
Etthithun Wood Bison Inventory

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Introduction

Wood bison (*Bison bison athabascae*) are blue-listed in British Columbia and designated as “threatened” by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). As part of British Columbia’s commitment to the recovery of wood bison, a herd was reintroduced into the Etthithun Lake area north of Fort St John. The reintroduction consisted of 43 calf and yearling bison shipped to the Etthithun bison paddock near Strom Lake in the winters of 1999 and 2000. In 2002 the young herd near was released from its enclosure and became free-roaming. Since its release, the Etthithun wood bison herd has expanded in both range and population size.

Etthithun Lake is located approximately 200km north of Fort St John and 20km east of the Alberta border in the Clear Hills Ecoregion (Demarchi, 1996). Traditionally the area was subjected to a high degree of wildfire activity, which in turn maintained large areas of potential wood bison habitat. With fire suppression, the disturbance regime was replaced by disturbances from forestry and petroleum activities, many of which are followed by seeding of domestic grasses. In the case of the Etthithun Lake area extractive resource development has increased meadow and grassland habitat and this can be to the benefit of grazing species such as the wood bison (Mitchell and Gates 2002). Forestry and petroleum activities near Etthithun Lake have improved the potential for the area to support bison and this is a primary reason why the area was chosen for reintroduction.

A management plan for the Etthithun bison herd was drafted by the Ministry of Environment in January 2006. This management plan recommended an aerial inventory be conducted for the Etthithun herd in order to determine current population demographics and total population size. This inventory was carried out on March 7, 2006 and was the first total count conducted for the herd since its release from the holding paddock in 2002. The inventory was carried out with the assistance of Doig River First Nation and followed from a series of meetings between the Ministry of Environment, Doig River First Nation, and the Treaty 8 Tribal Association. The inventory was funded by the Ministry of Energy, Mines and Petroleum Resources as part of their Oil and Gas Environmental Policy Program. The results of this inventory will be used to develop additional management guidelines for the Etthithun bison herd.

Methods

An aerial inventory was carried out on March 7th, 2006 using transects to cover the total presumed area of wood bison occupancy. An approximate area of occupancy was determined during the count flights based on track occurrence and the distribution of suitable habitat. Within this range, transects were flown using a Bell Jet Ranger 206 Helicopter in order to achieve a visual coverage of the area that approximated 100%. GPS receivers were used to verify geographic coverage of the area and to ensure all potential areas were covered. A pilot and 3 spotters were used during the transect flights. When bison groups were encountered the position of the groups were marked using GPS and the animals were classified to calf, yearling, 2+ year bulls, and 2+ year cows according to horn morphology and body size. The classification scheme was based on the Northwest Territories description of sex and age classes reproduced in Figure 1 below.

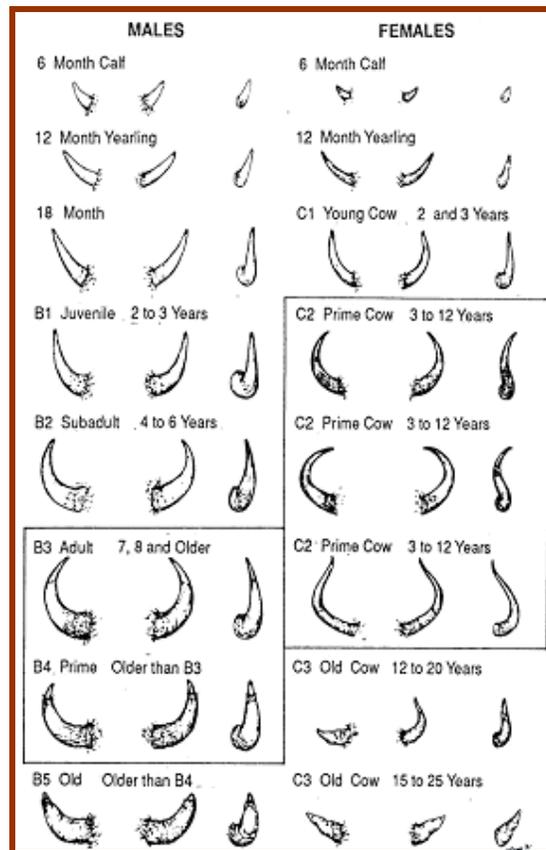


Figure 1. A description of wood bison horn morphology reproduced from the Northwest Territories website at the following location; <http://www.nwtwildlife.com/NWTwildlife/bison/description.htm>

Results

A total of 124 bison were encountered during the inventory flight. These occurred as 8 discrete groups within a minimum convex polygon (MCP) area of 254 km². The group sizes ranged from 2 to 36 animals with a mean group size of 15.5 +/- 8.68 at 90% confidence. The age and sex distribution of these 8 groups (along with geographic position) are listed in Table 1.

Group ID	Group Total	Calves	Yearlings	Adult Bulls	Adult Cows	Habitat	Latitude	Longitude
1	2	0	0	1	1	meadow	57.880890	-120.005200
2	14	3	2	0	9	pipeline	57.723250	-119.985540
3	36	6	4	8	18	meadow	57.826380	-120.051770
4	3	0	0	3	0	pipeline	57.802770	-120.194610
5	10	2	2	1	5	road	57.851080	-120.234640
6	34	5	3	3	23	meadow	57.665510	-120.305810
7	16	4	2	4	6	meadow	57.862250	-120.290030
8	9	3	0	1	5	pipeline	57.867310	-119.986080
totals	124	23	13	21	67			

Table 1. Etthithun wood bison population breakdown and locations for inventory conducted on March 7, 2006.

Of the 124 wood bison observed; 23 were calves, 13 were yearlings, 21 were adult bulls, and 67 were adult cows (adult is defined as being greater than 2 years old based on horn morphology). This gives a ratio of 34.33 calves/100 cows, 19.40 yearlings/100 cows, and 31.34 bulls/100 cows (as seen in Table 2).

Ratios	
calves per 100 cows:	34.33
yearlings per 100 cows:	19.40
bulls per 100 cows:	31.34

Table 2. Sex and age ratios determined during the March 7, 2006 inventory of the Etthithun wood bison herd.

Discussion

The Etthithun herd has been noted to have increased from the original number of 43 animals in February 2000 to approximately 124 in March 2006. This is a 2.88 fold increase over 6 years (a presumed average growth rate of about 19% per year). Wood bison herds in Alberta (Hay-Zama herd) and the Yukon (Aishihik herd) have been expanding at an average rate of 15% to 20% annually (Yukon Bison Management Plan). If we presume a 20% rate of growth as a theoretical maximum for the Etthithun herd (and ignore that the initial herd was too young to breed) then a potential population estimate of approximately 128 bison can be produced for the winter of 2005-2006. This is significantly lower than the estimate of 175 bison produced by industry aircraft pilots during the fall of 2005. It is difficult to determine the accuracy of the fall 2005 estimate since it was not produced using a scientific methodology and there was no way to avoid double counting of individuals. Although there was likely some mortality of both calves and adults between the fall 2005 and late winter 2006 population surveys, a fall 2005 population of 175 is still considered to be high given that it would entail an average population growth rate of 26% annually over 6 years.

All bison observed in March of 2006 occurred within a 20km radius of the original release site and within a MCP range of 254 km². Habitat utilization was primarily within sedge meadow complexes and pipeline right of ways. One group was found along a road east of Etthithun Lake. Wood bison home range sizes, herd distributions, and total herd sizes change seasonally, and the range extent in February is likely smaller than at other times of the year. Bison belonging to this herd have been observed in the summer months to range further south along the Fontas Road right of way.

Late winter recruitment was measured to be approximately 34 calves per 100 cows. Bulls and yearlings were measured at 31 and 19 per 100 cows respectively. The greater proportion of cows in the population compared to adult bulls is likely due to the fact that the reintroduction consisted of primarily juvenile females (approximately 3 cows for every bull). The current population parameters suggest the Etthithun bison herd has the potential for continued growth although it is uncertain at what point the habitat will reach carrying capacity.

The results of this population inventory will be used as a basis for future management decisions. Some management decisions include, but are not limited to, salt placement options and examining the potential for a limited harvest.

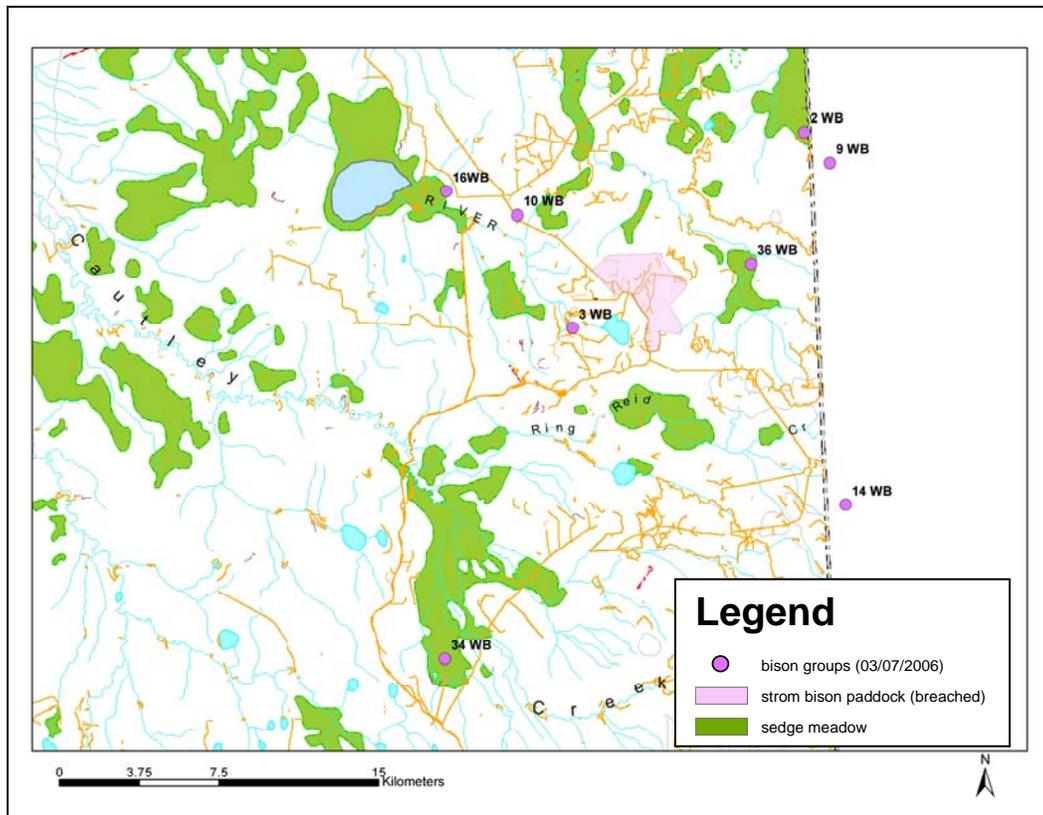


Figure 2. Locations of wood bison groups belonging to the Etthithun herd on March 7, 2005

Acknowledgments

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<http://www.yfwmb.yk.ca/comanagement/mgmtplans/bisonplan/yukon.html> Yukon fish and wildlife management board. 4pp.