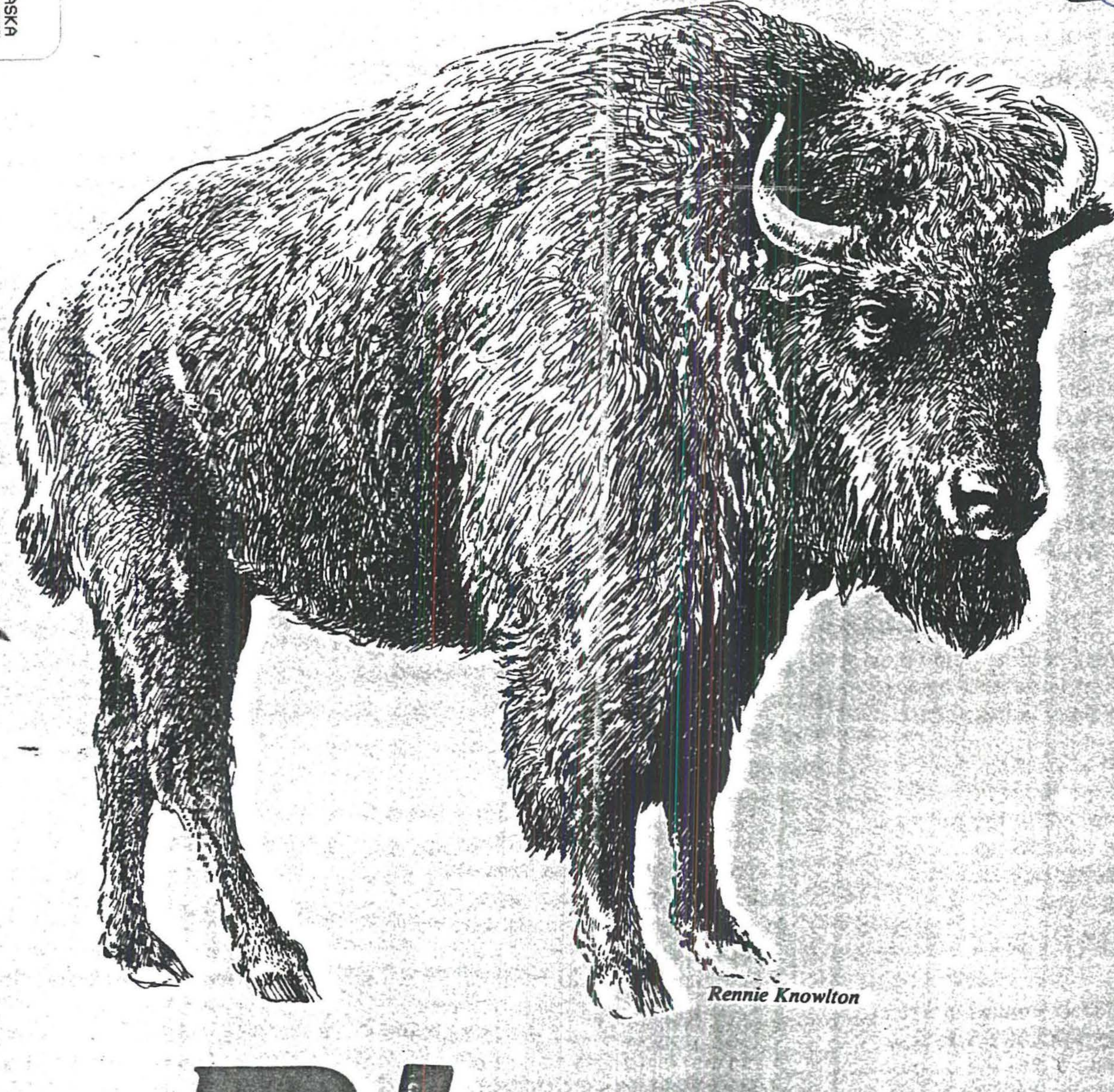
Arctic Wildlife Sketches



Rennie Knowlton

Bison

of the Northwest Territories

Bison *Bison bison*
of the Northwest Territories

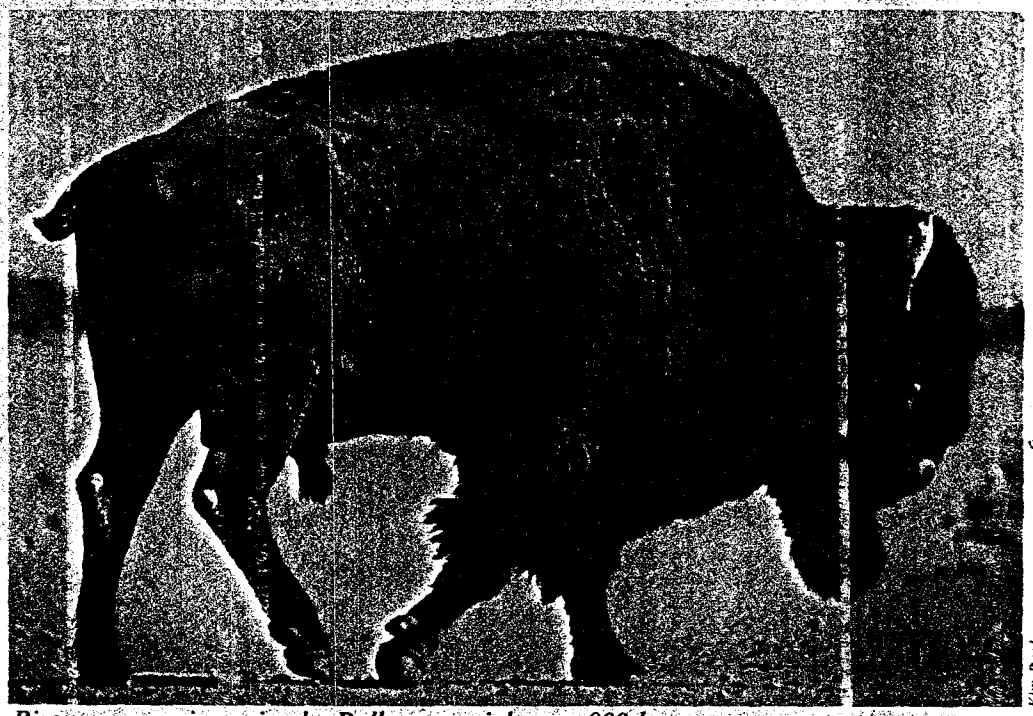
History

When the earliest explorers arrived in the Canadian west in the mid-17th century, an estimated 40-60 million plains bison *(Bison bison)* ranged throughout North America from Mexico to northern Alberta. Two hundred years later, the population had decreased to a few scattered herds. Wood bison *(B. b. athabasca)* suffered a similar fate. Once found in abundance in the forested areas of northern Saskatchewan and Alberta and in the southwestern Northwest Territories, they began to decline around 1840 and by 1890 were reduced to a herd of about 300 in the northern part of what is now Wood Buffalo National Park.

Plains bison owe their decline partially to the fact of their herding behaviour. Seeking protection in densely packed herds made the bison vulnerable to mass slaughters. Hundreds of thousands were killed to provide a seemingly endless supply of meat and hides for settlers and the men who worked on the railroad. Many hides were shipped to European markets. The bison were also shot for sport from train windows, and thousands were killed only for their tongues.

Wood bison fared somewhat better. The country they inhabited was less accessible to hunters and the wood bison themselves are more wary than their cousins on the plains. Nevertheless, wood bison numbers showed a gradual decline also. Several winters of severe or unusual weather may have been responsible for their demise. In 1897, in an effort to save them, a federal law was passed to protect wood bison from hunting.

Help for the plains bison came in 1906 when the Canadian Government, in an historic conservation move, purchased 709 animals from an American rancher. The bison were shipped to Elk Island National Park and later transferred to Buffalo Park near Wainwright, Alberta. The protected bison thrived and in 1925-27, 6,673 animals were moved from Buffalo Park to the newly established Wood Buffalo National Park on the Northwest Territories/Alberta border. About 400 of the transplanted bison rapidly migrated to the lush Peace/Athabasca River delta area. To protect those animals, the park was enlarged to its present size of 44,980 km².



Kim Poole

Bison are massive animals. Bulls can weigh over 900 kg.

The Wood Buffalo National Park transplant had two unsuspected and unfortunate consequences. The transplanted plains bison outnumbered the resident wood bison by about four to one. The two species readily interbred and by 1934 the herd had increased to about 12,000 animals. The animals, however, were hybrids and it was thought that the wood bison as a separate subspecies had become extinct.

The second consequence was that the transplant introduced tuberculosis and brucellosis into an area where it had been previously unknown. This was to have far-reaching effects on the herd.

Bison are currently found in four areas of the Northwest Territories: Wood Buffalo National Park, the Slave River Lowlands, the Mackenzie Bison Sanctuary and the South Nahanni area.

Wood Buffalo National Park

Wood Buffalo National Park, with one-third its area in the Northwest Territories and two-thirds in Alberta, is the home of the world's largest free-ranging bison population. The population has suffered some setbacks, such as an outbreak of anthrax in 1964 and some massive drownings which claimed several

thousands animals, but it has since stabilized at 3,000-4,000 hybrid bison. Within the bounds of the park the bison are protected by legislation from hunting.

Slave River Lowlands

In the 1940's a series of forest fires forced a group of hybrid bison eastward out of Wood Buffalo National Park. They moved to the Slave River Lowlands where they thrived on the rich meadows. By 1971, that group had increased to 2,050 animals. However, in March 1974, only 1,900 animals remained, and after the severe winter of 1974/75, the decline continued to 1,200 bison. An early, heavy snowfall followed by freezing rain may have hindered feeding and many animals moved south of their normal range in search of forage. Disease too was prevalent, and malnourished or diseased cows aborted or gave birth to small, weak calves which could not survive the winter. At the same time, wolves were preying heavily on the bison and hunters also took their share. A wolf control program initiated in 1977/78 may have been some help but hunting continued to be a problem.

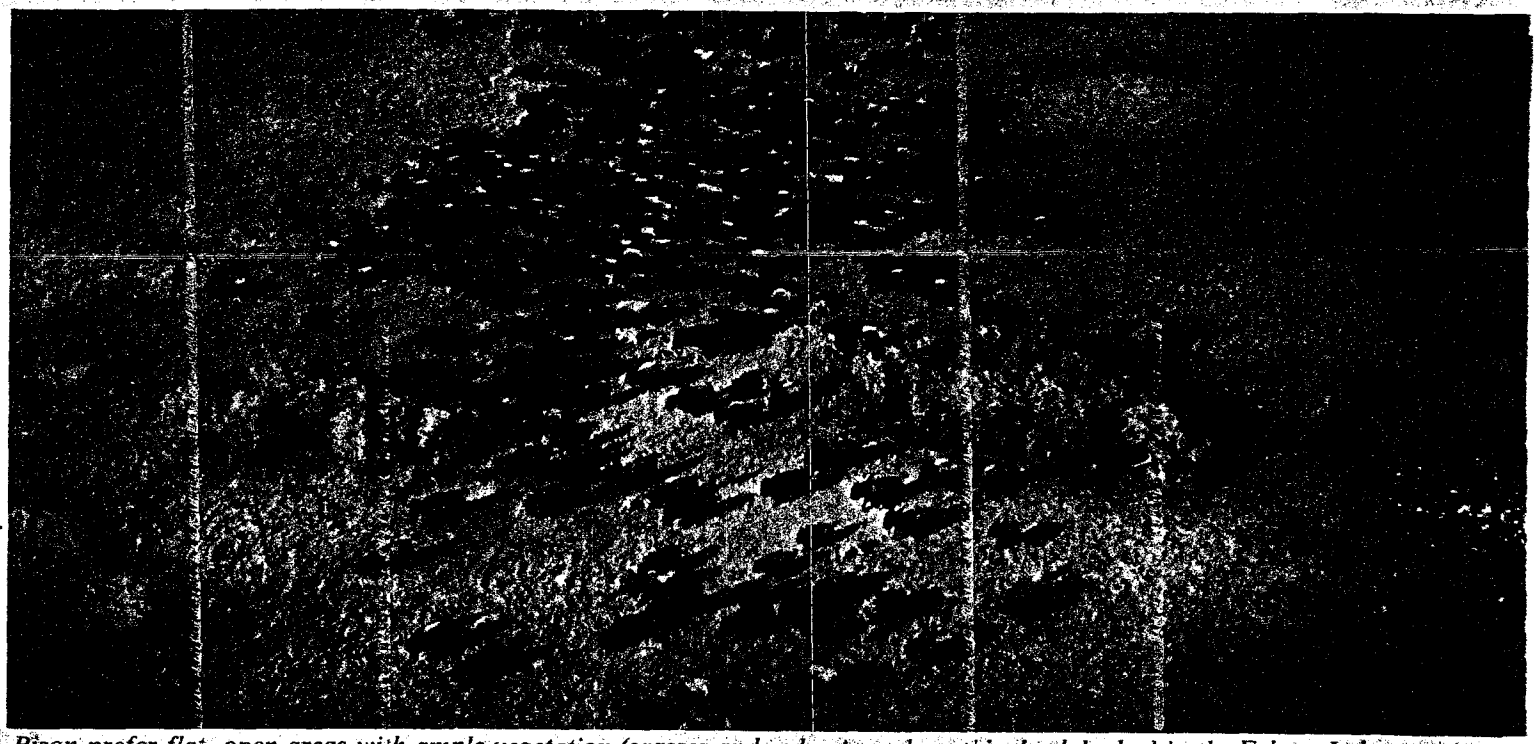
From 1959 until 1962, non-resident trophy hunting was conducted by one outfitter in the Slave River area. In 1970, another outfitter was licenced for non-resident sport hunts. Meanwhile, between 1968 and 1977, resident sport hunting was permitted during regulated seasons and at least 1,230 bison were killed in those 10 years. At the same time, hunting by General Hunting Licence holders, (GHL's include all natives, most Metis and a few long-term white residents) who have no season or bag limit, claimed many animals. Between 1973 and 1976, it became clear that harvesting of bison was exceeding average annual recruitment and that the bison were declining. In 1977, sport hunting was closed. GHL's agreed to restrict their harvest to 25 animals but this quota has been exceeded in every year. In February 1982, a census showed approximately 545 animals in the herds of the Slave River Lowlands. Those herds are known as the Grand Detour herd on the west side of the Slave River and the Hook Lake herd on the east. Their decline is being monitored, but without legislative action, the herds cannot be managed and prospects for their future are bleak.

Mackenzie Bison Sanctuary

The third area inhabited by bison is the Mackenzie Bison Sanctuary. In 1957, following speculation that some original wood bison still remained in isolated areas of Wood Buffalo National Park, a search was launched. In the Nyarling River area, separated from the main herd by 150 km of muskeg, 200 pure wood bison were located. In 1963, to ensure the protection and propagation of that herd, the Canadian Wildlife Service transferred 18 disease-free animals to an area just east of Fort Providence, on the northwest side of Great Slave Lake. T area became known as the Mackenzie Bison Sanctuary and the bison were granted endangered species status in 1964 under the Northwest Territories Act. A survey in June 1982 showed th the Fort Providence population contained at least 1,002 bison of which 12 were calves. In March 1983, approximately 80 animals, including calves, were found about 30 km northwest of the Sanctuary. Those animals, which had separated from the main herd, indicate that the bison are successfully expanding their range.

The habitat in the Sanctuary is well-suited to the bison, predation is low an bison hunting is not permitted. In 1981 the N.W.T. Department of Renewable Resources selectively killed 10 bison fo research purposes. Detailed tests, along with pathological examination, were conducted to determine the purity of th wood bison, evidence of disease, and other trends. Initial results indicate tha the herd is free of major disease and th animals appear to be in good physical condition.

The anthrax outbreak in Wood Buffalo National Park in 1964 prompte a second transfer from the Nyarling River herd. In 1965, 23 wood bison we shipped to an enclosed isolation area in Elk Island National Park near Edmonton. Since 1971 the herd has been disease free. It now numbers 125 animals and they are being used as seed stock to establish new herds.



Bison prefer flat, open areas with ample vegetation (grasses and sedges), such as this dry lake bed in the Falaise Lake area of the Mackenzie Bison Sanctuary.

South Nahanni

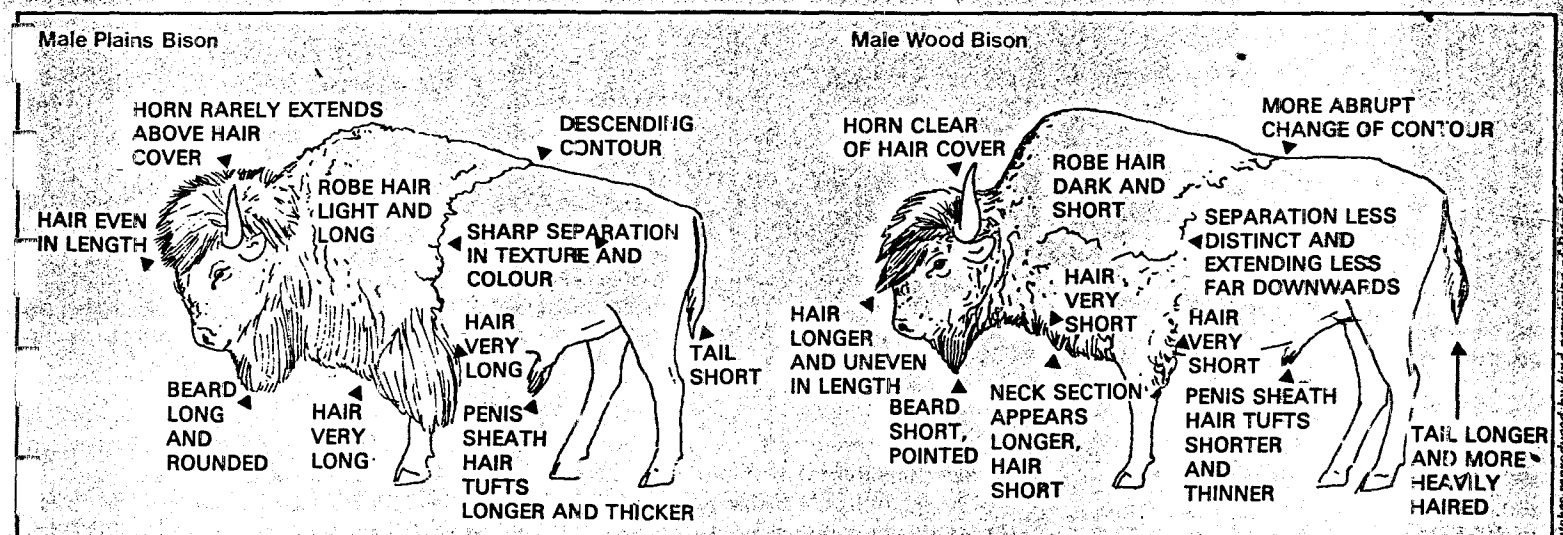
The success of the transplant to the Mackenzie Bison Sanctuary encouraged an attempt to establish another free-ranging wood bison herd in the Northwest Territories. In June 1980, 28 wood bison were moved from Elk Island National Park, 2,000 km north to an area southeast of Nahanni National Park, in traditional wood bison range. As of August 1982, five animals were known to have died, and eight had moved into northern British Columbia. The remaining bison are ranging throughout the Liard Valley in the Northwest Territories. In June 1982, four calves were seen, and in July three calves with eight adults were observed a few kilometres northeast of Fort Liard. Six animals were also sighted in the Lower Splits area on the South Nahanni River. In April 1983, 15 bison, including two of the 1982 calves, were located in the Nahanni Butte/Fort Liard area. The birth and survival of calves is a positive sign that the wood bison are adapting to their new territory and there is every indication that they will form the nucleus of a viable herd for the future.

Description

Bison are the largest terrestrial mammals in North America. Wood bison are generally taller and less stocky than plains bison. A large wood bison can measure 1.8 m to the shoulder and weigh over 900 kg. The plains bison is usually smaller, has shorter legs and a heavier head and hump. Both species have massive humped shoulders, a low-slung head and what appear to be disproportionately slender hindquarters. Males and females have short black horns extending upwards from the sides of the head. Plains bison are lighter in colour than wood bison. Both species have a woolly undercoat overlain by long guard hairs. Long, dark-brown, shaggy hair covers the head, shoulders and forelegs, while the hair on the hindquarters is shorter and lighter in colour. A beard, about 20-30 cm long, grows from the chin. During summer, plains bison develop a heavy coat or "chaps" on their front legs which accounts for their massive front end appearance. The tail of the wood bison seems longer and hairier than that of the plains bison and finally, the hump on the wood bison is flatter and more angular than the plains bison's.

Habitat and Food

Bison traditionally inhabited a variety of ranges, including meadows and arid plains, aspen parklands, river valleys and coniferous forests. They sometimes use separate summer and winter ranges and they may undertake seasonal migrations depending on the availability of forage. In Wood Buffalo National Park, for example, large numbers of bison winter in the rich open sedge meadows around Lake Claire. Those hybrid bison move northward in spring, as far as 250 km, to more closed forest cover interspersed with small meadows. Some of the park bison spend the winter in an area known as the Salt Plains. This area consists of wide meadows and alluvial plains with underground deposits that retain salt in the soil because of drainage. In the spring, the bison move westward to the Alberta Plateau where they inhabit the rich meadows set in a forest cover of white and black spruce, aspen, willow and birch. In the Northwest Territories, sedges are the most important item in the bison's diet in all seasons. Grasses and other species of vegetation are used if sedges are not available.



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Wood bison and plains bison can be distinguished from each other by a number of physical features. Identification, however, must be based on a combination of features rather than any one or two.

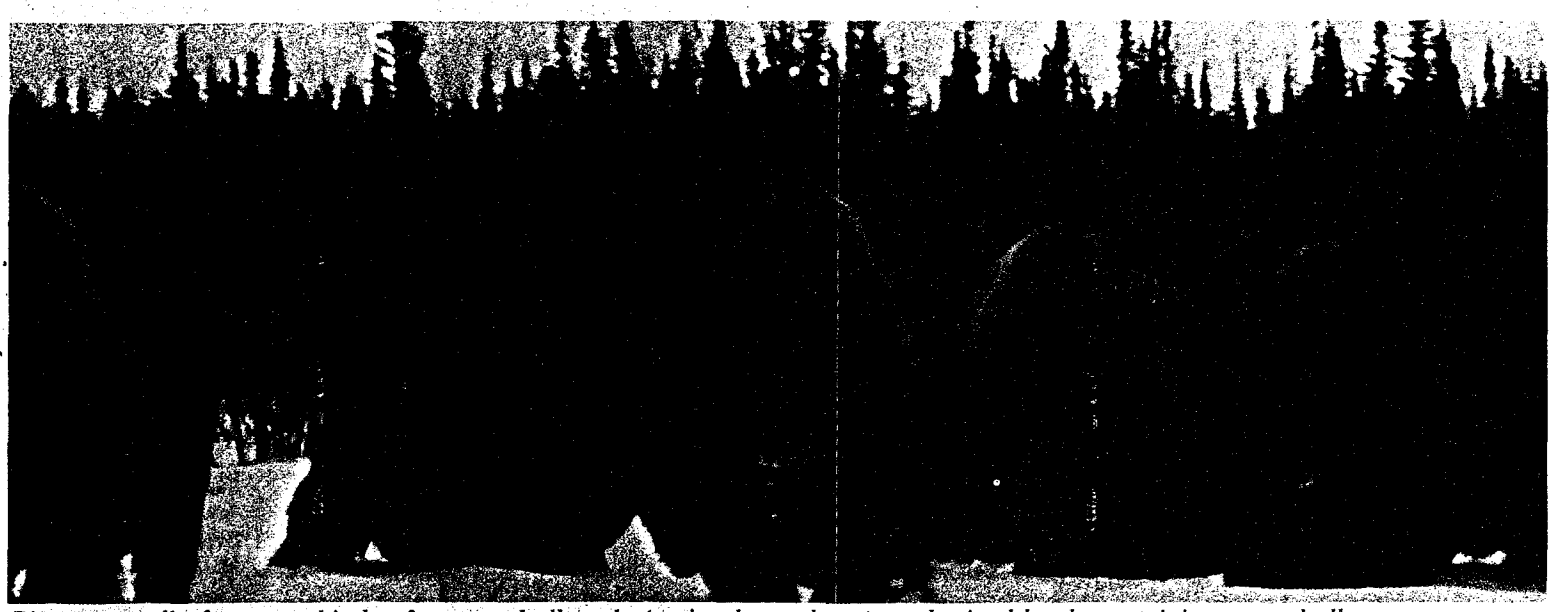
Behaviour

Bison are gregarious and form mixed groups of cows, calves, yearlings, and subadults. Bulls often form groups of their own, but a few are part of the mixed herds at all times of the year.

The herds are wary and sensitive to changes in their environment. The bison's senses of smell and eyesight are extremely well-developed; they can detect movement a kilometre away and distinguish smells from 3 kilometres.

Bison are easily frightened and an alarmed herd may lose control and stampede. When that occurs, the normally slow plodding animals break into a trot and then a rocking gallop, attaining a top speed of 60 kph. Early hunters took advantage of the bison's propensity to stampede by driving them over cliffs to kill them.

The onset of fly season in summer is a great disturbance to bison. Their sensitive nostrils and ears are plagued by hordes of blackflies and sandflies, while the huge "bull dog" horseflies attack and pierce the sensitive underbelly in search of blood. High wind provides some relief from flies. Bison also combat flies by rolling in mud or dust wallows and scratching heavily against the thick trunks of trees.



Bison generally form two kinds of groups: bulls only (as in photo above), and mixed herds containing cows, bulls and younger animals.

Reproduction

The breeding season in most areas occurs from mid-July to late September, with the peak rutting period in mid-August. Bulls often form groups before the rut and enter the mixed herds when cows come into oestrus. Dominance among bulls is established by behavioural display, sparring matches and occasional violent fights between evenly matched bulls. With upraised tail, a bull may either charge or give aggressive signals such as profile displaying, head-bobbing, snorting, wallowing and stamping. The blood-curdling roar of a rutting bull can be heard up to 5 km away. Sexual maturity is attained at 2 to 3 years of age for both males and females, and while females usually breed at about age 3, males generally do not breed until they are at least 4 or 5 years of age.

Cows give birth anytime from April until July. One calf is usual and twins are extremely rare. The calves have reddish-tan coats which turn almost black at about 3 months of age. They nurse soon after birth, balancing on long spindly legs, and within the same day are bucking and running about. Cows recognize their own calves by smell and chase away strange calves. In 2 or 3 days the calves venture from their mothers to frolic together. Although the calves nibble on grass within a few days of birth, they continue to nurse for 7 months. Mortality can be high during the first year. The young calves use up their limited fat reserves during the long cold winters, and are the least adept at foraging. During their first winter, they are especially vulnerable to predators, particularly wolves.

Mortality

a) Predators

In the Northwest Territories black bears may kill a number of bison calves but timber wolves are the most significant predators. Calves and injured or diseased animals most often fall prey, but a healthy bison is not an impossible opponent for a pack of wolves. Wolf predation can seriously affect calf survival and herd numbers, especially if the bison population has been reduced by other factors. The herds in the Slave River Lowlands are a case in point.

Weakened by disease and the severe winter of 1974-75, many adults and young calves in the Slave River Lowland herds fell prey to wolves. The wolves, in turn, prospered and produced large healthy litters. As the pups grew up and hunted more bison, the population reached the point at which calf recruitment no longer exceeded the mortality rate of the herd.

When a herd is pushed to this limit, it begins to decline. The following situation may then occur: faced with a shortage of prey, the wolves may work harder and begin to kill healthy bison. The decline accelerates and the pattern shifts again. As fewer bison remain, only the healthiest adult wolves are able to feed themselves. Litter size diminishes and the wolf population drops. If no other factors, such as hunting or inclement winter conditions are present, the herd may recover.

b) Disease

Three major diseases affect wild bison: brucellosis, tuberculosis, and anthrax. Brucellosis and tuberculosis were probably introduced to Wood Buffalo National Park with the transplant of plains bison from Wainwright, Alberta. Brucellosis is prevalent in bison both in the park and in the Slave River Lowlands. The disease causes abortions, still births and lower pregnancy rates. The infection is probably transmitted through sexual contact, and contaminated urine and placentas, which subsequently infect food and water. Brucellosis affects the growth rate of bison populations but does not threaten the survival of the species. Tuberculosis is a chronic, infectious disease that progresses slowly in bison. Over the years it affects the bison's vitality and may eventually result in death. The disease has a minor effect on population regulation in Wood Buffalo National Park.

Anthrax is the other serious disease affecting bison in the Northwest Territories today. Anthrax first broke out near Hook Lake, outside the park boundary, in the summer of 1962. Within one month, 281 infected carcasses were found. The next summer, anthrax occurred in the Hook lake herd again and also spread to bison on the west side of the Slave River, near Grand Detour. That summer 269 carcasses were found. In 1964, 299 infected carcasses were found at Hook Lake, Grand Detour and two locations in Wood Buffalo National Park. The rampant spread of the disease between isolated herds prompted Parks Canada and the

Northwest Territories Wildlife Service to ke immediate steps to control it. In 65, an anthrax vaccination program as initiated. It was accomplished by recting large corrals close to the bison mmer range on the open meadows, d herding the bison by helicopter into ie corrals for vaccination. Vaccinations ere carried out in early summer, close the time when anthrax usually oc- red. Unfortunately, this was also the me of year when new calves were resent and inevitably some were arated from their mothers in the nmotion. The vaccination program as hard on the bison — the constant vement of people, the presence of n structures and the drone of the elicopters all greatly excited them. ome died from exhaustion and panic. officials managed to vaccinate 700 bison at Hook Lake that summer, and 3,591 in Wood Buffalo National Park. The program continued intermittently from 1965 to 1977 resulting in close to 20,000 vaccinations.

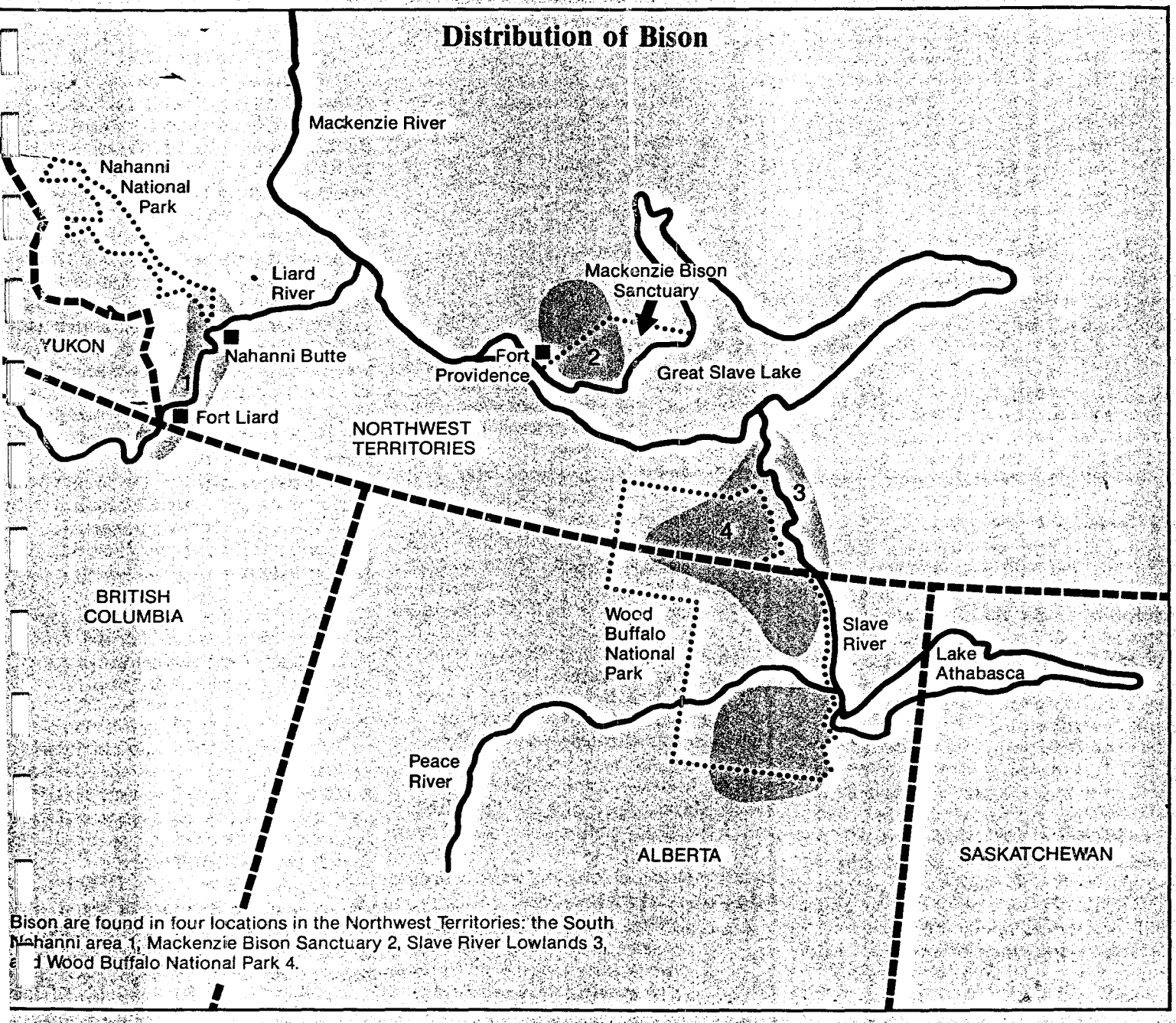
The effects of the vaccination program are not conclusive. There were no outbreaks of anthrax the year the program was initiated, nor the following year. Yet the disease has appeared a number of times in subsequent years. The manner in which anthrax is dispersed makes it especially difficult to control. Bacterial spores remain viable in the soil for years and if the active spores enter the blood stream, anthrax can develop. Officials recognize the necessity of close continued surveillance of bison herds and immediate disposal of contaminated carcasses.

c) Accidents

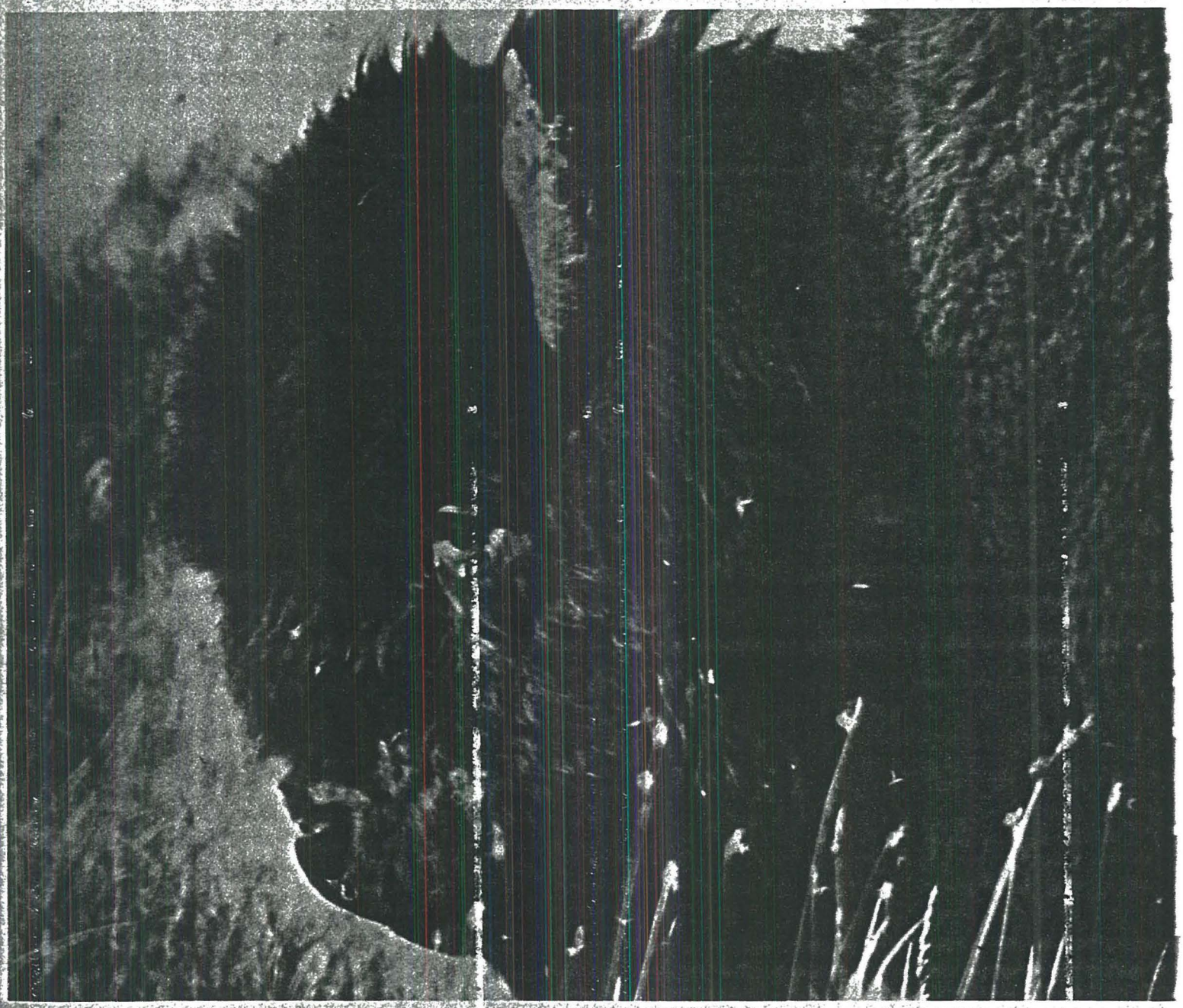
Drowning is a frequent cause of death for bison. Although they are normally excellent swimmers, entire herds of bison have drowned in flooded rivers. In 1958, spring floods on the Peace-Athabasca delta caused the death of about 500 bison. In 1959, 3,000 animals died during autumn flooding. In both 1961 and 1974, several thousand bison drowned in the same area.

d) Hunting

Legal hunting is not a factor in the mortality of pure wood bison in the Northwest Territories as they are protected under the Northwest Territories Act. Hybrid bison in Wood Buffalo National Park are also protected by



Bison are found in four locations in the Northwest Territories: the South Nahanni area 1, Mackenzie Bison Sanctuary 2, Slave River Lowlands 3, and Wood Buffalo National Park 4.



As bulls age, their horns often become blunt and shredded at the tips.

legislation from hunting. However, on the Slave River Lowlands, where bison have decreased from over 2,000 animals in 1971 to less than 400, uncontrolled hunting by General Hunting Licence holders continues to be a serious concern.

The Future

Although the Slave River Lowlands hybrid bison population is in trouble, bison in Canada generally are thriving. Wood bison have successfully been transferred to nine zoos and wildlife reserves, although there is only one viable wild population. The possibility of establishing new free-ranging herds of wood bison looks promising. In the Northwest Territories, wood bison rather than hybrid or plains animals, are the main interest of management efforts. The Fort Providence herd in the Mackenzie Bison Sanctuary is the largest wild herd of wood bison in the world and represents the only entirely successful transplant of healthy wood bison into historically occupied range. The goals of the N.W.T. Department of Renewable Resources are to manage the Sanctuary to maintain a healthy bison population, to use the herd for transplants to other areas and to allow the wise use of some surplus animals by the residents of the Northwest Territories. The ultimate goal is to remove wood bison from the list of endangered wildlife. Even before that happens, efforts are being made to build a large enough population that surplus animals can be hunted by native people, resident and non-resident sport hunters, and eventually be used in commercial enterprises. Non-consumptive use of wood bison is also a priority and part of the management plan is to increase public awareness of the herds and create opportunities for tourists, photographers and others to see and appreciate the bison. Currently, the future looks hopeful for wood bison. With prudent management, the herds can continue to expand and provide a new resource base for the lasting benefit of residents of the Northwest Territories.

Barbara Britton
and Jonquil Graves
Yellowknife
1983

Ellen Hume

Further Reading

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Northwest Territories Renewable Resources

Northwest Territories Information ●

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