

# Provincial Grazing Reserves and Grasslands Conservation

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**C**onservation of Alberta's grasslands is inescapably linked to the agricultural use of the land. In particular, many grassland ecosystems support grazing livestock and some of the province's best remaining native prairie landscapes are contained within Provincial Grazing Reserves. As public lands, these reserves are managed under the multiple use framework. Grazing needs are balanced with recreational and industrial uses, as well as conservation goals. While Provincial Grazing Reserves can help preserve native grasslands, how much do these reserves truly protect vulnerable habitats?

## Introduction to grasslands

As an ecosystem, grasslands are often overlooked. Distinguished by large open areas of grass and grass-like vegetation, grasslands, also known as prairies or rangelands, are estimated to cover 30% of land globally. Thus, they constitute one of the most common environments on Earth. Contained within the northern end of the

Great Plains of North America, the grasslands region of Alberta covers an area of 95,566 km<sup>2</sup>, accounting for 14.4% of the province. Included in that area are some of the world's best and largest remaining tracts of native prairie.

These grasslands are essential for biodiversity. They provide habitat for a variety of reptiles, amphibians, birds and mammals, and have been historically known for their large grazers, including bison, pronghorn, elk, and deer. The Great Plains contain over 460 rare and imperiled plant and animal species, with 70% of those considered as endemic or near-endemic, meaning these species are only or mostly found in the grasslands of North America. The North America Breeding Bird Survey has noted Alberta's grasslands for their diversity in breeding bird species and many animals rely on grasslands for at least a part of their lifecycle.

Additionally, grasslands provide many benefits through ecosystem services. Not only do they allow places for recreation but

healthy grasslands filter pollutants from air and water, improve and stabilize soils, prevent nutrient loss and regulate flooding. As well, native grasslands store carbon. Alberta's native grasslands alone store three times the annual greenhouse gas emissions of Canada, according to one report prepared for the Alberta Sustainable Resource Department (ASRD). They provide a massive aid to mitigating climate change. Carbon storage in grasslands is mainly belowground, in soils and roots, and as these underground stores are less impacted by seasonal fires and drought, this carbon can remain in soil for centuries. Losing these lands would mean more than losing their beauty; it would mean losing the benefits they bestow, along with many of the iconic species that rely on them.

## Grassland threats and conservation

Grasslands are already greatly threatened. In 2008, the International Union for Conservation of Nature (IUCN) declared grass-



*Sage flats in the Sage Creek Watershed in southeastern Alberta* PHOTO: © L. FITCH

lands to be the world's most endangered ecosystem, and temperate grasslands, like those in Canada, to be at particular risk. The declaration was reinforced in 2020 with a call for greater understanding of and protection for these vulnerable environments. The Canadian Parks and Wildlife Society (CPAWS) states Canada has already lost nearly 75% of its natural prairies and less than half of Alberta's native grasslands remain. With their loss, many of the species that rely on native grasslands are also in decline and approximately three-quarters of Alberta's species at risk are found in the grasslands region.

In Alberta, grasslands are under continued threats from human activity. The Alberta Biodiversity Monitoring Institute (ABMI) found conversion of native prairie for settlement, industrial development and agriculture has altered over 60% of Alberta's grasslands. Agriculture has had the largest impact. Human activities continue to encroach on the remaining areas through resource extraction, conversion of land for farming, and urban expansion. Only 1.25% of these grasslands are protected, a disproportionately low amount compared to the over 60% protection enjoyed by the Rocky Mountain region. Conservation of the remaining native prairie needs to be a priority, before the remains of this once-vast ecosystem are entirely lost.

## Grassland use and management

Protection of Alberta's grasslands is complicated by their inclusion primarily in the White Area. Alberta's lands are categorized into two distinct areas: the Green Area, which encompasses the province's northern forests, mountains and foothills, and the White Area, encompassing the southern prairies. Compared to the Green Area, the White Area is more populated, and most of the land is owned privately. The White Area also contains the vast majority of agricultural activities. As a result, conservation of Alberta's grasslands requires consultation and collaboration with several different interest groups and management of competing uses

for the remaining lands.

Many economic benefits derived from these lands, such as mineral extraction or cropland production, involve large-scale destruction and conversion of native prairie. These disturbances eradicate precious habitat, increase erosion, alter the plant community, and disturb the underlying carbon stores. They reduce the ability of the ecosystem to provide essential services and contribute positively to climate change. Recovery from disturbances, when attempted, is slow and not guaranteed. This is especially true where the altered environment attracts invasive species, which can displace native flora and fauna, permanently changing the landscape.

Livestock grazing is an important use of these lands. In contrast to most other economic uses, well-managed livestock grazing has relatively few damaging impacts on grassland ecosystems and the activity is capable of occurring on unconverted native prairie. Just as the prairies evolved under grazing by large herbivores, grazing can also aid in grasslands management. Studies have found a moderate amount of grazing can positively alter the prairie ecosystem, increasing biodiversity, improving water filtration and potentially encouraging carbon storage. When well-managed, livestock grazing can promote healthy grassland ecosystems.

Grazing on Alberta's public lands is managed through grazing dispositions. A large area of these public lands are managed under Grazing Leases, which cover 5,200,000 acres, and Provincial Grazing Reserves, which cover another 720,000 acres. Under the provincial government, Grazing Leases are defined as "long-term authorizations to individuals, corporations or associations," while Provincial Grazing Reserves are "community pastures located throughout the province, providing a significant amount of local public land grazing." Though Grazing Leases have been under intense public scrutiny recently, Provincial Grazing Reserves have been largely ignored.

The difference between Grazing Leases and Grazing Reserves lies in how the lands

under dispositions are managed. Grazing Leases are issued directly to the individuals or organizations maintaining livestock on the lands. These actors are responsible for management of the area, including access for industrial or recreational use. In contrast, Grazing Reserves are often managed by an association. The association manages livestock foraging from multiple individuals, while the province maintains control over other land uses. As a vast amount of the remaining native prairie in the province occurs in areas of livestock grazing, the management of these lands is of critical importance to grasslands conservation.

## History of Provincial Grazing Reserves

During the Great Depression, the Grazing Reserves program was launched in response to local farmer and rancher requests for pastureland. The first reserve was established at the Twin River site in 1934 and, in 1957, the first irrigated reserve was established at Purple Springs. Since then, 32 Grazing Reserves have been established throughout Alberta, with the last reserve launched in 1986. Of these, eight are located in the grasslands, covering nearly 260,000 acres. By 1999, responsibility for the management of livestock and forage resources on all reserves had been transferred to grazing reserve associations under grazing management agreements. These grazing associations maintain the land and structures, including fences. Access to and activities prohibited in these lands remains under the control of the provincial government.

The establishment of new reserves in the 1970s and 1980s caused difficulty with hunters and recreational users already using the land. The contested land contained resources that were coveted by other sectors, as well as harboring wildlife habitat. To resolve these conflicting demands on the land, the multiple use concept was developed. This land management philosophy attempts to balance the requirements of different groups and maintain sustainable natural resources, and is currently used to

manage all public lands in Alberta.

However, the focus of the Provincial Grazing Reserves remains on agricultural use. The Alberta government writes: “The main purpose of these reserves is to provide summer pasture for Alberta’s farmers and ranchers on public land” although the regions remain open for recreational activities and development, including drilling for oil and gas. While the provision of suitable habitat for wildlife is mentioned, this goal is largely secondary to maintaining a productive and sustainable forage for livestock.

## Conservation in Provincial Grazing Reserves

Despite the primary focus on forage, Provincial Grazing Reserves can provide protection to large sections of native prairie. Grazing Reserves prevent conversion of prairie habitat for other uses, such as cropland, and well-managed livestock grazing can benefit the grassland environment. As well, to maintain sustainable forage, a carryover of 50% is required. Carryover is the amount of forage produced during the growing season that remains ungrazed and a carryover of 50% indicates half the vegetation must remain after grazing. This requirement helps to protect plants and soil, enhance water filtration and provide habitat for wildlife. In this way, the provision of pastureland can benefit grasslands conservation goals.

Conservation efforts vary greatly between reserves. Some attempt to manage grazing in ways that account for wildlife. For instance, at Sage Creek, one of the most intact

and diverse areas of the Great Plains, the Provincial Grazing Reserve has set a higher carryover of 70% as an allowance for grazing wildlife. At Lonesome Lake, where developed water basins provide nesting habitat for waterfowl, grazing near these areas is deferred until nesting is completed. Others, such as Bow Island, are noted for their abundant wildlife populations, including deer, antelope and upland birds, although no active efforts to protect these populations have been announced.

However, Provincial Grazing Reserves do not always protect grasslands ecosystems. While reserves prevent large-scale conversion for other uses, recreational and industrial activities are allowed, including oil and gas wells, pipelines and roads. These activities can reduce grassland health as well as encourage invasive species growth. In addition, sections of reserves have been cleared and seeded to tame forage or irrigated. Tame forage is less desirable to wildlife, and can result in lower soil health and carbon sequestration compared to native prairie. Similarly, irrigation displaces dryland plant species, changing the grassland community, sometimes irreversibly. Projects for continued industrial development or additional irrigation could depose many native plants and should be limited to prevent further loss of irreplaceable prairie habitat.

As well, although well-managed livestock grazing has been praised for its benefits, poor management can have severe consequences for the ecosystem. Over-

grazing not only results in extensive loss of vegetation that many species rely on for habitat, it can lead to erosion and loss of fertile soil. An inch of topsoil forms over 500 or more years, so any losses in soil require time to recover. Livestock grazing can also cause conflict with native wildlife, through competition with other grazing species or predation on livestock. Careful monitoring of Provincial Grazing Reserve use is crucial to ensure sustainable forage growth and prevent conflict and degradation of prairie ecosystems.

Provincial Grazing Reserves may prove an economically viable method for helping to conserve Alberta’s remaining grasslands. The reserves protect against large-scale conversion of native prairie for other land uses and good management of grazing livestock can benefit the grassland ecosystem. However, to prevent further damage to these fragile ecosystems, use of these lands needs to be carefully monitored, and further development limited. Provincial Grazing Reserves allow the province more direct control than many other grazing dispositions – control that could be used to restrict industrial access and preserve the health of the remaining native prairie. Additionally, while some concessions to conservation have been made, these efforts can and should be expanded on. Grasslands continue to be under threat from agricultural, industrial and urban expansion. With so much of Alberta’s native prairie already lost, every remaining acre is precious and steps must be taken to protect these vulnerable lands. ▲



Three grasslands species at risk: Great Plains Toad, Mountain Plover, and Short Horned Lizard PHOTO: © C. WALLIS