply may be difficult - initial installation costs high
Solar	<ul style="list-style-type: none"> - uses renewable energy source -excellent for remote areas Non-polluting -solar panels mobile – ideal for rotational grazing Easy to install Low maintenance 	<ul style="list-style-type: none"> - initial cost high -water storage may be necessary in times of low sunlight -batteries increase cost and maintenance and reduce system life expectancy – must be replace every few years – require annual charging -potential for theft and vandalism.

Alternative Livestock Watering Facilities: Ducks Unlimited Canada

ADVANTAGES OF ALTERNATIVE WATERING SYSTEMS

- ◆ Limiting or preventing livestock access improves surface water quality.
- ◆ Health and productivity of the herd improves by providing a clean water source.
- ◆ Better footing for livestock with a reinforced standing pad around watering tanks.
- ◆ Can service multiple watering locations, resulting in potentially more uniform pasture utilization.
- ◆ Reduced maintenance on ditch and stream banks.



MATCH SYSTEM TO REQUIREMENTS

- Choose the best off-site watering system for your operation. Off-site water delivery systems can be non-powered (gravity or siphon) or powered by animal or on-site energy (solar/wind/stream or petroleum-based).
- Ensure that sites have good access and footing so that livestock will select the off-site source as a first alternative.
- When using springs or wells make sure water diversion does not negatively impact water supply to wetlands. Monitor wetland levels during periods of water use. Compare wetland water levels against 'normal' water levels when diversions are not occurring or are at minimal levels.

Table 1 outlines some of the pros and cons of each system.



Watering trough.

PHOTO: DUCKS UNLIMITED WEBSITE
[HTTP://YOURLAND.DUCKS.CA/MANAGEMENT/PDF/SK-WATERING-SYSTEMS.PDF](http://yourland.ducks.ca/management/pdf/sk-watering-systems.pdf)

WINTER WATERING

- Minimize water use from frozen wetlands as it is difficult to determine when critical water levels have been reached.

4.4.4. Riparian Grazing Management

Riparian management should be a part of developing a whole ranch plan. Riparian management involves planning for improving or maintaining the condition of vegetation in the entire land base, not only in the riparian areas. [Riparian Management Field Workbook](#)

Grazing, re-grazing and trampling will damage vegetation and soil. Heavy grazing, over many years, can remove the lower layers of vegetation, especially younger trees and the shrub component, which form key habitat for birds and other wildlife. Careful grazing management provides shelter for wildlife and livestock and riparian areas can produce substantially more forage than uplands if they are managed wisely.

GRAZING MANAGEMENT

Additional information on grazing management can be found on the following websites:

- ♦ B.C. Ministry of Agriculture and Lands - [Range InfoBasket](#)
- ♦ Alberta [Cows and Fish](#)
- ♦ Caring for the Green Zone - [Riparian Areas and Grazing Management](#)



PROTECT RIPARIAN AREAS

Good riparian management increases the stability of shorelines and prevents the loss of some of the most productive and valuable pastures because of lateral or vertical erosion.

- STOP Avoid grazing riparian areas that are particularly sensitive or vulnerable to trampling and erosion.
- STOP Avoid or minimize grazing riparian areas during vulnerable times, for example when streambanks or shorelines are saturated with moisture and vulnerable to trampling. It could also include late summer or autumn when grasses have cured and woody plants are still green, palatable and vulnerable to overuse.
- STOP Do not place roads and trails so that they funnel livestock to sensitive riparian areas. Cattle trails that avoid riparian areas and link upland pastures are useful distribution tools.
- Place salt blocks, minerals, oilers, and rubbing posts away from the riparian areas and water to prevent livestock from lingering. Moving salt away from water supplies is one of the easiest and cheapest changes available to start managing riparian areas better.
- Improve livestock distribution to better balance out the grazing load over the landscape. Don't allow livestock to linger and overuse riparian areas. Better animal distribution reduces the risk of water contamination and riparian damage. It also nets higher returns in productivity of forage and reduces need for fertilizer.
- Develop permanent or portable off-stream watering sites in the uplands to draw livestock pressure away from riparian areas and achieve better use of upland pastures.
- Maintain existing forested buffers between upland pastures and shorelines. Combined with off-site water, this can reduce pressure on wetlands and lakes.
- Provide feed and shelter away from riparian areas to avoid heavy use and damage to woody vegetation and reduce manure build up and possible water contamination.
- Add an additional (or a longer) rest period to the riparian grazing cycle to enhance riparian plant vigour, allow banks to stabilize, and allow tree seedlings to grow and reach a more grazing resistant stage. In the natural system localized impacts were short-lived because animals did not loiter for long periods of time and use was followed by rest.



Protect riparian areas.
PHOTO: SARMA LIEPENS



A 2001 study showed producers who switched to rotation grazing showed marked improvements in pasture forage quantity and quality; average weight gain; lower herd health costs and increased overall returns/animal and overall net returns for operations. (Chorney and Josephson, 2001)

- Move livestock away from wetlands and riparian areas with riding or herding practices.
- Balance animal demand with the available forage supply. This means harvesting forage but leaving enough carry over or grass residue to protect plants and soil, conserve moisture, plus trap sediment.
- Manage grazing intensity (number of animals times grazing duration) to maximize riparian plant vigour and species composition. Grazing intensity may also be regulated by providing supplemental feed. Refer to “Applying best stubble heights on rangeland” (Fraser, 2003) for conservative levels of use by typical species found on rangeland areas.

AVOID HOLDING PASTURES IN RIPARIAN AREAS

Holding pastures are fields where livestock are held for prolonged periods such as for winter feeding or calving, and may provide shelter through topography and/or wooded cover. Holding pastures in riparian areas can experience very serious livestock impacts due to trampling of banks and intensive use of herbaceous and woody plants. Repeated heavy use will threaten the woody plants that are so vital for livestock shelter and bank stability.

-  Avoid use of holding pastures in riparian areas. There are significant management requirements and potential for long term riparian damage.



PHOTO: DUCKS UNLIMITED WEBSITE
[HTTP://YOURLAND.DUCKS.CA/MANAGE/INDEX.HTML](http://yourland.ducks.ca/manage/index.html)

CONSIDER RIPARIAN PASTURES

Riparian pasture systems separate fields in a manner that reduces the variation within a given field, such as fencing uplands separately from the floodplain. Riparian pastures that incorporate rotational grazing, periods of rest and controlled levels of use will help sustain riparian health. Often more fencing is required but it can be successful because livestock distribution is more easily controlled in both uplands and riparian types, sometimes enabling an increase in livestock carrying capacity.

Potential benefits of riparian pasture systems (as opposed to exclusion of livestock grazing indefinitely) includes strengthened plant vigour, increased nutritional quality of autumn/winter forage, a shift in species composition to more desirable plants, increased vegetative cover, and improved ecological status of the plant community. Riparian pastures can also help restore and maintain woody riparian vegetation. However, a variety of factors such as terrain, the size of the riparian area, and fence construction and maintenance costs may limit the practicality of a riparian pasture system.



- If grazing riparian areas, where practical implement a riparian pasture system.



Corridor fencing. PHOTO: SARMA LIEPENS

CONSIDER CORRIDOR FENCING

Corridor or exclusion fencing eliminates livestock grazing on a narrow fringe of the riparian area. Corridor fencing can be a valuable first step to raise awareness about riparian area management by demonstrating the effect of rest on riparian vegetation. It is probably best applied in the following situations where fencing can be a feasible option.

- Install corridor fencing where resource values such as water quality or fish are a high priority.
- Use corridor fencing for high risk or chronic locations such as banks or shorelines that are fragile or severely degraded.
- Install fencing around sensitive areas such as seeps and springs to prevent erosion and subsequent wetland sedimentation.

4.4.5. Roads and Trails

Roads and trails can focus livestock activities on sensitive riparian areas by focussing animal movement. Roads and trails are also sources of sediment delivery to wetlands and construction and maintenance can impact riparian vegetation.

For information on minimizing impacts from road and trail building, see [CHAPTER 9: ROADS AND CORRIDORS](#).



AVOID RIPARIAN AREAS

- Locate roads and trails outside riparian areas.

AVOID WETLAND ROAD CROSSINGS

-  Avoid constructing road or trail crossings through wetlands. Where trails or roads must cross wetlands, ensure that livestock are excluded from accessing the wetland at crossing points. Minimize disturbance to riparian vegetation.
- Where crossings are planned for wetland inlet or outlet areas do not constrict the channel as this may affect the hydrological cycle including flooding, scour and dewatering.
- Ensure any structures are 'fish friendly' where necessary. Crossings, including culverts should not impede fish passage or negatively impact fish habitat.
- Immediately re-vegetate any disturbed areas with native vegetation to prevent erosion and sedimentation.

OBTAIN PROPER APPROVALS

- Read additional information background information on carrying out [changes in and about a stream](#) (which includes wetlands) as well as [Users' Guide to Working in And Around Water](#).

MINIMIZE IMPACTS

- Carry out works during least risk windows for fish and wildlife. Works may require authorization under Section 9 of the *Water Act*. Regional information for your area is posted on the [B.C. Ministry of Environment website](#).



Purple loosestrife can choke wetlands. PHOTO: DUCKS UNLIMITED WEBSITE [HTTP://WWW.DUCKS.CA/PROVINCE/NS/HOW/GROUND/INVASIVESPECIES/](http://www.ducks.ca/province/ns/how/ground/invasivespecies/)

4.4.6. Invasive Species

Invasive species are non-native 'exotic', introduced species that become established outside their normal range and adversely affect the habitats they invade. Many can spread quickly and widely and can cause harm to native ecosystems by out-competing or displacing native plants and animals. Trampling, overgrazing, and erosion can leave wetland riparian areas susceptible to invasive species.

For more information on managing invasive species in wetlands, see [CHAPTER 2: GENERAL GUIDELINES](#).



4.5. REFERENCES AND FURTHER READING

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