

LIVESTOCK GRAZING AND HABITAT NEEDS OF GRASSLAND-NESTING BIRDS

FREP

EXTENSION NOTE #36

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Over the last 30 years, habitat loss, fragmentation and habitat degradation has resulted in a marked decline in British Columbia's grassland-nesting birds, many of which are now endangered, threatened or of special concern (Sauer et al. 2012). In the province's Cariboo-Chilcotin region, forest in-growth and encroachment, livestock grazing and the introduction of domestic forage grasses has led to significant changes in native grasslands which may be contributing to bird population declines (Hooper and Pitt 1995).

Livestock can affect vegetation cover available for concealment of ground-nesting birds by reducing grass height and density, and by altering the grass community composition. In B.C. grassland ecosystems, tall native bunchgrass such as bluebunch wheatgrass, short-awned porcupine grass and rough fescue, provide excellent



Figure 1: Sharp-tailed Grouse photo by Jared Hobbs



Figure 2: Western Meadowlark photo by Ralph Ritcey

screening cover¹ for grassland-nesting birds. Overgrazing can slow the production of new shoots and roots, making grass plants more susceptible to drought, and can precipitate the gradual replacement of perennial bunchgrasses with less desirable native and non-native species (Burkhardt and Sanders 2010). For example, junegrass and Kentucky bluegrass are generally more resistant to grazing but are shorter and less dense than native bunchgrass species and may not provide sufficient cover to effectively conceal grassland-nesting birds from predators (Haddow et al. 2013).

¹ Screening cover: screening cover was measured using a cover board with life size silhouettes of the birds and digital photos taken from a distance of 4m and 1 m height away. Computer software was used to calculate the percentage of the silhouette obscured by vegetation. Nest cover, preferred cover, and vegetation cover were all measured in this way.

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Figure 3: Vesper sparrow photo by Jared Hobbs



Figure 4: Savannah sparrow photo by Rick Howie

In the Cariboo-Chilcotin, grassland birds that require tall or dense vegetation for nesting include the Columbia Sharp-tailed Grouse, Western Meadowlark, Vesper Sparrow and Savannah Sparrow. The Sharp-tailed Grouse has been extirpated from much of its former range in southern British Columbia; the Columbian subspecies that occurs in southern grassland habitats is blue-listed in the province (B.C. Conservation Data Centre 2015). It is relatively widespread

in larger cutblock areas of the Cariboo-Chilcotin; however, breeding populations in permanent native grassland habitats are considered at risk (Ritcey 1995). The Western Meadowlark, Vesper Sparrow, and Savannah Sparrow remain common migrants in the area; however, breeding populations of these species are declining in British Columbia and throughout their range.

THE KEY FINDINGS FROM AN EIGHT YEAR STUDY (2005-2012) IN THE CARIBOO-CHILCOTIN GRASSLANDS WERE:

- Grassland-nesting birds preferred to nest in vegetation with screening cover that exceeded 90%.
 - Grassland-nesting birds preferred to nest under bluebunch wheatgrass even when other grass species were available.
- Clipped (grazed) grass height required to meet the preferred nest cover level was $\geq 20\text{cm}$ for Vesper and Savannah sparrows and $> 25\text{-}30\text{cm}$ for Meadowlark and Sharp-tailed Grouse.
- Average cover available for Sharp-tailed Grouse nesting habitat was 74-96% in ungrazed and lightly grazed sites and reduced to 31-47% in heavily grazed sites.

Grassland-nesting birds depend on herbaceous cover for security and protection from predators during nesting and foraging.

1. GRASSLAND-NESTING BIRDS PREFERRED VEGETATION WITH SCREENING COVER THAT EXCEEDED 90% AND BLUEBUNCH WHEATGRASS NEST SITES.

Standard survey methods² were used to locate 84 nests in bluebunch wheatgrass and needlegrass plant communities within BGxw2 and IDFxM biogeoclimatic zones. Sharp-tailed Grouse, Western Meadowlark, and Vesper Sparrow all showed a preference for nesting in locations where screening cover exceeded 90%. This level of cover provides a dense screen of vegetation that helps protect the nest site from detection by predators. The birds also chose to nest under bluebunch wheatgrass plants more often than other available grass species (Figure 5).

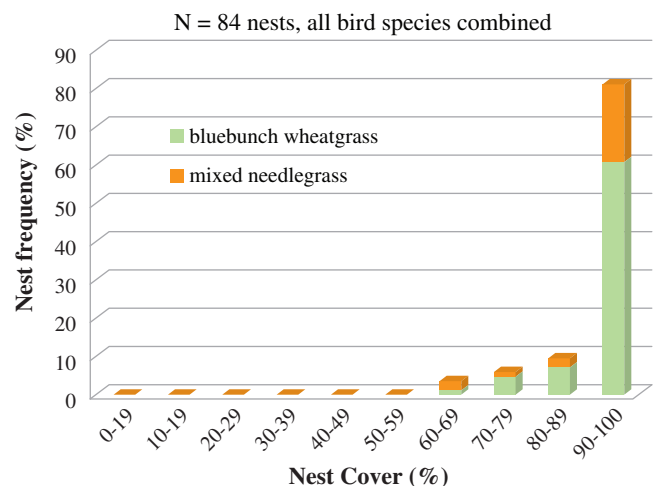


Figure 5: Grassland-nesting birds preferred vegetation with screening cover that exceeded 90% and bluebunch wheatgrass nest sites.

² Standard survey methods: Each pasture was surveyed for breeding birds and their associated nests on an equal and rotational basis following RISC standard survey protocols. Cover was measured at each nest. See addendum to full report #36 for details.

2. CLIPPED (GRAZED) GRASS HEIGHT REQUIRED TO MEET THE PREFERRED NEST COVER LEVEL WAS ≥ 20 CM FOR VESPER AND SAVANNAH SPARROWS AND > 25 -30CM FOR MEADOWLARK AND SHARP-TAILED GROUSE.

In each pasture and grassland type, screening cover was measured at plots with grass clipped to different heights (Figure 6). The preferred level of nesting cover (90%)

was reached at clipped grass heights of > 25 -30cm for Meadowlark and Sharp-tailed grouse and at ≥ 20 cm for the smaller Vesper and Savannah sparrows.

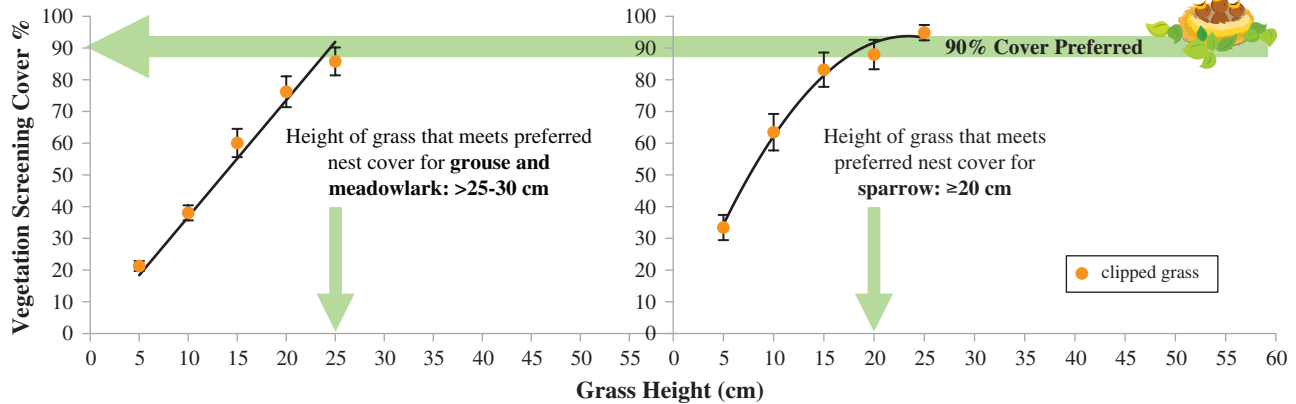


Figure 6: Clipped (grazed) grass height required to meet the preferred nest cover level was ≥ 20 cm for Vesper and Savannah sparrows and > 25 -30cm for Meadowlark and Sharp-tailed Grouse.

In early spring, when cover provided by new grass growth is limited, Sharp-tailed Grouse and other grassland-nesting birds conceal nests under dried standing bunchgrass plants and leaf litter carried over from the previous year. Inadequate height and density of this residual cover reduces the availability and quality of nesting habitat and increases susceptibility of nesting birds to predators. Grazing management practices that maintain high levels of residual cover before nesting, as

well as high cover during the nesting period, would benefit grassland-nesting birds. Maintaining taller stubble heights³ of native bunchgrasses, such as bluebunch wheatgrass and needlegrass, will increase availability of potential nesting sites with good cover.

³ Stubble height: stubble height is the average height of the leafy portion of herbaceous vegetation after grazing.

3. AVERAGE SCREENING COVER AVAILABLE FOR SHARP-TAILED GROUSE NESTING HABITAT WAS 74-96% IN UNGRAZED AND LIGHTLY GRAZED SITES AND REDUCED TO 31-47% IN HEAVILY GRAZED SITES.

Ungrazed areas generally met or exceeded the preferred nest cover level of 90%. When pastures were lightly to moderately grazed, average vegetation screening cover often decreased and fell short of the preferred nest cover, although some individual plots were found that met the preferred nest cover. Light to moderate grazing is often prescribed by range practitioners to maintain or improve range condition. Grazing at this level appears less detrimental to grassland-nesting birds compared to heavier grazing.

Heavy grazing negatively affects plant communities. As grazers remove the preferred plant species, bluebunch wheatgrass and needlegrasses, and these are replaced with less desirable native or non-native species, available grassland-nesting cover and grassland productivity declines.

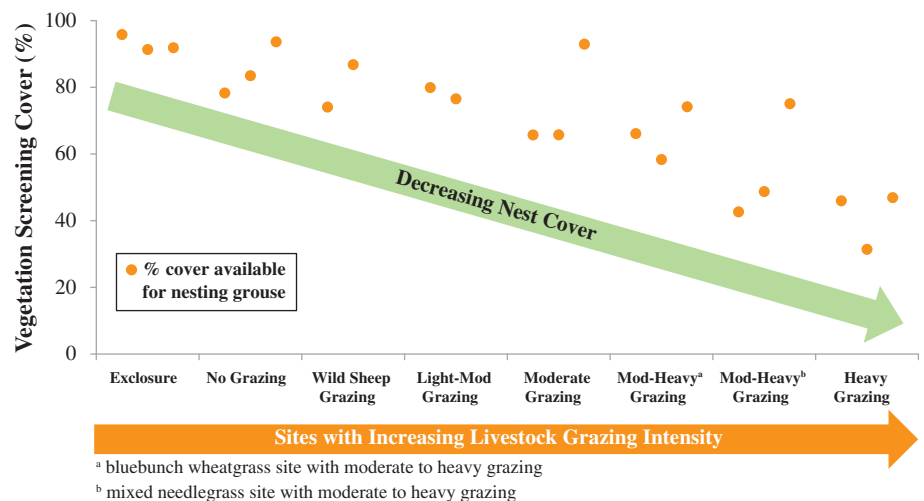


Figure 7: Average Screening Cover available for Sharp-tailed Grouse nesting habitat was 74-96% in ungrazed and lightly grazed sites and reduced to 31-47% in heavily grazed sites.

Therefore, avoiding heavy use appears beneficial to livestock producers and grassland-nesting birds (Figure 7).

BENEFICIAL GRAZING PRACTICES TO IMPROVE GRASSLAND-NESTING BIRD HABITAT

Improving range condition and health has benefits for grassland-nesting birds and also benefits livestock producers. Some suggested practices and research findings that would maintain or improve grassland-nesting bird habitat are presented here for consideration. It is not intended that these practices be applied across all grazing lands; however they should be considered as a component of integrated resource management.

Restore native bluebunch wheatgrass and other tall native bunchgrass ecosystems

- In areas where bluebunch wheatgrass occurs it may be possible to maintain and enhance the growth and vigour of these plants to benefit grassland-nesting birds. Bluebunch wheatgrass is less tolerant of heavy or repeated spring grazing especially during the boot and flowering stage. Grazing during early spring, prior to the boot stage, after seed set, and during the dormant season may be less damaging as long as sufficient residual leaf area is left for plants to continue photosynthesis and root growth. In rotational grazing systems limit spring use of native bluebunch wheatgrass to no more than one out of three years and graze at light to conservative levels.
- For all native bunchgrass plant communities, consider implementing rotational use of pastures with periods of rest from grazing. Limit the impacts of defoliation during times when the plants are more sensitive to leaf loss through proper timing of livestock use. Three and four pasture systems can be used to create opportunities to rest pastures either seasonally or for a full grazing period.
- Reduce livestock use to match levels that pastures can support, i.e., in arid and semiarid areas moderate (40-45%) use on most rangelands allows the palatable species to maintain themselves and light (less than 30%) to conservative (30-35%) use is needed for improvements to rangeland vegetation (Holechek et al. 1999).

Maintain adequate stubble height of native bunchgrass species

- Grazing reduces grass height and available nest cover for grassland-nesting birds. Tall grass is required to maintain preferred nest cover levels. Recommended stubble heights are > 25–30cm for Sharp-tailed Grouse, Western Meadowlark and ≥ 20cm, for Vesper and Savannah sparrows. In the drier Bunchgrass biogeoclimatic zone, stubble height values at the high end of these ranges and above are recommended to achieve the preferred nest cover of 90% (Haddow et al. 2013).

- As the average stubble height of a pasture approaches the preferred height of vegetation at the nest, the density of potential suitable nest sites should increase.
- One way to achieve taller stubble heights on some bunchgrass plants in a grazed pasture is to apply a reduced stocking rate. With fewer livestock per pasture, utilization of plants across a pasture will be more uneven, potentially leaving some plants lightly grazed or ungrazed. Rest and rotational grazing practices also create opportunities to manage for taller stubble heights on specific pastures in a rotation.

Plan timing of livestock use

- To avoid overlapping with the nesting period, grazing in a rotational grazing system may be deferred until early summer on some pastures. This strategy will prevent livestock disturbing nests and allow grasses to grow tall enough to provide good cover.
- Fall and dormant season grazing, while often beneficial to native bunchgrass, can reduce residual screening cover available to nesting birds in the spring. Spring, summer, fall and dormant season grazing in rest rotation and deferred grazing systems can be beneficial to most grassland-nesting bird species when these systems provide some pastures free from disturbance during nesting and other critical seasons. When three or more pastures are available rotational grazing systems can provide more options and greater opportunity to rest some pastures from grazing in the spring and fall across multiple years.
- Avoid grazing in spring and fall of the same year and provide adequate rest after grazing to help maintain the vigour and overall productivity of native grasses. Native bunchgrasses may require as much as 120 growing days or an entire season to recover from grazing (Fraser 2003).



Figure 8: Sharp-tailed Grouse nest photo by Becky Bings



Figure 9: Sharp-tailed Grouse photo by Cindy Haddow

Grazing practices that maintain winter carry over of residual vegetation provides spring nesting habitat for Sharp-tailed Grouse.

- Use leaf stage to determine range readiness of native grasslands before turning out livestock in the spring. This can help ensure grasses have sufficient leaf area to recover from grazing.

Manage livestock use near Sharp-tailed Grouse lek sites

- Sharp-tailed Grouse nest within 1-2 km of lek⁴ sites; therefore limiting livestock grazing within this area will help maintain optimal habitat attributes for nesting as well as reduce disturbance during the nesting period. Consider using salting, livestock attractants, and riding and herding practices to move livestock away from these areas.
- In grassland areas frequented by Sharp-tailed Grouse, consider leaving some areas ungrazed.
- Use rotational grazing systems, reduced stocking levels and modify period of livestock use to encourage tall bunchgrasses and carry-over of residual grass in the fall to the spring to provide nesting cover in early spring for Sharp-tailed Grouse.
- Avoid fall and winter grazing near lek sites, as this has potential to reduce the winter carryover of residual grass cover which is especially important for Sharp-tailed Grouse nesting habitat (Leupin and Chutter 2007).

Limit browse use on shrubs

- Shrubs (e.g., rose, saskatoon, choke cherry, and willow) provide important shelter areas and berry and bud crops for Sharp-tailed Grouse. Shrub habitat may be reduced by livestock overbrowsing. It is important to monitor and limit livestock browsing of shrubs by applying livestock management practices, such as strategic placement of salt, riding, pasture rotation, and rest and removal of livestock from pastures in the fall when nutrient levels in native grasses and forbs decline.

Restore fire-maintained grassland ecosystems

- Approximately 100 years of fire suppression has resulted in the encroachment and ingrowth of trees onto what was historically fire-maintained grassland ecosystems. The loss of these ecosystems further reduces available habitat for grassland-nesting birds. In recent years, the British Columbia government has been working to restore grassland areas by removal of trees through slashing and controlled burning activities. It is important that these activities continue.

FOR MORE INFORMATION AND REFERENCES

For a full list of references and more detailed information on this project, the methods, and the results, refer to the full report: Haddow, C., B. Bings and E. Wallich. 2013. Cover Requirements and Habitat Needs of Grassland-Nesting Birds in the Cariboo-Chilcotin. B.C. Ministry of Forests and Range, Forest Practices Branch, Forest and Range Evaluation Program, Victoria, B.C. FREP Report No. 36.

https://www.for.gov.bc.ca/ftp/hfp/external/!publish/FREP/reports/FREP_Report_36.pdf

⁴ Lek: an assembly area where Sharp-tailed Grouse carry on display and courtship behaviour.