

Summary of:
Riparian Forest Communities in the Southern Boreal Region of
Central Saskatchewan.
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The boreal forest is one of the largest but least understood biomes on earth. Ever increasing demands are being put on its resources. As the demand for forest products increases, ecological knowledge of forest plant communities becomes even more essential as the basis for sound forest ecosystem management. Sustainable forest management can only be achieved if management agencies have a thorough understanding of forest ecosystems and how they function. Riparian zones have recently been recognized as disproportionately valuable areas. Few studies of forest ecology in Saskatchewan have dealt with riparian ecology. This study focused on the vegetation of riparian ecosystems in the mixedwood section of Saskatchewan's boreal forest.

The primary objective of this study was to identify and describe riparian plant community types along the larger rivers and creeks in central Saskatchewan. Community types and species were evaluated in terms of their value as indicators of riparian and upland zones. Additional objectives were to identify communities in which rare plant species are found and to assess the effectiveness of buffer strips with respect to including riparian plant communities.

Trees, understory vegetation and soils were sampled along six rivers and one creek in the Mid-boreal Upland Ecoregion and the Boreal Transition Ecoregion.

The floristic inventory identified 206 species of vascular plants (including 4 rare species), at least 41 species of terrestrial bryophytes, and 17 taxa of lichens. Eight bryophyte and lichen, understory and tree communities were identified and described. Five tall shrub communities were recognized.

Moss communities that are dominated by widespread and habitat-insensitive species are poor indicators of riparian zonation. However, some less common species of moss can be useful indicators. Taxonomic difficulty and the need for specialist experts in bryophyte and lichen identification make it difficult to include bryophytes and lichens in inventories of vegetation and plant diversity.

Understory and tall shrub communities were variable in their ability to reflect riparian zonation, but some individual species were excellent indicators. Two tall shrub community types were found to be good indicators of forest riparian zones. Alpha diversity of understory communities did not differ between riparian and upland zones, and showed no relationship with the distance from a river. Beta diversity may be a more appropriate scale than alpha diversity when assessing riparian forest biodiversity. Both alpha and beta indices should both be considered when evaluating riparian diversity because the two scales are not correlated.

Six of the eight tree communities recognized in this study could be used to differentiate upland and riparian forest zones. Balsam fir and paper birch had the closest relationship to the riparian forest zone. Classification and ordination of vegetation data did not produce consistent results in attempts to quantitatively differentiate between riparian and upland forest zones.

Canonical correspondence analysis consistently distinguished riparian and upland forest soil categories. For soils, short distances from a river were correlated with deep

organic layers, poor soil drainage and high nutrient levels. Measuring soil variables may be a valuable tool to differentiate riparian and upland forest communities. Collection of continuous, rather than categorical, data would facilitate multivariate analysis.

The current regulation for 90m buffer strips to be placed on rivers that have game fish angling opportunities would include most of the riparian communities described in this report. In low relief riparian areas, a larger buffer would be required to fully include the riparian forest zones.

The preservation of diverse communities would help to maintain riparian diversity and rare plant populations. The preservation of diverse understory communities should be a management priority. Communities in a range of successional stages, including old forests, should be maintained to ensure forest biodiversity.