WILDLIFE IN BRITISH COLUMBIA AT RISK

Wood Bison

Once extirpated from the province, this threatened subspecies has been reintroduced to British Columbia.

BRITISH COLUMBIA
Ministry of Water, Land and Air Protection

Why are Wood Bison at risk?

At the time of European colonization in the early 1800s, the historic range of the Wood Bison *(Bison bison athabascae)* is thought to have encompassed northern Alberta, southwestern Northwest Territories, northeastern British Columbia and a small portion of northwestern Saskatchewan. Recent scientific evidence and oral history accounts indicate that most of the previously defined prehistoric range, including northwestern British Columbia, Alaska and the Yukon, should be considered historic Wood Bison range. In the early 1800s, an estimated 168 000 Wood Bison occurred over this large portion of the western boreal forest in Canada, although they were unevenly distributed and never as numerous as the millions of Plains Bison further south.

Wood Bison declined rapidly after 1860, reaching a low of approximately 250 between 1896 and 1900. In British Columbia, the last Wood Bison was shot near Fort St. John in 1906. After the North West Mounted Police were given responsibility for enforcing the *Buffalo Protection Act* in 1897, and began formal patrols in 1907, Wood Bison populations began to recover. By the time Wood Buffalo National Park was established in 1922, numbers in northern Alberta and the Northwest Territories had increased to 1500 to 2000.

Between 1925 and 1928, more than 6000 Plains Bison *(Bison bison bison)* were barged to Wood Buffalo National Park to relieve crowded conditions at Buffalo Park, Alberta. These animals hybridized with, and introduced infectious livestock diseases to, the Wood Bison subspecies. Tuberculosis and brucellosis continue to affect Wood Bison herds in and around Wood Buffalo National Park and present a major obstruction to their recovery.

Tuberculosis and brucellosis are chronic bacterial diseases. Tuberculosis usually produces abscesses in the lungs that impair breathing. This debilitating disease causes loss of condition and predisposes weakened animals to predation. Brucellosis usually affects the reproductive organs, causing sterility, abortions or weak calves, or infects leg joints, causing lameness. It is believed that these diseases are at least partially responsible for the decline of Wood Bison in Wood Buffalo National Park. Anthrax is another bacterial disease seen periodically in herds in the Wood Buffalo National Park area. Outbreaks, often in the summer, usually leave a number of bison dead. Anthrax bacteria form spores that can survive for years in soil or water. Tuberculosis, brucellosis and anthrax can be transmitted to humans.

Also known as buffalo, bison are the largest wild land animals in North America.

None of these diseases have been identified in Wood Bison herds in British Columbia. However, since the bison populations of British Columbia, Alberta and the Northwest Territories are actually or potentially connected, there is a risk that such infectious diseases may reach British Columbia bison.

Certain land uses greatly impact Wood Bison recovery programs. Bison can be aggressive towards humans and are rarely tolerated near settlements. Agricultural cultivation of historical range is more of a threat because of the large areas involved. Farming in the Fort St. John and Fort Nelson areas and continuing expansion of agriculture in the north has and will continue to reduce access to former bison habitat. Other land uses, including industrial development, may also have negative impacts on the availability of bison habitat.

The bison game farming industry also limits the amount of land available for free-ranging Wood Bison. Today, most of the 75 000 commercial bison in North America are managed as livestock behind fencing, and bison farming is an established agricultural industry. Commercial bison farms or ranches may not be a significant concern to recovery programs for wild bison, providing operations are well managed and distant from recovering wild populations. Some infectious livestock diseases, if present in ranched animals, may spread to wild populations by contact through fences, or from animals entering from the wild or escaping. Escapes of commercial bison can affect the genetic make-up of wild populations, since bison on ranches are usually bred for commercial purposes. Bison are difficult animals to keep behind fences because of their size and strength. Unfortunately, some escapes of commercial bison in British Columbia have occurred with mixing and possible interbreeding with free-ranging Wood Bison. Appropriate farm locations, good husbandry, management and maintenance of appropriate fencing can decrease the potential impacts of bison ranching on wild herds.

The Pink Mountain herd of Plains Bison is another management concern. Introduced within the former range of Wood Bison in 1971, this herd, currently estimated at 1400, has increased its range and numbers, mostly over the past 15 years. They are largely confined to grassy meadows in the upper Sikanni Chief River and Halfway River valleys.

Predation is an important part of the process of natural selection and

should be encouraged in most populations of free-ranging Wood Bison. In some situations, wolves have the potential to limit or even inhibit the recovery of populations. This is particularly the case for herds that are small and fragmented, impaired by disease or subjected to severe, deep-snow winters. A high rate of calf mortality by wolf predation is suspected for the Nordquist herd in British Columbia.

Collisions with motorized vehicles can threaten both public safety and bison populations. Wood Bison in the Yukon Territory have been traffic hazards along the Alaska Highway. As a result, the Yukon government instituted a "bison-free" policy in the vicinity of the highway, using deterrence measures, capture and relocation and the destruction of problem animals. In British Columbia, Nordquist bison cause similar problems when bison graze alongside the highway near Liard Hotsprings. At least one collision a year is reported. The second Etthithun Lake reintroduction was also compromised when 3 of 15 translocated animals were killed in collisions with industrial road traffic during their first winter.

There are now three small herds of reintroduced Wood Bison in British Columbia

What is their status?

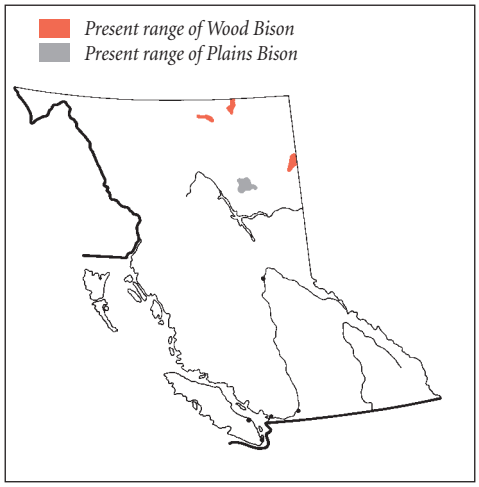
After the last Wood Bison from the original population in British Columbia was shot, only irregular sightings occurred until the 1980s. Since then, as part of the national recovery plan, reintroductions have established three small herds in northeastern British Columbia. Wood Bison reintroduced at Nahanni Butte in the Northwest Territories expanded their range along the Liard River as far south as the mouth of the Beaver River in British Columbia. Further west along the Liard River, another group was reintroduced near Aline Lake on Nordquist Flats. Wood Bison were also reintroduced further south near Etthithun Lake, close to the Alberta border. All these animals are the descendants of 21 bison captured in northwestern Wood Buffalo National Park in 1965 and relocated to Elk Island National Park in Alberta for captive breeding.

The British Columbia reintroductions have resulted in a current population of approximately 120. There are two separate herds along the Liard River, with about 50 animals in the Nordquist Flats herd and 30 in the portion of the Nahanni herd that lies within British Columbia, north of the Beaver River. The Etthithun Lake herd has approximately 40 animals. Wood Bison are on British Columbia's Red List of species and subspecies that are candidates for legal designation as Endangered or Threatened under the *Wildlife Act*.

In 1998, there were approximately 2600 free-ranging, disease-free Wood Bison in six separate herds in Canada. There were also approximately 2300 Wood Bison in and around Wood Buffalo National Park, in herds that are considered infected with tuberculosis and brucellosis. An additional 1400 to 1600 Wood Bison were in captive-breeding herds and private commercial bison farms. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) down-listed Wood Bison from Endangered to Threatened in 1988. Wood Bison are designated as Endangered under both the *Alberta Wildlife Act* and the *Northwest Territories Act*. A listing in Appendix II of the Convention on the International Trade of Endangered Species of Fauna and Flora (CITES) means that permits are required for international export of all Wood Bison, including game farm or ranching stock.

What do they look like?

Often incorrectly referred to as buffalo, bison are easily recognized by their massive forequarters and large shoulder hump. Both sexes have a large, woolly, bearded head, a short neck and short, black horns. Their comparatively small hindquarters have shorter hair and a distinctive tasselled tail. Compared to Plains Bison, Wood Bison are slightly larger and darker, with a more pronounced shoulder hump and shorter hair on the neck and forelegs.



Bison have thick coats varying in colour from golden to dark brown. The long, bushy mane of darker hair covering the head, shoulders and front legs contrasts with the shorter, lighter coloured hair on the hindquarters. For the first three months of life, young bison are reddish brown.

Bison are the largest wild land animals in North America. A mature bull usually weighs 800 to 900 kilograms and can exceed 2 metres in shoulder height. The heaviest wild male Wood Bison weighed in the Yukon was 1031 kg. The weight of adult females is about half that of adult males and their shoulder height averages 1.5 m. Compared to females, adult males have thicker horns, a more prominent hump and bushier hair on the forehead, chin and neck.

What makes them unique?

Wood Bison, the woodland subspecies of bison, are associated with boreal forests and parklands in northwestern North America. Naming of bison subspecies is controversial, but most taxonomists recognize Wood Bison as a valid type separate from Plains Bison and European Bison or Wisent *(Bison bison bonasus)*.

Bison are very well adapted to cold northern climates. Their metabolic rate decreases in colder temperatures down to -30°C. Unlike most hoofed mammals that use their front feet to paw through snow when foraging, bison sweep their neck and head from side to side to clear snow from vegetation. This action is made possible by long spines on their vertebrae (the hump) that support strong ligaments linked to large neck and shoulder muscles. Although bison are powerful animals, relatively tolerant of deep snow, snow depths that exceed 65 centimetres can limit the ability of calves to move and feed.

How do they reproduce?

For most of the year, bison form herds of adult females, subadults and calves, separate from mature bulls. As a rule, mature cows and bulls only mix during the rutting (breeding) period from July to early September. The challenging roar of rutting males can be heard for long distances. Opposing bulls approach each other head-on with tails raised and may perform nod threats and broadside displays until one indicates submission by turning his head and walking slowly away. Fights involving head butting and attempts to hook and gore each other with their sharp horns are rare, but can result in injury or death when they occur.

Females first conceive when one to three years old. Calves (usually one) are born in May after a gestation of 277 to 293 days (around 9.5 months). Wild bison live an average of 10 to 15 years, but the maximum age of a captive animal was almost 30 years. In the wild, fertility generally declines in females over 12 or 13 years old.

Calf production can be high in disease-free herds with low levels of predation. When the Mackenzie Bison Sanctuary population in the Northwest Territories was rapidly expanding in the 1980s, approximately 60 percent of females two years of age and older were accompanied by a calf.

What do they eat?

While typically associated with highly productive wet meadows with grasses and sedges, Wood Bison in British Columbia also forage on upland grasses. Although they are very efficient in digesting diets with low protein and high fibre, bison select habitats that contain the most nutritious forage. Suitable meadows are usually distributed unevenly over the boreal landscape, which is dominated by spruce and aspen forests and unsuitable bogs, fens and muskegs.

Sedges and grasses make up 85 percent of the typical Wood Bison diet; herbs account for the remaining 15 percent. In the Northwest Territories, awned sedge and various reedgrasses are the most common foods in all seasons. In spring, Wood Bison typically forage in drier, grassy meadows and shrubby savannahs, where willow leaves are also eaten. By mid July, shrubs are eaten to a lesser extent and sedges again dominate the diet. Fall diets consist of nearly equal proportions of grasses and sedges, with a minor component of terrestrial lichen. In winter, sedges are by far the most dominant item in the diet and Wood Bison prefer to forage in the wet meadows where these are common.

Bison are grazers, and prefer highly productive, wet, grassy meadows.

Where do they live?

The current range of the Wood Bison is centred on the borders of the Northwest Territories, Alberta, British Columbia and the Yukon. The largest herds are in Wood Buffalo

National Park and the Mackenzie Bison Sanctuary, south and west of Great Slave Lake. Free-ranging herds also occur in Manitoba, the Yukon and northwestern Alberta. Reintroduced Wood Bison in British Columbia are located in three separate herds – two along the Liard River near the Yukon-Northwest Territories border and one at Etthithun Lake near the Alberta border. In addition, animals from the Hay-Zama herd in Alberta (about 100) occasionally wander into British Columbia's Hay River drainage in summer.

FOR THE FIRST THREE MONTHS OF LIFE, YOUNG BISON ARE REDDISH BROWN. *NWT Bison Program photo*

The first reintroduction of Wood Bison to British Columbia took place in March 1995, near Aline Lake in the Nordquist Flats area of the Liard River valley. Forty-nine animals from Elk Island National Park were released into a temporary holding facility for two months to allow them to become habituated to the area. Although some still return to the original release site, many have wandered west along the Alaska Highway corridor as far as the mouth of the Smith River. Road mortalities and wolf predation on calves have kept this herd to around the same number as was originally released. Approx-imately 80 kilometres north of Nordquist Flats, an estimated 30 ani- mals range along the Liard and Bea-ver rivers. These Wood Bison are part of a population of more than 100 that extends across the border into the Nahanni Butte region of the North-west Territories, where they were originally reintroduced.

The first attempt to reintroduce Wood Bison near Etthithun Lake was abandoned after the formerly captive animals moved 100 km south of the release site and joined a small herd of commercial bison that had escaped from a ranch. The mixed herd was captured and sold to commercial operations due to concerns about potential interbreeding. On the second attempt, 40 Wood Bison from Elk Island National Park were released into a large fenced area of natural and industrially disturbed habitat near Etthithun Lake in 2000 and 2001. These bison will be confined for five years to ensure they become imprinted on the release site and do not wander south toward agriculturally developed areas. It is expected they will be released in 2004 or 2005.

Disease is the greatest obstacle to recovery of Wood Bison in Canada.

What can we do?

Wood Bison have a special symbolic importance to many Canadians, because of their majestic appearance, their imperilled conservation status and the fact that their range is restricted to Canada. Many First Nations communities have strong spiritual and cultural connections to bison. Although Wood Bison are no longer in immediate threat of extinction at the national level, further work is required to ensure their long-term survival. The goal of the National Wood Bison Recovery Team is to establish at least four free-ranging, disease-free herds of 400 or more Wood Bison within their original distributional range. Releases of captive-bred Wood Bison have created disease-free wild herds in Alberta, the Northwest Territories, Yukon, Manitoba and British Columbia, two of which have already exceeded the minimum population objective of 400.

Disease is the greatest single obstacle to recovery of Wood Bison populations in Canada. Interim bison-free buffer zones are in place to separate diseased populations in and around Wood Buffalo National Park from healthy reintroduced herds in the Northwest Territories and Alberta. Parks Canada has undertaken a Bison Research and Containment Program to gather information for future plans to manage bison diseases within Wood Buffalo National Park. The Northwest Territories government and the Deninu Kue First Nation are cooperating in a program to salvage healthy Wood Bison from a wild herd infected with tuberculosis and brucellosis, northeast of the park. Eradication of these diseases, but not the bison, in Wood Buffalo National Park may be the only long-term solution to prevent the possible spread of tuberculosis and brucellosis to healthy bison populations in Canada.

British Columbia's recently updated Wood Bison Management Plan (2001) is designed to recover Wood Bison in this province, down-list them from the Red List and eventually build up

populations to levels that could support sustainable human use. This plan outlines the goals, objectives and specific actions required to recover Wood Bison populations in British Columbia, recognizing that it is no longer practical or desirable to return Wood Bison to their original distribution or abundance.

The plan's goals are to:

1) reestablish three to four discrete, free-ranging, disease-free, viable populations of 400 or more Wood Bison in British Columbia;
2) prevent hybridization with Plains Bison or commercial bison;
3) prevent infections by contagious livestock diseases;
4) allow the population to increase to a level allowing ecotourism, wildlife viewing, hunting and First Nations subsistence use; and
5) work with local communities that have a direct stake in reestablishing and maintaining viable populations of Wood Bison in their area.

In order to provide for the continued natural evolution of Wood Bison, the normal interaction between free-ranging Wood Bison and their native environment will be maintained. The provincial management plan supports the goals of the national recovery program and the objectives of Wood Bison management plans in Alberta, the Yukon and Northwest Territories.

British Columbia has established a bison-free buffer zone along the Alaska Highway south of Fort Nelson and initiated limited entry hunting of the Plains Bison herd to ensure separation of free-ranging Plains Bison and Wood Bison.

Intensive habitat management has been used to improve grazing habitat for Wood Bison. Controls on wildfire have changed natural fire regimes, allowing tree and shrub growth at the expense of meadow habitats. Careful use of prescribed fire can substitute for natural fire regimes to improve the quantity and quality of bison feeding habitats. Although industrial development may have negative impacts on bison habitat, rehabilitation by industrial concerns has provided increased grass production in some localized areas of the northeast. Reintroduction programs may be able to take advantage of these practices.

There are still large areas of former Wood Bison habitat that are unoccupied in northeastern British Columbia. Reestablishing at least 1200 disease-free Wood Bison within their former range would boost national recovery efforts and return this impressive animal to its role as a keystone component of northern ecosystems. Success will depend on support and cooperation from the public in general, as well as First Nations, industrial and agricultural communities in northeastern British Columbia.

SUITABLE MEADOWS ARE USUALLY DISTRIBUTED UNEVENLY OVER THE BOREAL LANDSCAPE, WHICH IS DOMINATED BY SPRUCE AND ASPEN FORESTS AND UNSUITABLE BOGS, FENS AND MUSKEGS. *NWT Bison Program photo*

A MIXED AGE COW-CALF GROUP IN SHRUBBY HABITAT.
NWT Bison Program photo

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