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# Feral Horse Management Framework



ISBN 978-1-4601-5876-0

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Created by: Forestry and Parks

Last updated: Septmeber 2023

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## Executive Summary

Alberta's ecosystems provide many benefits to Albertans such as recreation, wildlife, energy and mineral resources, forestry, and grazing for domestic livestock. Healthy ecosystems are important in sustaining indirect benefits, also known as ecological goods and services. These include water purification, carbon sequestration and habitat for wildlife species provided by the diverse ecosystems, plant communities and soil types across the province. The Ministry of Forestry and Parks strives to maintain ecosystem integrity to ensure these benefits continue for years to come.

Alberta's feral horse populations are descendants of escaped or intentionally released domestic horses, used by First Nations, farmers, ranchers, logging and mining industries and hunters before and after the Industrial

Revolution. The post-Industrial Revolution shift away from horses has not changed the fact that horses are a part of Alberta's heritage, with the province being home to one-third of Canada's domestic (owned/non-feral) horses.

Alberta's current feral horse populations are not actively managed. They live on an active, multi-use landscape where the significant, simultaneous demands can result in cumulative impacts to long-term sustainability. As part of the Crown Land Vision, the ministry is working to streamline the integration of various land uses through red tape reduction and legislative updates. If horses are not integrated into a landscape-scale approach of managing natural resources, there will be significant long-term threats to resource sustainability.

Photo credit: Help Alberta Wildlives Society



Development of a science-based management framework provides options and trade-offs for the ongoing presence of feral horses while considering the ecological integrity of their habitats. Due to the complex nature of landscape management, the Department has developed feral horse population thresholds to identify where and when management tools could mitigate the environmental, social and financial risks and costs associated with declining ecosystem health. To achieve the province's goal of healthy, ecologically sustainable Crown land, adaptive horse management options are imperative to complement other components of a busy, complex landscape. With this in mind, the Department and the Feral Horse Advisory Committee (the advisory committee) have developed a management framework for Alberta's feral horses.

Managing feral horse populations in Alberta will be guided by the following principles developed in consultation with a wide range of stakeholder groups:

- An ongoing presence of feral horses in the Horse Capture Area while recognizing the need to steward the landscape in an ecologically sustainable manner.
- Continue supporting feral horse research and monitoring as essential components of active and adaptive feral horse management.

The Feral Horse Management Framework is not intended to be a regional or sub-regional plan. This framework focuses on the feral horse component of the landscape and will be integrated into future regional planning and/or integrated resource management exercises.



# Introduction

## History of Feral Horses in Alberta

Horses have been an integral component of exploring and settling Canada, and continue to be part of Alberta's history and culture. After the most recent ice age in North America, horses (*Equus caballus*) went extinct on the continent, yet they are now widespread within Equine Management Zones across the Eastern Slopes of Alberta.

Feral horses live and reproduce in the wild but are normally considered a domesticated species and are designated under the *Stray Animals Act*. Feral horses are also known by stakeholders as wild horses or free-roaming horses. For the purposes of this management framework, feral horses refers to escaped or abandoned (stray) free-roaming horses without identifiable owners and/or descendants of such horses. These horses' long-standing history and a

social desire to maintain them on the landscape separates them from more recently escaped and abandoned horses that may occur in other parts of the province.

The highest concentration of feral horses occurs west of Sundre. Many of Alberta's feral horses are descendants of horses that have escaped or been intentionally released from human confinement/use, including by First Nations, ranchers, loggers, miners, hunters and the pre-Industrial revolution transportation industry. The demand for horsepower in agriculture, transportation, logging and mining industries was not consistent prior to and during the 1900s, which prompted the release of unneeded horses on unfenced rangelands in the Eastern Slopes. These horses were captured again, as required; however, roundups were not always complete (Kennedy 2005).



War times also influenced free-roaming horse populations in Alberta, with the first documented roundup occurring to support Boer War efforts (Smith and Kunst 2003). Roundups also occurred to support World War I, and mechanization was occurring at the time. The combustion engine replaced many horses in the 1900s, leading to more permanent releases of unneeded horses. A combination of these factors allowed populations to expand in terms of distribution and abundance.

Some government efforts to round up free-roaming horses since the 1920s have also been in response to impacts on the landscape. There has been government and public intervention in the Horse Capture Area to limit horse populations over time. Amendments to the *Stray Animals Act* and the introduction of the Horse Capture Regulation, passed in 1993, facilitated improvements to management and humane handling of feral horses in Alberta. The Horse Capture Regulation establishes humane handling practices and the legislative framework for permit-based horse capture within the designated zones ([Figure 1](#)). This designated Horse Capture Area is a large area in the Eastern Slopes where six separate Equine Management Zones (EMZs) have been established. This management framework applies to the six EMZs within the Horse Capture Area. Unidentifiable escaped or abandoned horses outside of an EMZ are treated as stray animals as per the processes outlined in the act; however, the Horse Capture Regulation would not apply.

In 2013, the Minister of Environment and Parks established the advisory committee to enable a collaborative process for identifying and developing potential improvements to the management of feral horses in Alberta. This committee comprised representatives from a multi-stakeholder group. After several consultations, the advisory committee provided recommendations to Alberta Environment and Parks (The Department).

The Department actively managed feral horses in the existing Horse Capture Area until 2015. This included issuing capture licences for removal of horses when determined it

was required. Although full records are incomplete prior to establishment of the legislated management system, over 2,100 documented horse removals occurred in the Eastern Slopes since the 1960s in response to natural resource concerns. This ongoing management may have influenced the current distribution and growth rates of feral horses; however, since 2015, active management in this region was suspended, and the Department has turned to monitoring and a contraception pilot program. Since then, the feral horse population has grown to more than 1,300 within the EMZs ([Figure 2](#)).

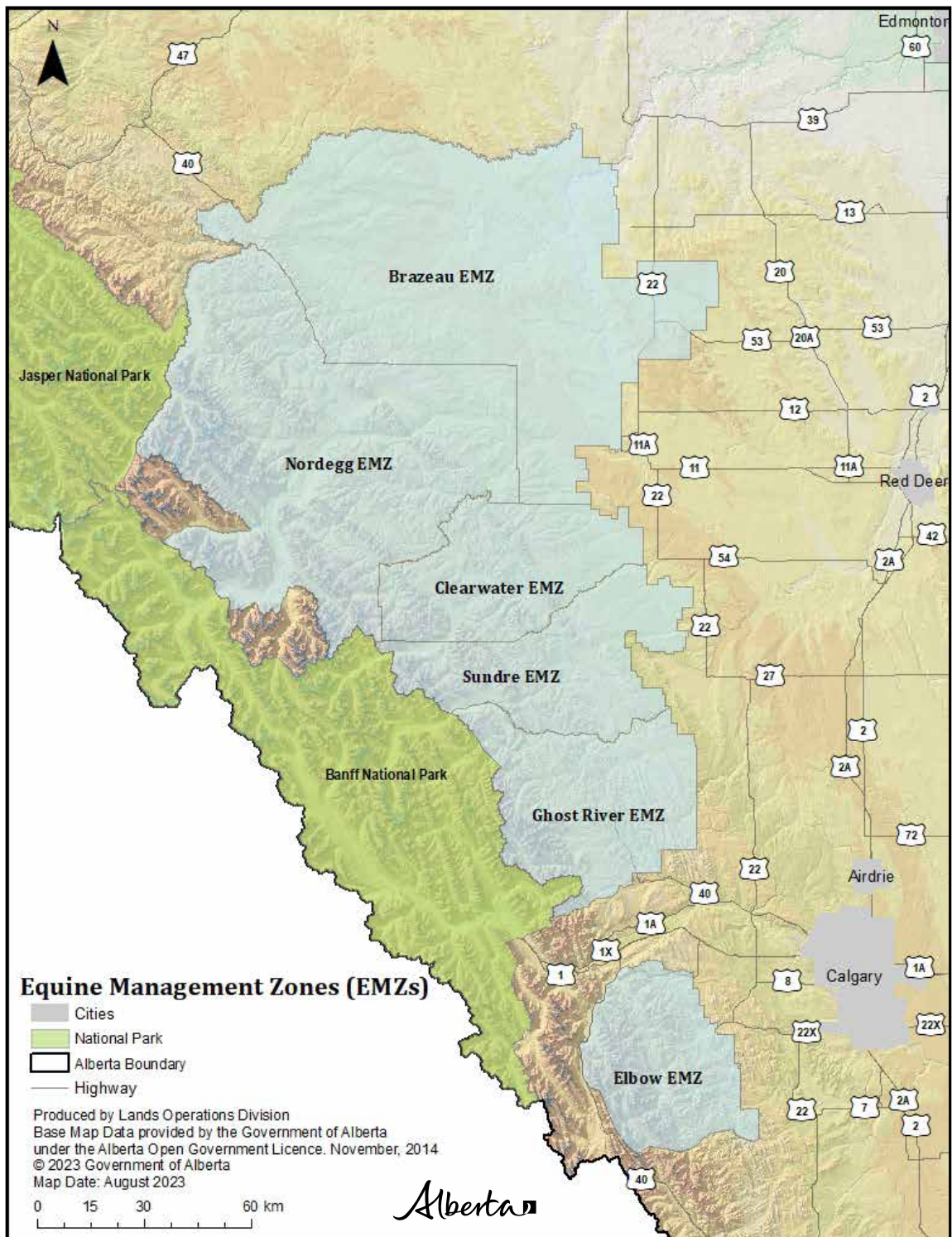
## Feral Horse Management Framework

This management framework recognizes the long history of these horses and the requirements for their management. There is a strong desire from many Albertans to ensure horses have a place on the landscape, are treated humanely, and that natural ecosystems are maintained in coexistence with wildlife, livestock, forest management and other land uses.

Since spring 2021, the Feral Horse Advisory Committee ([Appendix 1](#)) has worked to support the development of this management framework. The background for this framework includes Indigenous perspectives and incorporates the practicality of implementation, recent scientific and knowledge advances, ongoing monitoring and research and new perspectives from the current committee's membership. The advisory committee has worked hard to support the development of a clear and transparent framework for managing Alberta's feral horses into the future.

Research and knowledge on feral horses in Alberta is improving, yet still incomplete. The management framework blends existing scientific knowledge from around the world with the field data compiled by Department staff as well as other independent researchers and stakeholders.

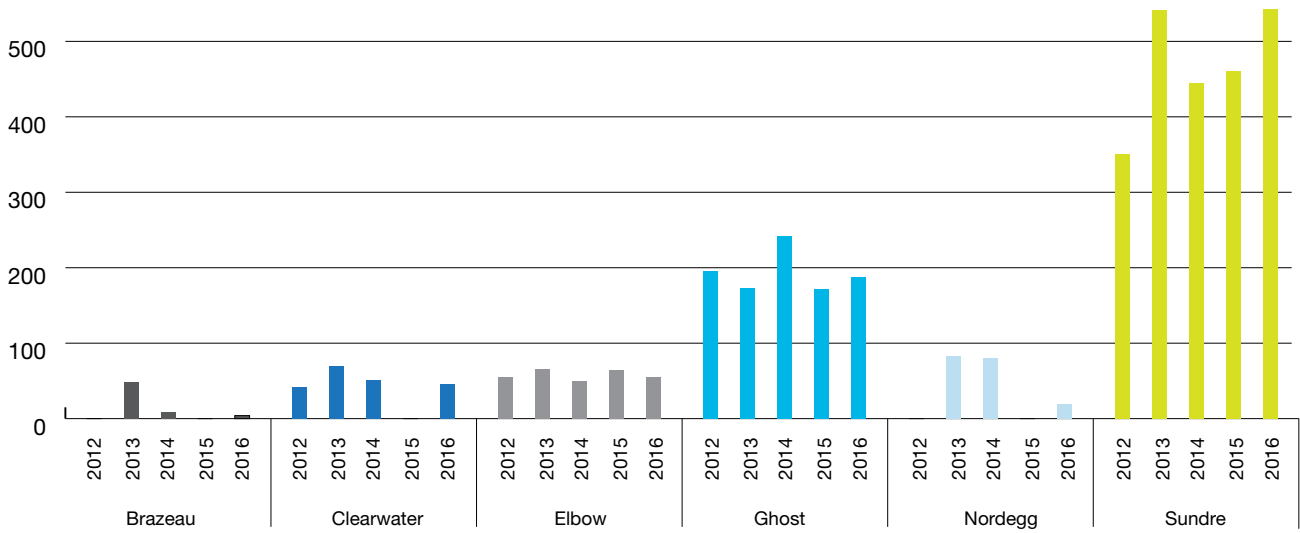
**FIGURE 1**  
Six Equine Management Zones (EMZs) make up the Horse Capture Area.





**FIGURE 2**

2012-2016 Equine Management Zone minimum count summary



**FIGURE 3**

2017-2023 Equine Management Zone minimum count summary

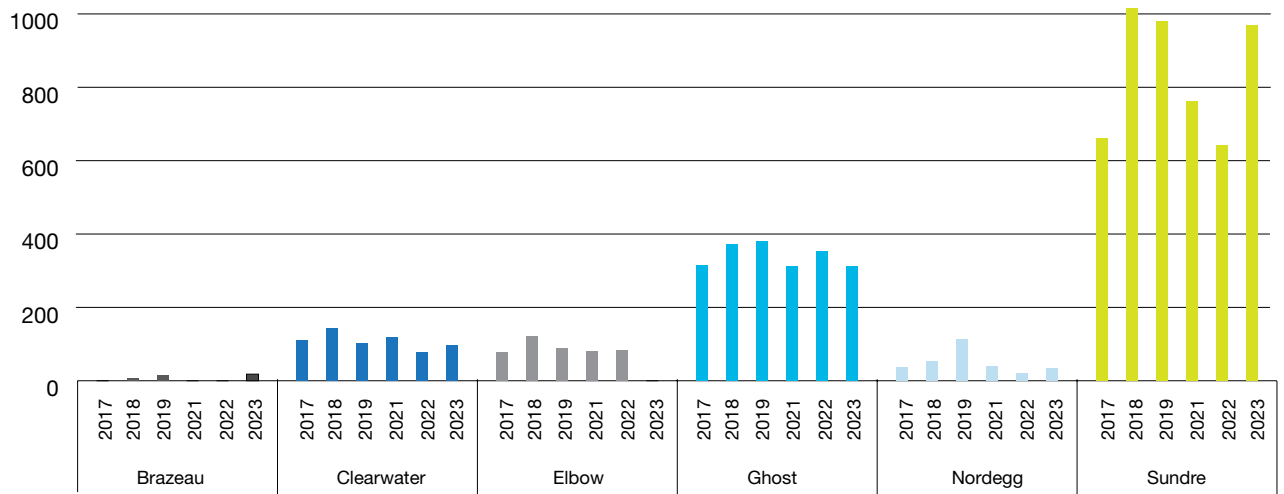


Figure 2 (Top) and Figure 3 (Bottom). Minimum count results across the six EMZs since 2012. No surveys were flown in 2020, and zones with population zero may indicate it was not surveyed that year.

## Indigenous Peoples and Horses

Horses are seen as spiritual beings with a place in the ecosystem. The Stoney Nation, for example, considers horses to be healers. Historically, First Nations managed free-roaming horse populations on traditional hunting grounds through round up and castration of young studs, with some chosen males left as stallions. Horses were also traded by First Nations to manage local numbers. For current management, First Nations have emphasized the need for coexistence and communication, particularly through applying traditional knowledge and engaging in spiritual practices such as pipe ceremonies.

It is acknowledged through this management framework that Indigenous Peoples in Treaty 6 and 7 as well as the Métis Nation of Alberta have a historical tie to horses in the EMZs. This management framework recognizes that horses used and managed by First Nations may have contributed to today's feral herds.

## Stakeholders

The advisory committee comprises a broad group of stakeholders representing First Nations, conservation, hunting, agriculture, forestry and horse advocacy interests ([Appendix 1](#)). While the advisory committee is highly diverse, shared landscape values are a theme across the group. First Nations participation in the committee is important to incorporate traditional knowledge into management plans and decisions, while horse advocacy groups provide a connection to Albertans, raising awareness about feral horses and their welfare. Advocacy groups also play an important role in reporting distress situations, participating in research and facilitating feral horse adoption programs in Alberta.



## Current Situation

Managing feral horses is complex, as demonstrated in other jurisdictions. The risks of not managing feral horses include:

- Overutilization and potential degradation of the land and forage on a multi-use landscape where seasonal domestic cattle grazing, ongoing wildlife and horse use can exceed what the land can sustain. The decline or loss of grassland ecosystems due to shrub encroachment, invasive species, and development pose significant threats to biodiversity.
- Fluctuating horse populations over the last 10 years of monitoring (Figures 2 and 3), show the potential for growth, with the most noticeable changes/increases occurring in the Sundre and Ghost EMZs. If that growth is not managed it could impact the landscape over time.
- Complexity of the predator-prey dynamics between horses, ungulates and natural predators. The potential to disrupt natural predator-prey relationships is not fully understood and may have unintended consequences on ungulate populations, such as elk and deer.



## Multi-use Landscape

Domestic livestock grazing is managed through an ecological monitoring and permit-based system in the Eastern Slopes. Managed grazing attempts to mimic a disturbance regime similar to seasonal bison grazing.

Grazing is authorized for agricultural producers who possess private land and pay to seasonally use Crown land to provide livestock forage. When the owner or occupier (i.e. grazing lease holder) of a parcel of land places livestock on the parcel, they are required under the *Line Fence Act* to establish and/or maintain fence infrastructure in cooperation with directly adjacent owners or occupiers who also benefit from the existence of the line fence or boundary. There are also processes and roles established for agricultural dispositions to provide rangeland stewardship with the goal of maintaining ecosystem function and health, while conserving a multitude of important socio-economic uses derived from rangeland resources.

A common wildlife population management tool in Alberta is to harvest species through the regulated sale of hunting licenses. Various groups exist to educate hunters on wildlife ecology, habitat conservation, and ethical harvest practices, and to facilitate access to wildlife populations for hunting opportunities. Hunting and outfitting attracts residents as well as interprovincial and international travellers, contributing to tourism and recreation revenues in Alberta. Hunting is managed and administered through a series of Wildlife Management Units in Alberta.

Another prominent land use across the EMZs is resource extraction. Alberta's forestry and oil and gas industries provide goods to the global markets and support local economies within Alberta and Canada. Dispositions/tenure grant the right to establish, grow and harvest timber across a large portion of the EMZs.

## Legislative Roles and Feral Horses

As land management regulators, Alberta Environment and Parks, Alberta Agriculture, Forestry and Rural Economic Development and Alberta Energy Regulator employ an Integrated Resource Management System to manage sustainability and support a range of coordinated outcomes on the landscape, including feral horse management.

A management framework for feral horses will help deliver on legal and/or legislated commitments and Department targets for the continued conservation and sustainable use of Crown land into the future. The Department is responsible for managing Crown lands through the Alberta Crown Land Vision to meet the needs of communities and Indigenous Peoples without compromising conservation values and recreation opportunities. Legislation such as the *Parks Act* emphasizes the value of and commitments to biodiversity conservation in parks and protected areas, and Alberta's Land-use Framework, supported by the *Alberta Land Stewardship Act*, sets out a framework to achieve Alberta's long-term economic, environmental and social goals.

The Department is responsible for the designation of horse capture areas and the issuance of capture licences under the *Stray Animals Act*. The Horse Capture Regulation ensures that horses captured under licence are captured and treated safely and humanely through a licensing system in the designated capture area, as defined by the Department ([Figure 1](#)). Moving forward, licences under the *Stray Animals Act* will continue to be used for feral horse management; however, stakeholders have identified the need for legislative changes in the future to help ensure better management of feral horse populations.

Livestock Identification Services (LIS) is a non-profit organization that is the delegated authority of the *Livestock Identification and Commerce Act* and the Livestock Identification and Commerce General Regulation. They provide services related to brand registration, livestock inspection and livestock dealer licensing. LIS is also a delegated authority of the Minister under the *Stray Animals Act*, meaning they can act as inspectors and assume responsibilities related to the identification, capture, transport,

inspection, impounding and disposal of stray animals, and distribution of proceeds from the sale of stray animals as outlined in the *Stray Animals Act*. LIS may become involved if situations arise where illegal removal by unlicensed individuals and/or sale of feral horses is suspected.

The Royal Canadian Mounted Police (RCMP) enforce federal, provincial and municipal laws, including the Criminal Code of Canada enacted by the Parliament of Canada. They may respond to situations where feral horses are reported to be in distress or concerns around public safety and property damage. The RCMP and Fish and Wildlife Officers with the Solicitor General play an important role in dealing with feral horses that are found to be under distress. These officers have authority to take action or authorize others to take the required action under their direction.

*Related legislation:* [Stray Animals Act](#), [Horse Capture Regulation](#), [Agricultural Pests Act \(Pest and Nuisance Control Regulation, section 3\(2\)\)](#), [Criminal Code of Canada](#), [Livestock Identification and Commerce Act](#), [Livestock Identification and Commerce General Regulation](#), [Animal Protection Act](#).

## Legislative Authority

### Horse Capture Area:

The *Stray Animals Act* gives the Minister the ability to designate land where a licence is required for the removal of horses. Pursuant to section 9(1) of the *Stray Animals Act*, the Minister has designated an area ([Figure 1](#)) where horse capture permits can be issued on public land to “protect, maintain or conserve the range, forage, soil, reforestation, wildlife habitat or other resource, or for the safety of the public.” Subsequently, the Horse Capture Regulation sets guidelines for humane licensed capture of horses.

### Outside Horse Capture Area:

The legislative mechanisms for removing horses occurring outside of the designated capture area or on private land are found within Section 8 of the *Stray Animals Act*. This section of the Act allows owners and occupiers to capture and confine horses which allows LIS to identify the horse and provide direction. Any free-roaming horses outside of the equine management zone are considered stray animals and section 8(1) of the *Stray Animals Act* applies to their capture. Livestock Identification Services and the RCMP have legislative authority.

**Horse in Distress (In and Outside of the Capture Area):**

Feral horses in Alberta are not considered “owned.” Owned animals in distress are defined in the *Animal Protection Act* as being in distress if they are deprived of adequate shelter, ventilation, space, food, water or veterinary care, or reasonable protection from injurious heat or cold, injured, sick, in pain or suffering, or abused or subjected to undue hardship, privation or neglect. Section 3 and Section 8 of this Act enable the Royal Canadian Mounted Police, municipal police services and peace officers to relieve distress of an animal in accordance with the regulations and in the absence of a veterinarian, which includes destruction of the animal if deemed necessary.

**Safety or Property Concerns:**

If feral horses move on to disposed or patented lands immediately adjacent to the EMZs, they are considered stray animals and landowners and occupiers will be encouraged to contact LIS. If LIS determines the horse is escaped or abandoned (unidentifiable through brand or microchip), they can contact a local horse stakeholder or arrange for transport to auction as outlined in the *Stray Animals Act*.

**Ecology of the Equine Management Zones**

Grazing by large ungulates has occurred in Alberta for millennia; however, historic use was largely seasonal. Bison would migrate from the foothills winter ranges to the prairies during the spring, summer and early fall before returning back to the foothills. This annual cycle occurred in an era where natural and intentional fires (started by Indigenous Peoples) also helped limit the encroachment of trees and shrubs onto primary rangelands. Based on ecological data and scientific research, the Department attempts to mimic seasonal use by allowing pre-determined amounts of grazing of livestock on public lands for a select period. Sustained overuse by any grazing species can shift a native grassland community to one dominated by less adaptable and palatable grass species, but these tame grass species can eventually be lost to lower-quality forage without eventual rest from grazing. Native grasslands, which are a globally rare and threatened ecosystem type, make up a small portion of the EMZs, but are important to biodiversity and land uses such as grazing and recreation.

The year-round grazing that occurs with feral horses differs from the feeding strategies of native wildlife (e.g. elk migrate to graze, while moose are predominately browsers meaning they focus on woody vegetation) and management of summer grazing by domestic stock. Native plant communities and soils cannot tolerate this type of repeated/sustained grazing and will degrade, eventually undergoing irreversible changes. Introduced plant species quickly invade and outcompete native forage species in overgrazing situations, resulting in a change in forage/habitat quality as well as the ecological goods and services the land produces. Non-native grass communities may not be as resilient during times of water stress and can raise winter forage quality concerns for wildlife such as elk that are predominately grazers rather than browsers; however, in order to maintain landscapes, sustainable range management practices are still recommended for sites that have become dominated by non-native forage species as the potential remains to impact soil health, water quality and quantity in riparian areas and reduce the quality and diversity of plant species.

The high level of biodiversity across the EMZs is highlighted by the 452 observations of 237 species and/or plant communities in the Alberta Conservation Information Management System (ACIMS, [Appendix 2](#)), a system that houses information on tracked species and plant communities. A tracked species is generally one with fewer than 20 observed occurrences in the province or is under threat to population or habitat.

Appendix 2 represents known observations and likely represents a much greater abundance and diversity of sensitive species that thrive in Eastern Slopes systems. An explanation of ACIMS and species rankings is available [here](#).

## Current Understanding of Feral Horses

A review of global feral horse scientific literature was conducted by the Office of the Chief Scientist to ensure the most current research is available to the Department and the Feral Horse Advisory Committee during framework development and implementation. The document is regularly updated to capture new research. Although features such as local climate or vegetation type vary across the global bodies of ecological and feral horse literature, the findings of other jurisdictions provide insights on trends and patterns that can be considered or rejected as appropriate in the context of a local ecosystem for study, monitoring and management purposes.

### Past and Current Feral Horse Research in Alberta

#### Articles

A number of research projects have been completed on the feral horses of the Eastern Slopes of Alberta ([Table 1](#)). There is a considerable body of research available from other jurisdictions that is pertinent to Alberta and that information has been used to inform management options where appropriate. Relevant findings of current and future research projects in Alberta will be considered as appropriate and integrated into Department and advisory committee resources to support decision making. Numerous papers about Alberta's feral horses that have not been peer reviewed have also been developed by various researchers. The Office of the Chief Scientist has listed these in their literature review summary.



**TABLE 1**

Summary of peer-reviewed literature pertaining to feral horse ecology on the Eastern Slopes of Alberta.

Topic	Citations
Effects on vegetation	Bork and Burkinshaw 2009, Burkinshaw and Bork 2009
Feeding ecology	Salter and Hudson 1979
Habitat use	Girard et al. 2013 a and b, Salter and Hudson 1978a
Interactions with other wildlife	Salter and Hudson 1980, Knopf et al. 2010, Boyce and McLoughlin 2021
Management	Salter and Hudson 1978 b, Zomorodi and Walker 2020
Policy	Kincaid and Fletcher 2017, Notzke 2017
Social organization	Salter and Hudson 1982
Tourism	Notzke 2016

## Wild Horses of Alberta Society (WHOAS) – Memorandum of Understanding

A Memorandum of Understanding (MOU) was signed in 2014 with the intention to pilot initiatives that could be important for a long-term strategy for the management of feral horses. For the five-year duration of the MOU (2014-2019), two separate projects were established: an Adoption project and a Contraception project (the projects).

WHOAS assumed responsibility for costs and potential risks of securing and retaining all resources to establish, implement and sustain the projects. Capture licences were required and issued at no cost. Information from these projects, such as feral horse locations, behaviour, movements, wildlife and human encounters, cannot be distributed or published without the written consent of WHOAS; however, through the MOU, it was agreed that such consent would not be unreasonably withheld.

### Adoption Project

- The project was limited to a project area and young horses within it. Care was taken to avoid capturing mares treated as part of the Contraception Project.
- Success measures and deliverables included successful rehoming numbers, humane and safe handling in the process of gentling and rehoming, veterinary costs of male castration, and key learnings that may be applicable in the future.
- The MOU was amended to make horses from the Ghost EMZ eligible for adoption.

- Rather than capture horses from the area specified in the original MOU, 28 horses brought to the WHOAS facility from the 2015 Ghost EMZ Capture were inspected by a veterinarian before gentling began. Wolf teeth were removed as required, as these teeth can interfere with metal bits during training, and male horses were castrated.
- Each horse was rehomed.
- The cost of the Adoption Project was \$15,000 excluding volunteer time to transport, feed, initiate basic training and provide vet care for the captured horses.

### Contraception Project

- The goal of the Contraception Project was to monitor reproductive-age mares through a volunteer, community-based program to identify and track horses for data collection and reporting purposes. WHOAS helped support the project logistics, including personnel and equipment. Details of the project include:
  - Administered two-dose Zona-Stat Porcine Zona Pellucida (PZP).
  - 2015 to 2017: A total of 87 mares were vaccinated with an initial dose, and 17 received a booster shot. Five of the 17 received a third dose as well.
  - Seventeen vaccinated mares were monitored after foaling season and one was confirmed to have given birth.
  - Database created to monitor vaccinated mares.
  - Estimate of \$1,180 per dose per horse including equipment and field time for a crew of two or more staff.
  - Research conducted by Kirkpatrick et al. 2009, suggests that 45-84% of the horse population requires fertility control treatment to notice reductions.
  - Terrain, weather and stakeholder capacity were identified as limitations to operational success.

Research from other jurisdictions emphasizes that unintended effects of contraception are inconsistent across jurisdictions. This includes increased dispersal distance of treated mares (Madosky et al. 2010; Nuñez et al. 2009), potentially expanding presence and/or making it harder to re-treat with boosters. They predict horses will redistribute due to density dependent habitat selection (see van Beest et al. 2014 for horses).

## University of Alberta

Research at the University of Alberta has helped grow understanding about wildlife, vegetation and landscape management in the Eastern Slopes. This work is foundational in helping to understand the basic and applied ecology of the Eastern Slopes and how feral horses fit into the mosaic of natural and anthropogenic activities.

The University of Alberta is involved in various ecosystem and adaptive management projects across the province. Peer-reviewed research published in 2013 under the supervision of Dr. Edward Bork provided updated feral horse habitat-use data specific to Alberta for the first time since the 1980s, using modern data collection and analyses ([Table 1](#)).

University of Alberta research conducted by Knopff et al. 2010 has shown feral horse in the diet of cougars in Alberta. Other research conducted in Alberta by various professors including Dr. Evelyn Merrill, Dr. Erin Bayne, and Dr. Mark Boyce can help inform landscape-scale management decisions and implementation of this framework, such as ungulate habitat use and monitoring, and Eastern Slopes predator-prey specialization.

## University of Calgary

A thesis co-supervised by Dr. Jocelyn Poissant assessed the genetic make up of horses within the EMZs. Fecal samples were collected within the constraints of the budget. The results suggest multiple genetically distinct subgroups of global origins in Alberta's current feral horse populations (Tollet 2018). Tollet's thesis work in 2018 also found varying degrees of inbreeding within feral horse subgroups in Alberta. Ongoing genetic and epidemiological research related to feral horses is still conducted at the University of Calgary, including some in partnership with the University of Saskatchewan.

## University of Saskatchewan

As part of the re-established Feral Horse Advisory Committee, the Department sought academic input and opportunities for collaborative research projects to address information gaps or strengthen existing analyses. The Department has engaged with Dr. Philip Mcloughlin to bring in research related to feral horses for the committee's understanding. Funding was provided to the University of Saskatchewan in 2018 to continue and enhance feral horse research in Alberta. Eight horses were fitted with GPS-collars from 2018-2019, with data signal transmission wrapping up in 2023. Part of the research initiated in 2018 included a two-year, 130-camera grid. These trail cameras were removed in October 2020. The University of Saskatchewan's research interests for this project included:

- Resource selection functions based on GPS collars on adult mares and a camera trap grid to gain insight on density-dependent habitat selection, movements and future expansion/habitat use.
- Niche overlap between elk, horses and cattle to inform where and when horse management could be most effective.
- Mark recapture and thermal imaging methods to compare to aerial surveys.



# Long-Term Management of Feral Horses

The Government of Alberta, as stated in policy and land-use plans, is committed to managing Crown lands to maintain biodiversity and ecosystem services. As part of a sustainable landscape, herbivory is a widespread and expected disturbance on rangelands in the Eastern Slopes, to which wildlife, livestock and feral horses contribute. Rangelands evolved with disturbances such as fire and grazing, and these practices now occur through landscape management and monitoring.

As part of a commitment to a sustainable landscape, this management framework includes management triggers and tools to successfully manage Alberta's feral horse populations for today and into the future. The goals of this framework include managing feral horses alongside other species that have management plans such as cattle grazing and wildlife. These combined management plans aim to ensure rangeland health and environmental

sustainability while balancing social and economic priorities in the EMZs.

With this in mind, the management of feral horse populations in Alberta will be guided by the following principles developed in consultation with the Feral Horse Advisory Committee:

- Feral horses will have an ongoing presence in the EMZs while recognizing the need to steward the landscape in an ecologically sustainable manner.
- Mitigate potential impacts to private property and domestic stock.
- Continue supporting feral horse research and monitoring as essential components of adaptive management of feral horses.
- Learn from other jurisdictions and apply best practices to Alberta's feral horse populations.

Photo credit: Help Alberta Wildies Society



## Vision

Integrated approaches to Crown land management will ensure healthy working landscapes for all Albertans and Indigenous Peoples now and for future generations. This includes maintenance of rangelands, including grasslands, forests, shrublands and riparian ecosystems, in the EMZs to ensure they are able to sustainably support a suite of values and/or ecological processes (i.e., biodiversity, wildlife habitat, Indigenous traditional values, recreation, timber production, mineral resource extraction, livestock grazing, feral horses). Through a collaborative approach to management, the presence of feral horses will be managed such that the landscape is sustainably shared with livestock and wildlife.



## Objectives

The following objectives will support the achievement of the vision for the long-term management of feral horses in the EMZs.

- Ecosystem integrity is maintained and enhanced over time.
- Partnerships are built and maintained to support framework implementation.
- Horses are managed within defined thresholds on the land, similar to other activities/species on the landscape, and consistent with maintaining a suite of other important ecological and socio-economic values.
- First Nations' perspectives and knowledge are considered in how horses are managed.
- Feral horse populations are monitored over time and space to track ecological sustainability.
- Decisions are science and data informed.
- Adaptive management approach used to consider changes over time.
- Wildlife, cattle/domestic livestock and feral horses are all recognized as sharing these landscapes in a manner supported by integrated resource management.
- Recognition is given to how wildlife management, cattle grazing and feral horse viewing opportunities each generate economic returns for society.
- Horse owners are educated on not releasing horses to Crown lands.
- Albertans understand why horses are managed and how they can support (i.e. donations, adoption).
- Horses are treated humanely, and their welfare is considered in decisions.

## Strategies

Six strategies will guide the actions towards achieving the vision and objectives of this management framework. These strategies will be implemented following approval of this plan, and progress will be tracked to ensure long-term management objectives for feral horses are achieved.

### **Strategy 1: Ecosystem Health and Horse Management - Utilize ecosystem-based indicators and thresholds to ensure a sustainable multi-use landscape.**

- Establish a framework for population and ecological thresholds that directs feral horse management to balance multiple use demands on the landscape.
- Establish monitoring sites for habitat use and productivity.
- Establish ecological tools and assessments to ensure ongoing sustainability.
- Limit loss of native grasslands, plant communities and applicable biodiversity.
- Restore terrestrial and aquatic habitat where degradation has occurred.

### **Strategy 2: Research - Integrate science with Indigenous knowledge and practices pertaining to feral horse management in the Eastern Slopes.**

- Build and maintain partnerships to:
  - Enhance science-based knowledge of feral horses in the Eastern Slopes, including citizen science.
  - Stay informed and where appropriate, utilize research that is occurring in Canada and other jurisdictions.
  - Work with accredited organizations to achieve common goals related to the management of feral horses due to impacts on the ecosystem.
- Support traditional Indigenous practices (i.e., ceremony, capture, trading) related to feral horses.
- Work with Indigenous communities and organizations, including completing an Indigenous knowledge assessment to gather historical knowledge of horses on the landscape to better inform their long-term management.

**Strategy 3: Education - Albertans are aware of how feral horses are managed and how the public can contribute to the successful management of feral horses.**

- Develop educational resources in collaboration with members of the Feral Horse Advisory Committee to bring awareness to feral horse management.
- Provide Albertans with scientific knowledge about Alberta's feral horses.
- Communicate key science, findings and knowledge related to feral horses with the advisory committee, other stakeholders and Albertans.
- Encourage stakeholders to make their organizations and/or members aware of the available resources and information.
- Provide awareness on the impacts and welfare concerns of illegal releases of domestic or previously captured horses, or illegal captures of feral horses.

**Strategy 4: Monitoring and Reporting - Ensure monitoring and reporting of feral horse populations, along with ecosystem indicators and wildlife populations, to inform ongoing management.**

- Continue monitoring and reporting to implement and evaluate a Feral Horse Management Framework in the EMZs.
- Monitor feral horse populations and ecosystem health using a scientifically-informed approach.
- Evaluate forage productivity and wildlife population trends over time as part of ongoing management decisions.
- Report horse populations at the EMZ level regularly to the public.
- Promote transparency by reporting feral horse management actions taken by the Department and stakeholders.

**Strategy 5: Adaptive Management - Utilize adaptive management to ensure feral horse populations and thresholds align with the capacity of the landscape.**

- Ongoing review of the framework through an adaptive management lens.
- Inform management decisions through current data, science and Indigenous knowledge, and consider the implications of cumulative effects as well as natural and anthropogenic landscape changes.
- Use current and emerging science, technology and methods in future management approaches.

**Strategy 6: Provide clarity to the public on best practices for interacting with feral horses, cattle and wildlife.**

- Educate Crown land users about public safety risks, and communicate reporting process and contacts in the event of feral horse, and other large ungulate, incidents.
- Develop and share educational materials related to public interactions with feral horses.
- Develop and share educational materials for landowners and occupants related to feral horses.

# Management Framework and Tools

Under Strategy 1, a management framework will be established to ensure ecosystem health and sustainably manage feral horse populations. The goal of the framework is to manage feral horse populations where horses can co-exist with the other managed uses, including wildlife, livestock, recreation and other land resources, to sustain ecological and biodiversity values.

## Forage Allocation System and Integration of Feral Horse

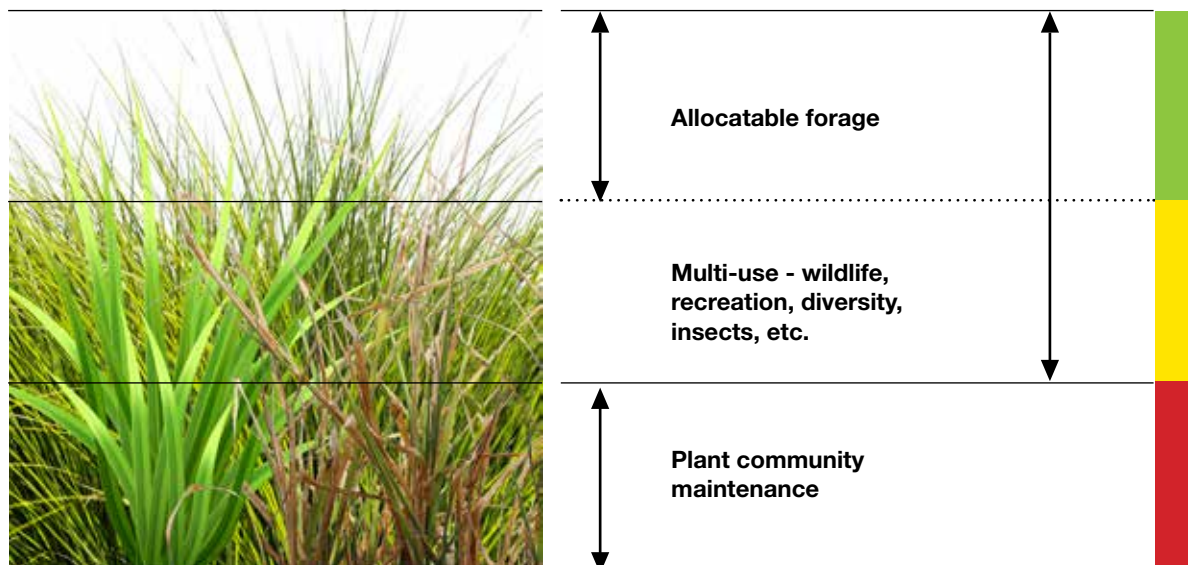
Horses are grazers with diets composed primarily of grass rather than forbs or woody plants. Livestock grazing on Crown land is managed through a long-term forage

allocation system that is monitored annually across the province. This approach divides available forage into three broad categories (Figure 4):

1. A portion set aside for natural requirements of the local plant community.
2. Larger-scale ecosystem needs for other land uses and to meet habitat and diet requirements of native species, and provide a buffer against drought, flood or other environmental influences.
3. Allocatable forage: palatable forage (i.e., grasses) that can be sustainably removed by non-native species (i.e., cattle, horses, sheep, goats) before potentially affecting ecosystem integrity or multiple use on a dynamic, shared landscape.

**FIGURE 4**

Crown land forage allocation approach. Plant community maintenance refers to the retention of plant biomass for the conservation of plant community condition, plant vigor and ecosystem health.



Figures 5 and 6 show the effects of over use on Alberta rangelands that leads to detrimental impacts to the ecosystem. This affects wildlife, endangered species, water infiltration, soil erosion, and productivity of the ecosystem, which in turn impacts many other values and resources. If the allocatable forage (Figure 4) is completely removed, further grazing may start to impede the other categories. The goal of a sustainable and healthy ecosystem is to manage the available forage overtime.

The principles of forage allocation systems will be applied to identify which horse populations are within the long-term, forage-production based capacity of the ecosystem.

**FIGURE 5**

Impacts of over use on grasslands as shown at the Stavelly Research Ranch.



**FIGURE 6**

Impacts of over grazing on forested ecosystems.

**Aspen/Rose/Tall Forb**



Healthy  
75 –100%  
Ecological function =  
no changes needed

**Aspen/Rose/Low Forb**



Healthy with Problems  
50 – 74%  
Ecological Function = warning

**Aspen/Dandelion/Kentucky Bluegrass**



Unhealthy  
< 50%  
Ecological Function = changes required

The Department has allocated resources to better understand feral horse population dynamics and develop a generalized landscape scale carrying capacity for non-wildlife grazers (cattle and feral horses). Forage availability estimations coincide with Range Plant Community guides and habitat types spatially classified across each natural sub-region of the EMZs. These estimations also capture forage provided by cutblocks, which are not typically included in the forage base available for cattle grazing due to the variable and short-lived provision of grass at these sites while they regenerate back to forest.


A forage-availability approach to setting management thresholds for feral horses is logical in a system where there is significant physical overlap between large herbivores, recreation and industry. Integrating feral horses into a busy landscape requires careful consideration to prevent degradation of Crown resources such as grasslands, wetlands and native wildlife. Such an approach is still in development, however, draft carrying capacities are provided in this plan.

**Management Framework - Feral Horse Population Status and Thresholds**

This document establishes the Feral Horse Management Framework, which is based on a three-tier (Green, Yellow, Red) classification. There are thresholds between the tiers ([Table 2](#) and [3](#)) to guide whether status indicators are trending up or down. Each EMZ will be assessed and managed individually to determine each zone’s status classification, which will inform the current state of the population and overall management intent and direction for the specific EMZ.

Established thresholds will guide when management actions are required and help ensure transparency on how feral horses will be managed on the landscape. To define the thresholds and different EMZ statuses, a combination of rangeland science, landscape ecology, feral horse population data and adaptive management have been used. Because the landscape is dynamic and knowledge continues to develop, population thresholds will be dynamic in order to be responsive to new knowledge and data. Any changes will be done in consultation with the Feral Horse Advisory Committee and other key stakeholders.

**TABLE 2**  
Feral Horse Management Framework tiers.

	<p><b>Population levels unacceptable and are not ecologically sustainable</b></p> <ul style="list-style-type: none"> <li>• Immediate management action required to reduce herd size and/or density</li> <li>• Proactive actions and humane removal of horses implemented to bring populations below Threshold 2 levels</li> </ul>
Threshold 2	
	<p><b>Population levels are a concern and could trend to ecologically unsustainable if unmanaged</b></p> <ul style="list-style-type: none"> <li>• Management actions implemented to reduce risk of exceeding Threshold 2</li> <li>• Collaborative management to address landscape concerns and/or local herd density</li> <li>• Focus on proactive actions to maintain population levels and ensure they don't continue to grow</li> </ul>
Threshold 1	
	<p><b>Horse population acceptable and ecologically sustainable</b></p> <ul style="list-style-type: none"> <li>• Monitoring</li> <li>• No active management except for welfare and public safety</li> </ul>

**Threshold 1: Sustainable (Green) to Concerned (Yellow)**

Threshold 1 ([Tables 2](#) and [3](#)) is between the Green (sustainable) to Yellow (concern) tiers. This threshold is based on the amount of the available allocatable forage that is not allocated by permit to livestock or reserved for ecosystem processes and multiple use ([Figure 4](#)). This remaining amount of forage could be grazed by feral horses without impairing the core rangeland functions of plant communities, forage allocated to livestock, the maintenance of biodiversity and wildlife, or the potential for multi-use and recreation.

Feral horse populations below this threshold will be considered ecologically sustainable and not requiring active management. The specific horse population levels for this threshold are outlined in [Table 3](#) and [Figure 7](#).

**Threshold 2: Concern (Yellow) to Unsustainable (Red)**

Threshold 2 ([Tables 2](#) and [3](#)) represents a population cap for the feral horse populations. Exceeding Threshold 2 and moving from the Yellow (concern) to Red tier (unsustainable) means exceeding key indicators of ecological sustainability in the presence of high feral horse populations.

In the Yellow tier, active management is employed to avoid moving across Threshold 2 into the Red tier. Population levels of horses approaching or at Threshold 2 are managed through actions like adoption, contraception or other programs that help maintain or reduce the herd size.

Threshold 2 is established based on a combination of four key indicators:

- Feral horse population levels and trends as per [Table 4](#)
- Assessment of ecological health
- Assessment of wildlife populations levels and trends
- Assessment of forage utilization

If one or more of these indicators trend in a negative direction, this would indicate moving into the Red tier, and additional management actions are necessary through a licensed capture and removal of horses from the EMZ. The established thresholds are outlined in [Table 3](#) and [Figure 7](#).

**TABLE 3**

Numeric table of the thresholds referred to in [Table 2](#), which separate the tiers (green, yellow, red) of EMZ status classification put forward in this framework.

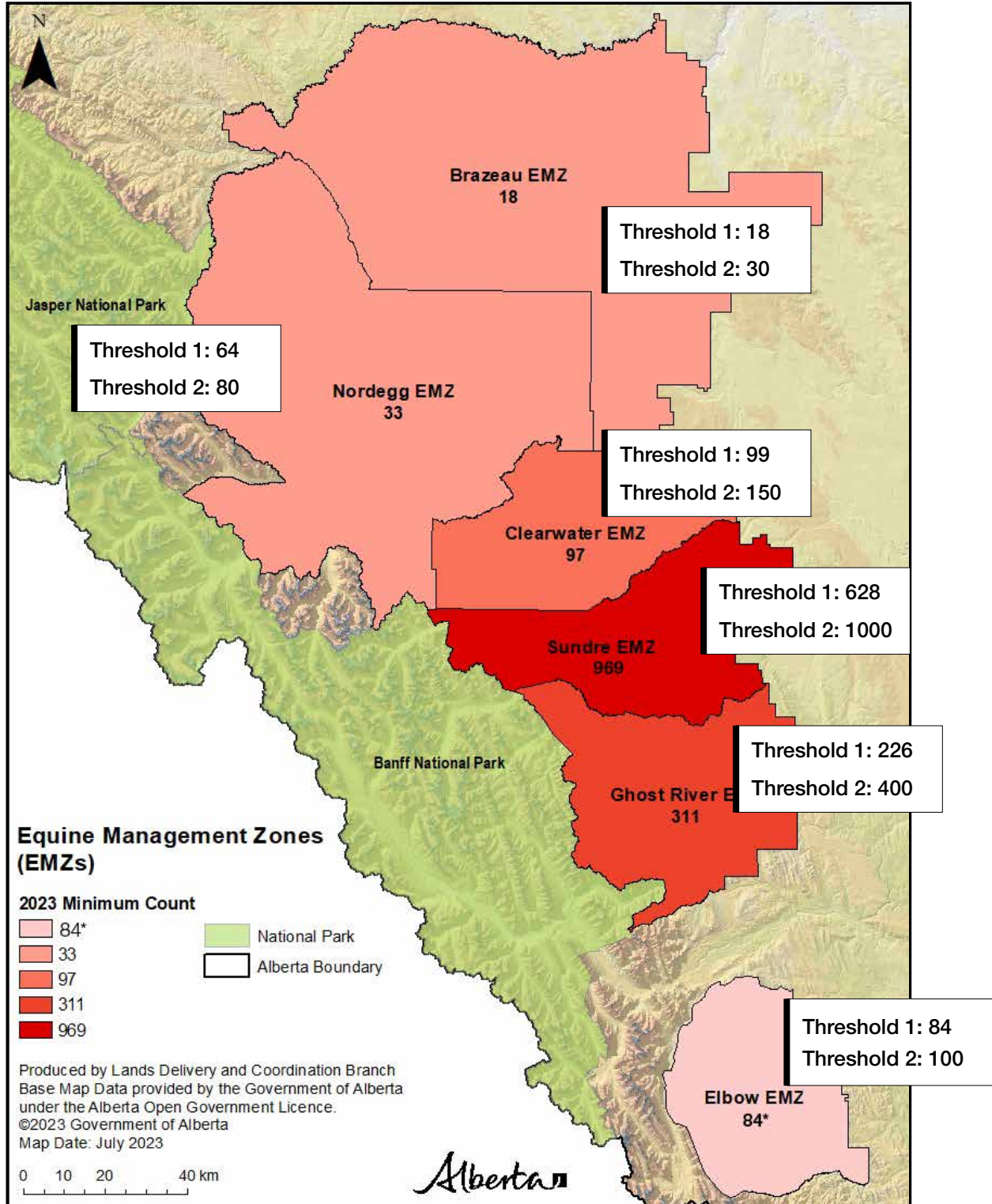
EMZ	Horse Population trigger for Threshold 1	Horse Population trigger for Threshold 2 (population cap)
Brazeau	18	30
Nordegg	64	80
Clearwater	99	150
Sundre	628	1000
Ghost	226	400
Elbow	84	100
<b>Total</b>	1119	1760



**FIGURE 7**

Map representation of the framework thresholds for each EMZ. In this map, the colouration refers to the relative horse abundance based on 2023 minimum counts.

\* indicates a count from surveys completed in 2022.



**TABLE 4**

Comparison of thresholds with minimum count results from 2023 back to 2017. “N/S” indicates a year the EMZ was not surveyed. Zeros indicate no horses were detected that year.

EMZ	Horse Population trigger for Threshold 1	Horse Population trigger for Threshold 2 (population cap)	Minimum count 2023	Minimum count 2022	Minimum count 2021	Minimum count 2019	Minimum count 2018	Minimum count 2017
Brazeau	18	30	18	N/S	0	16	8	0
Nordegg	64	80	33	20	39	114	53	36
Clearwater	99	150	97	79	118	101	143	110
Sundre	628	1000	969	642	763	981	1015	661
Ghost	226	400	311	353	313	379	371	316
Elbow	84	100	N/S	84	81	88	122	79
<b>Total</b>	1119	1760	1428	1178	1314	1679	1712	1202

A status assessment of each EMZ as per the management framework will be completed following updates on one of the four indicators, including surveys of feral horse populations, or new information related to their management.

The implementation of this management framework will direct and guide the actions to be taken by the Government of Alberta and stakeholders. Management advice will be provided by the Feral Horse Advisory Committee, and decisions will be made by the Government of Alberta based on this advice, in alignment with the management framework.

It is also acknowledged that there may be movement of horses between EMZs, and discretion and good judgement will be applied to consider the need for management action when accounting for horses moving across the boundaries.

Based on the management framework and established thresholds, the status of each EMZ will be determined by minimum population counts. Some zones classified within the Yellow tier will require active management.

## Habitat Zonation

As part of framework implementation, The Department will classify the land base within EMZs into suitability rankings similar to those used for native wildlife in Alberta. The three classes of habitat will be delineated on the landscape and are defined as:

### a. Core Feral Horse Habitat

This is the habitat and associated landscapes preferred by feral horses. Core habitat has been identified for each EMZ. Core habitat may include landscapes within a sub-basin watershed connected to the most preferred habitat. The assumption is that succession due to forest harvesting will most often result in a diverse range of successional habitat types.

### b. Secondary Feral Horse Habitat (Horse Management Buffer)

Lands that are less preferred by feral horses. Horses can be found on these landscapes, but tend not to be as abundant or widespread compared to core habitats. When horse numbers begin to increase on these lands, it suggests that horse density and pressure on core habitat is causing horses to move from core feral horse habitat.

### c. Exclusion Area

Critical sensitive wildlife habitat, ecologically sensitive lands, and disposed or patent lands where feral horses and livestock are not compatible. Feral horse populations that spend the majority of their time in areas that have been designated for exclusion will not be tolerated, and a management action will be triggered. Horses may be prioritized for removal or relocation when they have been found to reside in these exclusion areas for the majority of the year. The goal of the exclusion area is not to manage individuals but to inform decisions regarding established bands in these areas of concern.

The defined feral horse habitat areas will help guide and prioritize management actions within EMZs by stakeholders and the Government of Alberta. Metrics and data to assess population levels and densities within the EMZs can also help ensure local overpopulation is not occurring. If overpopulation is found to occur at a local scale, this would further identify priority areas for management actions.

These habitat rankings will be further defined, mapped and delineated through the implementation of the framework and will be further discussed with the Feral Horse Advisory Committee and other stakeholders for best use in the management of feral horses. This information may be used as additional input to help inform and direct priorities and management actions on the landscape.

## Implementation

A phased implementation approach will be applied to this framework. In the initial years of this plan, it is anticipated that current horse populations for each EMZ will fall in the Green and Yellow tiers. To allow for management programs to be developed and implemented in the EMZs that are deemed to be in the Yellow tier, a period of three years from the approval of the framework will be set where management approaches, such as adoption and contraception programs, can be established. This will allow for the programs to be established and their efficacy evaluated.

If populations move into the Red tier during this three-year period, licensed capture will be considered with input from the Feral Horse Advisory Committee. Other options may be considered in consultation with the advisory committee if an EMZ is undergoing population growth and/or expansion. EMZ tier status will be updated regardless of whether status change is in an upward or downward direction.

## Management Toolbox

All management practices, whether it be removal, adoption or contraception, have inherent costs, risks, benefits and challenges. The topography and vast extent of the Eastern Slopes also influences the cost and feasibility of implementing some management practices (i.e., two-dose contraception, extensive radio collaring efforts). Management costs rise with range expansion and/or population growth. Responses to these management options among stakeholder and advocacy groups are highly variable, adding to the complexity of conserving ecosystem health. This is not the first time, however, that feral horse management has occurred in Alberta. In response to ecosystem integrity concerns, First Nations have used castration of young stallions and capture to limit feral horse population growth, and the Department began authorizing the removal of feral horses during the 20th century.

In other jurisdictions, such as Australia, governments provide welfare assessments for various population control methodologies (Sharp & Saunders, 2011). Through ongoing research and work through the advisory committee, additional techniques and tools will be considered that can aid in the ongoing management of feral horses, including habitat restoration on the landscape.

## Adoption

As a first management tool, the ongoing implementation of an adoption program will continue through WHOAS and other stakeholder groups to help provide mechanisms to see suitable feral horses adopted to homes to help manage populations in the EMZs. WHOAS and other groups running adoption programs will have admittance procedures in place to monitor and ensure horse welfare, including comprehensive physical examinations and behavioural observations.

Enrolment in Alberta's [Premises Identification System](#) is encouraged in order to receive alerts about diseases such as Equine Infectious Anemia, as part of responsible livestock

ownership and biosecurity measures.

Adoption is also an important way for Albertans to participate in feral horse management. Horses rescued or identified for adoption, but are not adoptable by WHOAS or other organizations, will become the responsibility of the organization. No feral horse can be returned to the EMZs once removed.

### Unhealthy and unadoptable horses

In addition to the program measures above, regardless of management zone, there will be circumstances where feral horses are injured, unhealthy or unadoptable. In such cases, the following will be considered:

- Horse advocacy agencies will be called upon for an assessment. If the horse can be rehabilitated, the agency will be authorized through a licence to take the horse, have veterinarian treatment and then move to adoption.
- If the horse is not fit for treatment, it will be euthanized.

## Contraception

Through collaboration between academia, horse advocacy agencies and the Government of Alberta, a contraception program will be established to provide an additional management tool for managing horses on the landscape. The program will be led by a collaboration of organizations to ensure its effective delivery and support through expertise, staffing and other resources. The program will be established as part of implementation of the framework with a goal to see actions implemented as soon as the first year to manage populations in the Yellow zone. In developing the program, lessons learned from the WHOAS pilot project and the experience from other jurisdictions will be incorporated.

## Capture

The Government of Alberta administers the licensed round up and capture of horses that can then be sold at auction or kept for personal use. Administration of the capture of horses is managed by the Department.

The scope and scale of the capture may range from limited capture permits, to a larger-scale round up to bring populations under the established threshold. Any decisions around capture of horses will be discussed with the Feral Horse Advisory Committee, including effective capture methods and key populations to manage.

The Department will specify conditions that must occur during any capture, including the humane treatment of horses as outlined in the Horse Capture Regulation and how to handle horses that are not sold at auction.

Horses from Canada must have a complete [Equine Information Document](#) establishing medical history and drug use for at least six months before they are eligible to enter the food chain, if that is the buyer's intent. This is a requirement of the Canadian Food Inspection Agency.



## Management Approaches by EMZ status

Under the Green status, horse populations are deemed acceptable. The focus of implementing the framework will be routine monitoring of populations to see whether they are moving past the first threshold (Table 5). There will also be a focus on continuing to grow understanding and knowledge around horses and their dynamics on the landscape.

Under the Yellow status, the focus will be to ensure that populations are not trending upwards and management actions will be taken to maintain populations in the Yellow zone and where possible, move towards the Green status. This will be achieved through the work of feral horse advocacy organizations that will work to adopt feral horses and implement a contraception program. Other programs and initiatives may be considered as proposed by the Feral Horse Advisory Committee.

Under the Red zone, feral horse populations are deemed to be unsustainable and require intervention to lower them into the Yellow zone. This will be achieved through the Department licencing the capture of horses for the purposes of, in order of priority: 1) sale or adoption; 2) euthanasia. Euthanizing horses will only be considered as a last resort when all other options have been explored and are not viable as a means to lower the populations.

**TABLE 5**  
Key management actions associated with each management zone status classification.

Green	Yellow	Red
Monitoring	Contraception program Adoption program Monitoring	Licensed Capture Sale of horses Other measures as necessary
Research, Science Education Improving Indigenous Knowledge Management of horses for humane purposes (diseased or injured horses)		

## Population Monitoring

Feral horse population monitoring in Alberta formally began in 1993 based on minimum count surveys. Minimum counts are an artifact of prior Government of Alberta decision making processes for feral horse management.

Between 2013 and 2016, the Sundre, Ghost and Elbow Horse Capture Areas were surveyed consistently for minimum counts to focus on areas of the highest known concentration of feral horses. Since 2016, minimum count surveys were completed in all six EMZs, with the exception of 2020, due to COVID-19 limitations. Previously, the removal of horses occurred annually unless the minimum count number, derived from surveying a handful of known preferred habitats, fell below 200 feral horses. Minimum counts were used to confirm that the population was not rapidly decreasing during permitted, ongoing removals. Now the demands for counts have changed, and the length of minimum count surveys has grown to include more terrain and other habitat types. With increased overall minimum populations again towards the end of the 2010s, the objective for the survey methodologies is not just to get a minimum number, but to understand how the population is changing. This information helps resource managers as they consider the various demands in the Eastern Slopes, landscape change, and effective long-term feral horse management. These new demands of counts led the Department to add a new count methodology, distance sampling, to supplement minimum counts in select EMZs.

The Department, in collaboration with academia and the Office of the Chief Scientist, will implement the best methods for monitoring populations. Work will also look at alternative, cost-effective methods for population surveying to take advantage of technical advances. These techniques may include advances with artificial intelligence or thermal sensors from aircraft.

Aerial monitoring of horse population will occur at a minimum frequency of:

- Every year for populations in the Red tier
- Every two years for populations in the Yellow tier
- Every two years for populations in the Green tier

In the future, the Department aims to transition to other scientifically-sound methodologies, such as distance sampling, to provide a more consistent and repeatable methods for estimating the total population. Minimum counts may still be used periodically, when necessary.

There are three key reasons to continue to monitor feral horse populations in the EMZs, regardless of perceived population trends:

1. Acquire information and understanding of whether the feral horse population has shifted in numbers and/or geographic distribution. This will enable the Department to share information with other land use managers and users who are monitoring their own land use productivity and impacts. In addition, this data supports collaboration between Departments.
2. Strategic long-term data collection is helpful in analyzing management efficacy and long-term effects.
3. Supplement historical records of removals and anecdotal population estimates, which are important to inform future management actions.

In the future, flexibility with sampling methods and intervals may be applied to maximize available data sources and make effective use of resources while gaining insights on changes to feral horse abundance and distribution, including:

- Optimization of distance sampling survey configuration and/or distance surveys in new areas as key components for monitoring in high density areas.
- Minimum counts for populations that are too low to conduct a statistically rigorous distance sampling survey and/or in areas that we are concerned with evaluating site-based impacts or monitoring management actions (i.e., habitat degradation, habitat enhancement or horse removal).
- Consideration of other methods (i.e., camera traps, thermal imaging) and/or adjustments to monitoring intervals, as appropriate, in the pursuit of effective and sustainable large-scale efforts.

All monitoring data will be reported to the Feral Horse Advisory Committee and posted publicly on Alberta.ca. Wildlife surveys will be conducted concurrently where feasible.

## Ecosystem Health

Range, forest and riparian health are indicators that play an important role in monitoring long-term ecological trends; however, other tools will also need to be employed to effectively evaluate grazing impacts at a local scale.

Options include forage cages, or seasonal exclosures - they exclude grazing from an area in order to monitor the site's production in the absence of grazing. Forage cages could be established in key areas, particularly before the cattle-grazing season starts, to demonstrate a site's potential compared to its grazing surroundings. Similar approaches have existed for decades to monitor rangelands in Alberta, and additional strategic sites would enhance the current reference area monitoring program. Ecosystem health will be monitored in the EMZs, especially in areas where feral horse population densities are a concern.

## Feral Horse Advisory Committee

The Feral Horse Advisory Committee will be transitioned to an implementation committee that will meet at least once per year. All actions, monitoring and reporting will be reviewed by the committee. The goal is to ensure there is transparency, information exchange and the opportunity for collaboration on the ongoing management of feral horses on the landscape.



## Communication

Through the Feral Horse Advisory Committee, a joint communication/education plan will be developed (i.e., key messages, information, fact sheets) that committee members can use to share with their stakeholders and the public at large.

In addition, Forestry and Parks will also ensure:

- Website: both the Feral Horse Management Page ([Feral horse management | Alberta.ca](#)) and the Feral Horse Advisory Committee page ([Feral Horse Advisory Committee | Alberta.ca](#)) will be kept current to improve transparency and share knowledge, updates and advisory committee activities with the public.
- OCS publications: The background documents produced by the Office of the Chief Scientist will be circulated among advisory committee stakeholders for sharing with their respective organizations and members to establish a scientific base for the framework development and decision making processes. A literature review summary, which contains the titles and abstracts of journal articles, is also available to advisory committee members and is regularly updated by the OCS to capture new scientific publications. This document brings awareness to scientific research that may help with advisory committee activities and provides stakeholders opportunities to request full versions of articles they may otherwise be unable to access without paid journal access.





## Future Recommendations

Those recommendations from the Feral Horse Advisory Committee that were not within the scope of this management framework, but were captured for future consideration by government and stakeholders, are as follows:

- Cumulative effects and landscape-level concerns was a continued theme heard through the advisory committee and the need for integrated management of all landscape activities to ensure that landscape/watershed goals are achieved. The need for ongoing regional and sub-regional planning and implementation of programs that manage activities towards the broader landscape objectives (e.g., forest management, recreation management, wildlife management) was emphasized.
- Consideration be given to renaming feral horses to an alternative name such as Alberta Mountain Horse, Alberta Free Roaming Horse or Alberta Wild Horse. Such naming may be considered by stakeholders; however, for the purposes of legislation/regulations, the term feral horses will continue to be used by the government until the *Stray Animals Act* and Horse Capture Regulation are updated.
- Consideration be given to update and clarify the legislation/regulations pertaining to the management of feral horse. Such consideration should be given when the *Stray Animals Act* and the Horse Capture Regulation undergo legislative review.





## Acronym Glossary

ACIMS: Alberta Conservation Information Management System

EMZs: Equine Management Zones

GPS: Global positioning system

LIS: Livestock Investigation Services

MOU: Memorandum of Understanding

OCS: Office of the Chief Scientist

PZP: Porcine Zona Pellucida

RCMP: Royal Canadian Mounted Police

WHOAS: Wild Horses of Alberta Society

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# Appendices

## Appendix 1 – Feral Horse Advisory Committee

Membership and Terms of Reference:

[Feral Horse Advisory Committee](#)

[Feral Horse Advisory Committee Terms of Reference \(alberta.ca\)](#)

## Appendix 2 – ACIMS observations within the EMZs

Common Name	Latin name	Category	Sensitivity
a button lichen	Buellia badia	Fungus	S1
Arctic Bryum Moss	Ptychostomum arcticum	Nonvascular Plant	S1
Caribou - Central Mountain Population	Rangifer tarandus pop. 18	Vertebrate Animal	S1
Cordilleran Stygobromid	Stygobromus secundus	Invertebrate Animal	S1
Desert Vagabond Lichen	Circinaria hispida	Fungus	S1
Dwarf Arctic Groundsel	Packera cymbalaria	Vascular Plant	S1
Large Dry Rock Moss	Grimmia elatior	Nonvascular Plant	S1
Lustrous Bow Moss	Lescuraea saxicola	Nonvascular Plant	S1
Macoun's Cinquefoil	Potentilla macounii	Vascular Plant	S1
Mountain Mare's-tail	Hippuris montana	Vascular Plant	S1
mountain rough fescue - tufted hair grass meadow	Festuca campestris - Deschampsia caespitosa meadow	Local Terrestrial Community Classification	S1
northern wheat grass - dragonwort - pasture sagewort grassland	Elymus lanceolatus - Artemisia dracuncululus - Artemisia frigida grassland	Local Terrestrial Community Classification	S1
northern wheat grass - slender wheat grass grassland	Elymus lanceolatus - Elymus trachycaulus grassland	Local Terrestrial Community Classification	S1
northern wheat grass - small-leaved everlasting grassland	Elymus lanceolatus - Antennaria parvifolia grassland	Local Terrestrial Community Classification	S1
Round-nerved Grimmia Moss	Grimmia teretinervis	Nonvascular Plant	S1
Schleicher's Bryum Moss	Ptychostomum schleicheri	Nonvascular Plant	S1
Sieve-tooth Moss	Coscinodon cribrosus	Nonvascular Plant	S1
Soft Cinquefoil	Potentilla pulcherrima	Vascular Plant	S1
Splachnoid Trumpet Moss	Tayloria splachnoides	Nonvascular Plant	S1
western wheat grass - one-flowered ironplant sparse vegetation	Pascopyrum smithii - Pyrrocoma uniflora sparse vegetation	Local Terrestrial Community Classification	S1
Humble Pixie-cup Lichen	Cladonia humilis	Fungus	S1?
Small Map Lichen	Rhizocarpon pusillum	Fungus	S1?
Blackberry Scale Lichen	Psora globifera	Fungus	S1S2

Black-eyed Rosette Lichen	<i>Physcia phaea</i>	Fungus	S1S2
Brain Scale Lichen	<i>Psora cerebriformis</i>	Fungus	S1S2
Desert Rockscab Lichen	<i>Glypholecia scabra</i>	Fungus	S1S2
Donn's Grimmia Moss	<i>Grimmia donniana</i>	Nonvascular Plant	S1S2
Lake Sturgeon	<i>Acipenser fulvescens</i>	Vertebrate Animal	S1S2
Nevada Curl Moss	<i>Homalothecium nevadense</i>	Nonvascular Plant	S1S2
Northern Ragged Moss	<i>Brachythecium frigidum</i>	Nonvascular Plant	S1S2
Ontario Rose Moss	<i>Rhodobryum ontariense</i>	Nonvascular Plant	S1S2
Purple Braya	<i>Braya glabella</i> ssp. <i>purpurascens</i>	Vascular Plant	S1S2
Rugged Dung Moss	<i>Splachnum vasculosum</i>	Nonvascular Plant	S1S2
Spearleaf Thread Moss	<i>Ptychostomum lonchocaulon</i>	Nonvascular Plant	S1S2
Thicket Hairstreak	<i>Callophrys spinetorum</i>	Invertebrate Animal	S1S2
Waterside Rockshag Lichen	<i>Ephebe lanata</i>	Fungus	S1S2
Willow Feather Moss	<i>Hygroamblystegium varium</i> var. <i>varium</i>	Nonvascular Plant	S1S2
a stubble lichen	<i>Chaenotheca chrysocephala</i>	Fungus	S1S3
Fragile Broom Moss	<i>Dicranum tauricum</i>	Nonvascular Plant	S1S3
Red Dung Moss	<i>Splachnum rubrum</i>	Nonvascular Plant	S1S3
	<i>Elymus lanceolatus</i> - <i>Hesperostipa comata</i> grassland	Local Terrestrial Community Classification	S2
Andrew's Leafy Moss	<i>Rhizomnium andrewsianum</i>	Nonvascular Plant	S2
Appressed Jellyskin Lichen	<i>Scytinium subtile</i>	Fungus	S2
Bloody-heart Lichen	<i>Mycoblastus sanguinarius</i>	Fungus	S2
Blunt Extinguisher Moss	<i>Encalypta mutica</i>	Nonvascular Plant	S2
Branched Pixie-cup Lichen	<i>Cladonia ramulosa</i>	Fungus	S2
Broad-lip Twayblade	<i>Listera convallarioides</i>	Vascular Plant	S2
Bulbous Woodland-star	<i>Lithophragma glabrum</i>	Vascular Plant	S2
Bull Trout	<i>Salvelinus confluentus</i>	Vertebrate Animal	S2
Columbian Sedge	<i>Carex aperta</i>	Vascular Plant	S2
Fineleaf Erect-capsule Moss	<i>Orthothecium intricatum</i>	Nonvascular Plant	S2
Fragrant Cliff Woodfern	<i>Dryopteris fragrans</i>	Vascular Plant	S2
Gastony's Cliffbrake	<i>Pellaea gastonyi</i>	Vascular Plant	S2
Gillette's Checkerspot	<i>Euphydryas gillettii</i>	Invertebrate Animal	S2
Glandular Limestone Willow	<i>Salix calcicola</i> var. <i>glandulosior</i>	Vascular Plant	S2
Greenland Primrose	<i>Primula egaliksensis</i>	Vascular Plant	S2
Hanging Fringed Lichen	<i>Anaptychia crinalis</i>	Fungus	S2
Lake Louise Arnica	<i>Arnica louiseana</i>	Vascular Plant	S2
Lapland Azalea	<i>Rhododendron lapponicum</i>	Vascular Plant	S2
Lapland Reedgrass	<i>Calamagrostis lapponica</i>	Vascular Plant	S2

limber pine / common bearberry - creeping juniper woodland	<i>Pinus flexilis</i> / <i>Arctostaphylos uva ursi</i> - <i>Juniperus horizontalis</i> woodland	Local Terrestrial Community Classification	S2
Little Copper	<i>Lycaena phlaeas</i>	Invertebrate Animal	S2
Longleaf Arnica	<i>Arnica longifolia</i>	Vascular Plant	S2
Low Sandwort	<i>Arenaria longipedunculata</i>	Vascular Plant	S2
McCalla's Braya	<i>Braya humilis</i> ssp. <i>maccallae</i>	Vascular Plant	S2
Meadow Pussytoes	<i>Antennaria corymbosa</i>	Vascular Plant	S2
Narrow-flower Bluegrass	<i>Poa stenantha</i>	Vascular Plant	S2
Net-veined Willow	<i>Salix reticulata</i>	Vascular Plant	S2
Northwestern Groundsel	<i>Packera contermina</i>	Vascular Plant	S2
Pacific Butterfingers Lichen	<i>Dactylina beringica</i>	Fungus	S2
Payson's Whitlow-grass	<i>Draba paysonii</i> var. <i>treleasii</i>	Vascular Plant	S2
Rau's Long-awn Moss	<i>Jaffuelobryum raui</i>	Nonvascular Plant	S2
Reptilian Pixie-cup Lichen	<i>Cladonia straminea</i>	Fungus	S2
Ribbed Candlesnuffer Moss	<i>Encalypta rhaptocarpa</i>	Nonvascular Plant	S2
Rocky Mountain Willowherb	<i>Epilobium saximontanum</i>	Vascular Plant	S2
Running Fleabane	<i>Erigeron flagellaris</i>	Vascular Plant	S2
Rusty Woodrush	<i>Luzula rufescens</i> var. <i>rufescens</i>	Vascular Plant	S2
Simple Cliffbrake	<i>Pellaea glabella</i> ssp. <i>simplex</i>	Vascular Plant	S2
Slender Silver Moss	<i>Anomobryum julaceum</i>	Nonvascular Plant	S2
Smooth Woodsia	<i>Woodsia glabella</i>	Vascular Plant	S2
Spider Saxifrage	<i>Saxifraga flagellaris</i> ssp. <i>setigera</i>	Vascular Plant	S2
Western Dwarf Cliffbrake	<i>Pellaea glabella</i> ssp. <i>occidentalis</i>	Vascular Plant	S2
Western Larch	<i>Larix occidentalis</i>	Vascular Plant	S2
Western Red-cedar	<i>Thuja plicata</i>	Vascular Plant	S2
Western White Pine	<i>Pinus monticola</i>	Vascular Plant	S2
Westslope Cutthroat Trout	<i>Oncorhynchus clarkii lewisi</i>	Vertebrate Animal	S2
White Cuckoo Bittercress	<i>Cardamine dentata</i>	Vascular Plant	S2
Wind River Whitlow-grass	<i>Draba ventosa</i>	Vascular Plant	S2
Brownish Monk's-hood Lichen	<i>Hypogymnia vittata</i>	Fungus	S2?
Davis' Locoweed	<i>Oxytropis campestris</i> var. <i>davisii</i>	Vascular Plant	S2?
Awl-leaf Forklet Moss	<i>Dicranella subulata</i>	Nonvascular Plant	S2S3
Bent-foot Bristle Moss	<i>Seligeria campylopora</i>	Nonvascular Plant	S2S3
Birdnest Jellyskin Lichen	<i>Scytinium tenuissimum</i>	Fungus	S2S3
Bog Apple Moss	<i>Philonotis marchica</i>	Nonvascular Plant	S2S3
bog birch / mountain rough fescue shrubland	<i>Betula glandulosa</i> / <i>Festuca campestris</i> shrubland	Local Terrestrial Community Classification	S2S3
Boreal Wormwood	<i>Artemisia borealis</i> ssp. <i>borealis</i>	Vascular Plant	S2S3
Britton's Moss	<i>Bryobrittonia longipes</i>	Nonvascular Plant	S2S3

Brown-eyed Scale Lichen	<i>Psora tuckermanii</i>	Fungus	S2S3
Brown-eyed Sunshine Lichen	<i>Vulpicida canadensis</i>	Fungus	S2S3
Budding Tube Lichen	<i>Hypogymnia enteromorpha</i>	Fungus	S2S3
Butterfly Scale Lichen	<i>Psora nipponica</i>	Fungus	S2S3
Compact Moss	<i>Anoetangium aestivum</i>	Nonvascular Plant	S2S3
Confusing Broom Moss	<i>Dicranum spadiceum</i>	Nonvascular Plant	S2S3
Curl-leaf Forklet Moss	<i>Dicranella crispa</i>	Nonvascular Plant	S2S3
Dimpled Jellyskin Lichen	<i>Leptogium pseudofurfuraceum</i>	Fungus	S2S3
Donn's Bristle Moss	<i>Seligeria donniana</i>	Nonvascular Plant	S2S3
Dwarf Mousetail Moss	<i>Myurella tenerrima</i>	Nonvascular Plant	S2S3
False Beard Moss	<i>Didymodon fallax</i>	Nonvascular Plant	S2S3
Hairy Dogtooth Moss	<i>Cynodontium schisti</i>	Nonvascular Plant	S2S3
Inland Mountain Beard Moss	<i>Didymodon subandreaeoides</i>	Nonvascular Plant	S2S3
Lanceleaf Claw Moss	<i>Dichelyma falcatum</i>	Nonvascular Plant	S2S3
Largeleaf Pocket Moss	<i>Fissidens grandifrons</i>	Nonvascular Plant	S2S3
Little Groove Moss	<i>Aulacomnium androgynum</i>	Nonvascular Plant	S2S3
Long-stalked Thread Moss	<i>Meesia longiseta</i>	Nonvascular Plant	S2S3
Mountain Notchwort	<i>Tritomaria scitula</i>	Nonvascular Plant	S2S3
mountain rough fescue - hairy wild rye meadow	<i>Festuca campestris</i> - <i>Leymus innovatus</i> meadow	Local Terrestrial Community Classification	S2S3
Muehlenbeck's Thread Moss	<i>Imbricbryum muehlenbeckii</i>	Nonvascular Plant	S2S3
Northern Leopard Frog	<i>Lithobates pipiens</i>	Vertebrate Animal	S2S3
Norwegian Timmia	<i>Timmia norvegica</i> var. <i>norvegica</i>	Nonvascular Plant	S2S3
Olive Beard Moss	<i>Didymodon tophaceus</i>	Nonvascular Plant	S2S3
Oval Chalk Moss	<i>Pterygoneurum ovatum</i>	Nonvascular Plant	S2S3
Powder-headed Shadow Lichen	<i>Phaeophyscia nigricans</i>	Fungus	S2S3
Rose-petalled Jellyskin Lichen	<i>Scytinium gelatinosum</i>	Fungus	S2S3
Roundleaf Bryum Moss	<i>Ptychostomum cyclophyllum</i>	Nonvascular Plant	S2S3
Serrate Trumpet Moss	<i>Tayloria serrata</i>	Nonvascular Plant	S2S3
Shiny Erect-capsule Moss	<i>Orthothecium strictum</i>	Nonvascular Plant	S2S3
Spathulate Candlesnuffer Moss	<i>Encalypta spathulata</i>	Nonvascular Plant	S2S3
Top-shaped Thread Moss	<i>Ptychostomum turbinatum</i>	Nonvascular Plant	S2S3
Tree Pelt Lichen	<i>Peltigera collina</i>	Fungus	S2S3
Tundra Plait Moss	<i>Hypnum procerrimum</i>	Nonvascular Plant	S2S3
White-mouthed Extinguisher Moss	<i>Encalypta brevicollis</i>	Nonvascular Plant	S2S3
Wispy Leske's Moss	<i>Pseudoleskeella rupestris</i>	Nonvascular Plant	S2S3
Yellow Collar Stubble Lichen	<i>Calicium trabinellum</i>	Fungus	S2S3
Hooded Merganser	<i>Lophodytes cucullatus</i>	Vertebrate Animal	S2S3B
Peregrine Falcon	<i>Falco peregrinus</i>	Vertebrate Animal	S2S3B
a lichen	<i>Mycocalicium subtile</i>	Fungus	S2S4

a sunken disk lichen	<i>Aspicilia supertegens</i>	Fungus	S2S4
Brown Cobblestone Lichen	<i>Acarospora fuscata</i>	Fungus	S2S4
Desert Firedot Lichen	<i>Xanthomendoza trachyphylla</i>	Fungus	S2S4
Glaucous-headed Earwort	<i>Scapania glaucocephala</i> var. <i>glaucocephala</i>	Nonvascular Plant	S2S4
Mealy Firedot Lichen	<i>Flavoplaca citrina</i>	Fungus	S2S4
Arctic Bladderpod	<i>Lesquerella arctica</i>	Vascular Plant	S3
Aromatic Pussytoes	<i>Antennaria aromatica</i>	Vascular Plant	S3
Astarte Fritillary	<i>Boloria astarte</i>	Invertebrate Animal	S3
Bare-bottomed Sunburst Lichen	<i>Xanthomendoza fulva</i>	Fungus	S3
Brown Bear	<i>Ursus arctos</i>	Vertebrate Animal	S3
Crescent Frost Lichen	<i>Physconia perisidiosa</i>	Fungus	S3
Dark Shadow Lichen	<i>Phaeophyscia sciastra</i>	Fungus	S3
Deadman's Camouflage Lichen	<i>Melanohalea subelegantula</i>	Fungus	S3
Fan Ramalina	<i>Ramalina sinensis</i>	Fungus	S3
Figleaf Pixie Lichen	<i>Cladonia macrophylla</i>	Fungus	S3
Intermediate Cartilage Lichen	<i>Ramalina intermedia</i>	Fungus	S3
Limber Pine	<i>Pinus flexilis</i>	Vascular Plant	S3
Long-stalked Fine Wet Moss	<i>Pseudocampyllum radicale</i>	Nonvascular Plant	S3
Macoun's Whitlow-grass	<i>Draba macounii</i>	Vascular Plant	S3
Minnehaha Blue	<i>Icaricia shasta minnehaha</i>	Invertebrate Animal	S3
Mountain Bladderfern	<i>Cystopteris montana</i>	Vascular Plant	S3
Old-Growth Clam Lichen	<i>Xylopsora friesii</i>	Fungus	S3
Pacific Oak Fern	<i>Gymnocarpium disjunctum</i>	Vascular Plant	S3
Poplar Sunburst Lichen	<i>Xanthomendoza hasseana</i>	Fungus	S3
Porsild's Whitlow-grass	<i>Draba porsildii</i>	Vascular Plant	S3
Quilted Stippleback Lichen	<i>Dermatocarpon intestiniforme</i>	Fungus	S3
Sagebrush Buttercup	<i>Ranunculus glaberrimus</i> var. <i>ellipticus</i>	Vascular Plant	S3
Short-tooth Hump Moss	<i>Amblyodon dealbatus</i>	Nonvascular Plant	S3
Snow Foam Lichen	<i>Stereocaulon rivulorum</i>	Fungus	S3
Spoon-leaf Moonwort	<i>Botrychium spathulatum</i>	Vascular Plant	S3
Tall Blue Lettuce	<i>Lactuca biennis</i>	Vascular Plant	S3
Taprooted Fleabane	<i>Erigeron radicans</i>	Vascular Plant	S3
Three-lobed Fleabane	<i>Erigeron trifidus</i>	Vascular Plant	S3
Upward-lobed Moonwort	<i>Botrychium ascendens</i>	Vascular Plant	S3
Whitebark Pine	<i>Pinus albicaulis</i>	Vascular Plant	S3
Harlequin Duck	<i>Histrionicus</i>	Vertebrate Animal	S3B
Crimson-ringed Whiteface	<i>Leucorrhinia glacialis</i>	Invertebrate Animal	S3S4
Whitehouse's Emerald	<i>Somatochlora whitehousei</i>	Invertebrate Animal	S3S4



Yellow-spored Firedot Lichen	<i>Bryoplaca sinapisperma</i>	Fungus	S3S4
Waterbird Colony	Waterbird Colony	Animal Assemblage	S3S4B
Red Threadwort	<i>Cephaloziella rubella</i>	Nonvascular Plant	S4
Long-bearded Jellyskin Lichen	<i>Leptogium burnetiae</i>	Fungus	SNA
a button lichen	<i>Buellia concinna</i>	Fungus	SU
a button lichen	<i>Buellia dispersa</i>	Fungus	SU
a dot lichen	<i>Protoblastenia incrustans</i>	Fungus	SU
a lichen	<i>Lecidea umbonata</i>	Fungus	SU
a lichen	<i>Lecidea lithophila</i>	Fungus	SU
a lichen	<i>Thelidium decipiens</i>	Fungus	SU
a lichen	<i>Gyalidea asteriscus</i>	Fungus	SU
a lichen	<i>Bryonora castanea</i>	Fungus	SU
a lichen	<i>Chaenotheca stemonea</i>	Fungus	SU
a lichen	<i>Aspicilia pergibbosa</i>	Fungus	SU
a map lichen	<i>Rhizocarpon superficiale</i> ssp. boreale	Fungus	SU
a notchwort	<i>Lophoziaopsis pellucida</i>	Nonvascular Plant	SU
a rim lichen	<i>Lecanora subintricata</i>	Fungus	SU
a rock pimple lichen	<i>Staurothele areolata</i>	Fungus	SU
a speck lichen	<i>Verrucaria hydrela</i>	Fungus	SU
a speck lichen	<i>Verrucaria aethiobola</i>	Fungus	SU
a stubble lichen	<i>Chaenotheca trichialis</i>	Fungus	SU
a sunken disk lichen	<i>Aspicilia anseris</i>	Fungus	SU
a tile lichen	<i>Lecidea plana</i>	Fungus	SU
alpine grimmia moss	<i>Grimmia tenerrima</i>	Nonvascular Plant	SU
Arctic Oakmoss Lichen	<i>Evernia perfragilis</i>	Fungus	SU
Assimilative Dot Lichen	<i>Micarea assimilata</i>	Fungus	SU
Binstead's Pawwort	<i>Neoorthocaulis binsteadii</i>	Nonvascular Plant	SU
Black Woodscript Lichen	<i>Xylographa parallela</i>	Fungus	SU
Brown Pepper-spore Lichen	<i>Rinodina archaea</i>	Fungus	SU
Collared Notchwort	<i>Mesoptychia collaris</i>	Nonvascular Plant	SU
Concentric Map Lichen	<i>Rhizocarpon concentricum</i>	Fungus	SU
Cosson's Hook Moss	<i>Scorpidium cossonii</i>	Nonvascular Plant	SU
Creeping Ancyloid	<i>Ferrissia rivularis</i>	Invertebrate Animal	SU
Cupped Soot Lichen	<i>Acolium inquinans</i>	Fungus	SU
Curly Jellyskin Lichen	<i>Scytinium teretiusculum</i>	Fungus	SU
Dark-green Flapwort	<i>Jungermannia atrovirens</i>	Nonvascular Plant	SU
Dust Lichen	<i>Lepraria incana</i>	Fungus	SU
Epigeal Clot Lichen	<i>Thrombium epigaeum</i>	Fungus	SU
Fendler's Brachythecium Moss	<i>Brachytheciastrum fendleri</i>	Nonvascular Plant	SU

Fragrant Macewort	<i>Mannia fragrans</i> ssp. <i>fragrans</i>	Nonvascular Plant	SU
Gillman's Notchwort	<i>Mesoptychia gillmanii</i>	Nonvascular Plant	SU
Gypsum Earthscale Lichen	<i>Gypsoplaca macrophylla</i>	Fungus	SU
Horned Notchwort	<i>Lophozioopsis longidens</i>	Nonvascular Plant	SU
Irish Ruffwort	<i>Moerckia hibernica</i>	Nonvascular Plant	SU
Jagged Germanderwort	<i>Riccardia chamedryfolia</i>	Nonvascular Plant	SU
Jellyskin Lichen	<i>Leptogium hirsutum</i>	Fungus	SU
Kindred Blood Lichen	<i>Mycoblastus affinis</i>	Fungus	SU
Longleaf Hook Moss	<i>Drepanocladus longifolius</i>	Nonvascular Plant	SU
Michaux's Notchwort	<i>Anastrophyllum michauxii</i>	Nonvascular Plant	SU
Orange Dot Lichen	<i>Protoblastenia rupestris</i>	Fungus	SU
Purple-lobed Notchwort	<i>Schistochilopsis grandiretis</i> ssp. <i>grandiretis</i>	Nonvascular Plant	SU
Red-fruited Pox Lichen	<i>Varicellaria rhodocarpa</i>	Fungus	SU
Ring Pellia	<i>Pellia neesiana</i>	Nonvascular Plant	SU
Scrambled Egg Lichen	<i>Gyalolechia fulgens</i>	Fungus	SU
Shortleaf Spear Moss	<i>Pseudocalliergon brevifolium</i>	Nonvascular Plant	SU
Small Clam Lichen	<i>Carbonicola anthracophila</i>	Fungus	SU
Snowy Map Lichen	<i>Rhizocarpon chioneum</i>	Fungus	SU
Sommerfelt's Pore Lichen	<i>Pertusaria sommerfeltii</i>	Fungus	SU
Spoke Pepper-spore Lichen	<i>Rinodina exigua</i>	Fungus	SU
Turgid Dot Lichen	<i>Lecidea turgidula</i>	Fungus	SU
Villous Cinquefoil	<i>Potentilla villosa</i>	Vascular Plant	SU
Warty Beard Lichen	<i>Usnea ceratina</i>	Fungus	SU
White-spotted Woodscript Lichen	<i>Xylographa vitiligo</i>	Fungus	SU



*Alberta* 