

Riparian Areas, Biodiversity & Livestock Grazing

A Summary and Analysis of Research in Alberta and Saskatchewan

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1. Executive Summary

Riparian areas are important to a variety of wildlife and plants and landuse practices can influence this biodiversity. In prairie Canada, a major landuse of riparian areas is livestock grazing. Presented here is a summary of six studies, conducted in Alberta and western Saskatchewan, that investigated the influence of grazing on bird communities. Also included are the results of a pilot invertebrate study and a vegetation study.

All of the avian studies found some grazing effect on bird communities, primarily a reduction of native species abundance and richness. Riparian health assessments were available for three of the study areas. One study area had a sufficient sample size to allow statistical comparisons of health assessment variables and bird community variables. A significant positive relationship was found between measures of the shrub community (shrub volume and number of shrub species) and avian abundance.

A meta-analysis was performed on the combined data, which indicated a general negative effect of grazing on species richness and avian abundance across a broad geographic area in Alberta and western Saskatchewan.

The response of individual bird species to grazing was examined in each of the six studies. Sixteen common riparian species decreased with grazing in the majority of the studies. Species that generally decreased with grazing were: least flycatcher, gray catbird, cedar waxwing, yellow warbler, common yellowthroat, red-winged blackbird and American goldfinch.

Results of the Alberta and Saskatchewan studies parallel similar research conducted in other parts of North America, where intensive grazing negatively influenced bird community evenness, richness and abundance.

Eight dominant messages emerged from the combined results of the six studies. The messages are summarized below:

1. High intensities of grazing result in reductions in breeding bird abundance.
2. High intensities of grazing result in reductions in breeding bird species richness.
3. There are several potential indicator bird species that appear to be sensitive to grazing.
4. High intensity grazing results in reductions in fall bird abundance and species richness
5. High intensity grazing results in increases in European starlings, a non-native species.
6. Although there may be similarities between riparian systems, each riparian system is unique.
7. Ungrazed riparian areas are uncommon and therefore extremely important as benchmark sites.
8. Appropriate riparian grazing thresholds have yet to be defined.

A number of recommendations are made. Firstly, six primary areas where additional research is required are identified. Secondly, three stewardship-based recommendations are made relating to grazing management and riparian health. Two supplementary recommendations are made, pertaining to publishing of riparian studies and protecting riparian benchmark sites. Lastly, several methodological suggestions are made for conducting research into grazing effects in riparian areas.