

## RIPARIAN PASTURE DESIGN

### Key Factors to Consider

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| <ul style="list-style-type: none"><li>• <b>Size</b></li><li>• <b>Ratio of riparian to upland</b></li></ul> | <ul style="list-style-type: none"><li>• <b>Vegetation</b></li><li>• <b>Practicality-fencing, access, time of use</b></li></ul> |
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### Pasture Size

Pasture size is one of the factors to be considered when designing a riparian pasture. Size of the pasture needs to be reviewed based on both the physical area available, the ratio of riparian area to the upland area, vegetation types in each area and herd size.

Smaller pastures tend to be more precisely managed and easier to monitor than larger pastures, as there is usually less variation of landform and vegetation in a smaller area. However, pasture size also needs to be related to herd size, as pastures that are too small may suffer from negative impacts very quickly if too many animals are present when compared to available forage. For example, high intensity, short duration grazing is not generally recommended for riparian areas as it increases the risk of excessive bank damage from trampling, as well as over use of riparian shrubs.

Very large pastures that contain riparian areas are difficult to manage, as grazing selectivity may result in over utilization in some areas, and underutilization in others. For example, if the grazing system is managed to fully utilize the forage over the entire area, there is likely going to be significant over utilization in preferred areas which is often the riparian area.

Pasture size needs to be small enough to allow for precise management of grazing impacts on plants. Key indicator plants should be monitored (e.g. preferred forage and shrub species) so that livestock can be moved as soon as the planned level of use is reached, and trampling damage is minimized.

Riparian pasture size should allow for the desired forage utilization to be reached within 3 weeks, as too long a grazing period with low livestock numbers often results in selective grazing with less uniform removal of target species and potentially more use of shrubs than desirable. Too short a period of use is also often undesirable since small pasture size and frequent livestock movement is often not practical for many operations.

Page 3 suggests three examples of dealing with riparian areas.

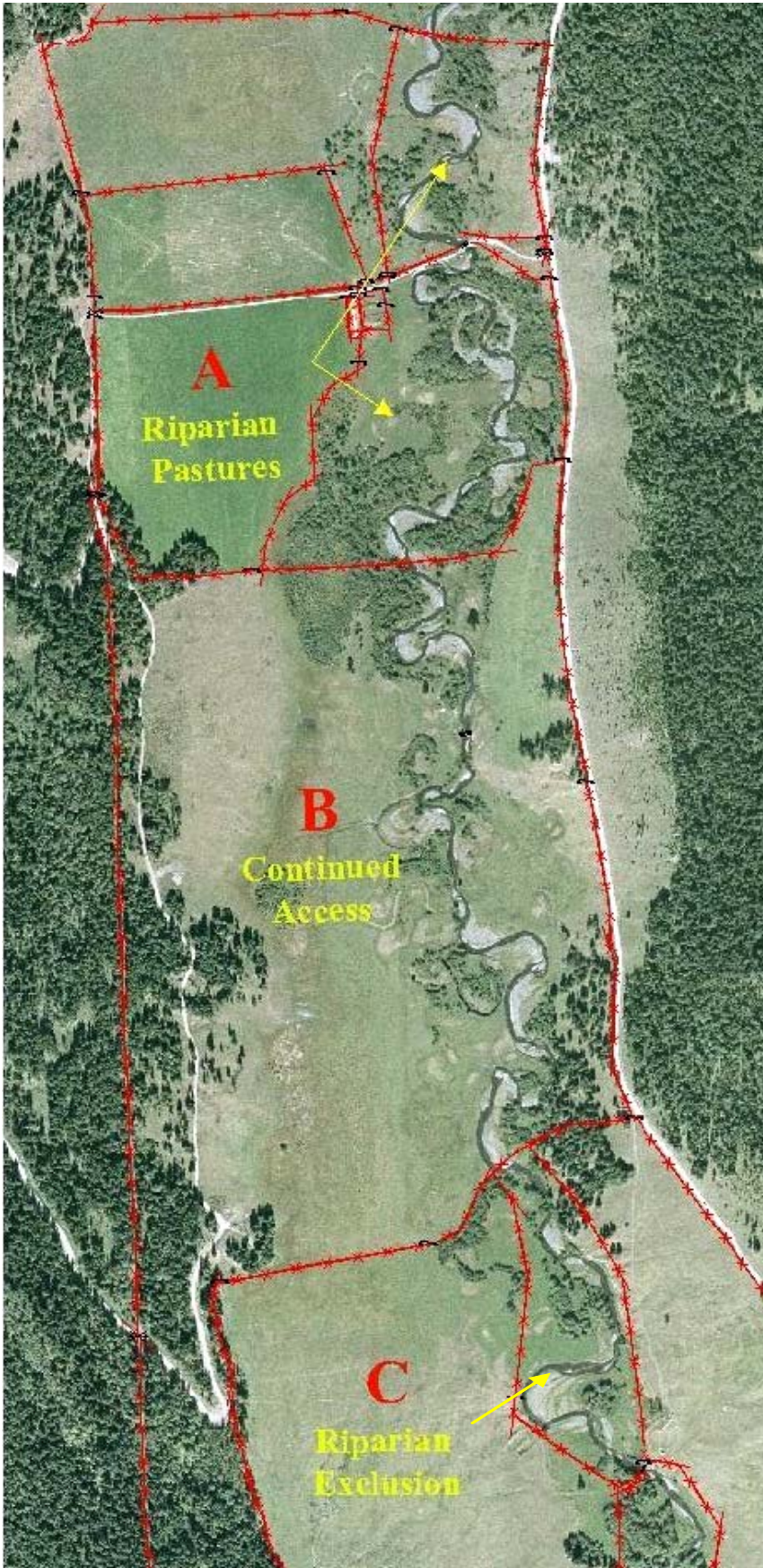
## Ratio of Riparian Area to Upland Area

The ratio of riparian area to upland area is often a critical factor for management of riparian pastures. If the upland area has a much larger carrying capacity than the riparian area, managing to meet forage removal targets on the upland will often result in overuse of the riparian area. Conversely, if the pasture is managed to meet riparian objectives, much of the upland area may be under utilized, thus reducing returns to the agricultural operation.

Ideally, the carrying capacity of the riparian area will be equal to or greater than the carrying capacity of the upland area. In order to achieve this, it is necessary to conduct an assessment of both areas to determine the approximate capacity of each area. Since these assessments are often difficult to conduct it is recommended that temporary electric fencing be used initially when designing a riparian pasture. This allows you to adjust your pasture size more easily until the correct ratio of riparian area to upland area is determined by grazing and monitoring of the results. If practical an ideal “riparian pasture” will be dominated by riparian forage and contain as little of upland forages as possible.

## Vegetation

An assessment of the vegetation both within the riparian area and on the upland area is necessary when designing a riparian pasture, as it is the vegetation that will determine the carrying capacity of the respective area. In addition, the type of vegetation present will affect livestock grazing behaviour. Palatable species of grasses and forbs will attract livestock. If most of these species are in the riparian area, that is where the livestock use will be concentrated. If the riparian area has primarily shrubs and trees, and the upland has more palatable grasses and forbs, the pressure on the riparian area will be reduced. If the riparian area is the preferred area within the pasture, your grazing management should be determined by the use of the vegetation in that area. For example, when the targeted level of use on the riparian vegetation has been reached, livestock should be removed, regardless of whether the level of use on the upland vegetation has been reached.



**AREA A** – The majority of the forage is in the riparian area, with only a small amount in the upland. This allows for better grazing management based on plant phenology, and makes it possible to rest this area when required.

**AREA B** – Difficult to manage this pasture to get good utilization of upland without excessive impacts on riparian area.

When the upland plants have become very dry (e.g. late summer) the green growth in the riparian area becomes more attractive, and thus is at risk of being over utilized. This pasture however does reduce the amount of fencing required.

**AREA C** – Exclusion areas eliminate the impact of livestock on the riparian area, but complete removal of grazing is not always desirable. Apart from the loss of forage for livestock production, no grazing may create problems, including weeds, fuel build-up, and increased cover for predators.

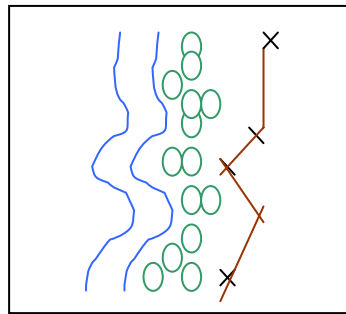
When considering pasture design it is important to know that grazing can be used to help promote desirable riparian vegetation by appropriate timing and use levels.

For example, the exclusion area in this photo could be managed as a riparian pasture if objectives and strategies are carefully defined.

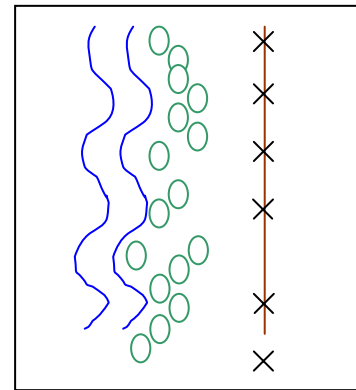
## Riparian Pastures

When designing riparian pastures, it is important to consider practical issues such as fence lines, number of corners, access to water and season of use.

Fences work best when built in a straight line, but creeks often meander, so a compromise is often required. Try to reduce the number of corners and curves in a fence and the number of braces required. Any reductions will reduce fence construction costs and maintenance costs. Building the fence as straight as possible however may include more upland area than desired within the riparian pasture. This will have management implications, as described above. It is also important to note that each pasture needs to be designed independently as standard setback distances rarely result in the best design for a riparian pasture.



Difficult to build and maintain fence



Straight fence is easier to build and maintain

Use of easily moved electric fence is also an option. This should be considered only if required maintenance will be conducted. In addition, electric fences do not work if they are flooded, nor are they as effective on frozen ground, so the season of use must also be considered.



While off stream water sources for livestock are often preferred, direct access to the natural water source is also possible under well-managed conditions. Riparian pastures that have relatively short periods of use (e.g. 2-3 weeks at a time) are unlikely to suffer from damage caused by livestock. In some situations, improved access points for drinking, (e.g. gravel or geogrid to stabilize the bottom) may be recommended. Factsheet 590:303-1 *Watering Livestock Directly from Water Courses* contains more information on this subject.

### FOR FURTHER INFORMATION CONTACT

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