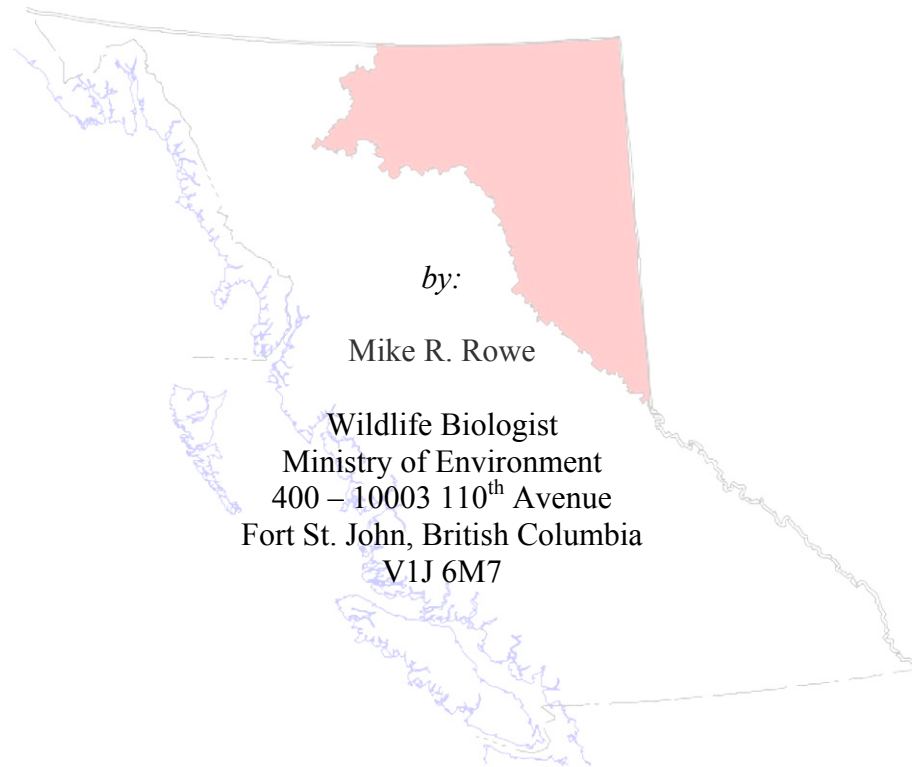


2007 Nordquist Wood Bison Inventory



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2007



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Introduction

The recovery of wood bison (*Bison bison athabascae*) is often considered a great conservation success. Indeed, wood bison were brought back from the brink of extinction through intensive management and a series of reintroductions across their former range. This success is tempered by the fact that reintroductions have sometimes created conflicts and management obstacles, especially in areas where human development neighbours wood bison range. Although wood bison have been successfully reintroduced in 2 areas of BC since 1995, both herds have now expanded their range into areas where humans live, work, or travel. A major implication of this is that when bison travel on or near roads, the threat of a collision becomes a serious issue to both motorists and bison.

Wood bison are considered a “keystone species” because they can influence landscapes and the species that utilize them (Reynolds *et al.* 2003, Campbell *et al.* 1994, Gates and Larter 1990). Although this may be beneficial for many species, the human species can take offence when this happens near their home or to their belongings. Despite the conflicts that arise with the recovery of wood bison, recovery efforts will need to continue if we wish to alleviate the threat of extinction that this species faces due to the actions of humans over the past few centuries (Gates *et al.* 2001).

Wood bison were once numerous in the boreal regions of north western Canada and Alaska. Some estimates put total wood bison numbers at approximately 168,000 prior to arrival of the Europeans (Soper 1941). By the early 1900’s wood bison had been extirpated from British Columbia (and over much of their range) due mainly to over-hunting (Gates *et al.* 2001). At that time, the only viable wood bison populations remaining in the world occurred in the Slave River Lowlands (Northwest Territories) and within Wood Buffalo National Park (WBNP; northern Alberta and southern NWT). In 1896 the population had reached an estimated low of less than 250 (Soper 1941). The remaining wood bison were almost lost to hybridization and disease when over 6,500 plains bison were released into WBNP in the late 1920’s.

A small isolated herd thought to be representative of wood bison genetics was located at Nyarling River in WBNP in 1959. In order to prevent hybridization with plains bison and to allow future recovery efforts, 21 bison were moved from Nyarling River to an enclosure at Elk Island National Park (EINP), near Edmonton, Alberta. From this source population a number of reintroductions have occurred, including recovery efforts within British Columbia.

Wood bison were reintroduced into the Aline Lake area east of Liard Hotsprings in northern British Columbia in 1995 (Figure 1). The original population consisted of 49 bison from EINP. The bison were released into a temporary holding paddock at Aline Lake to facilitate a soft release (to allow time for the animals to habituate to their new environment before they became free-roaming). Once released, it was hoped that the bison would disperse to the north and east utilizing the Liard River corridor and that they would eventually connect with the Nahanni wood bison population near where the Liard River crosses the NWT border. Instead, the bison at Aline Lake dispersed westward, bypassed a fence, and soon took up residence in the Alaska Highway corridor. There they found abundant grazing potential along wide swaths of cleared land adjacent to the highway which had been replanted with agronomic plant species.

These bison, referred to as the Nordquist Herd, continue to utilize replanted sites along the Alaska Highway corridor. In recent years they have extended their range along the highway corridor and have been observed as far south as the north gates of Muncho Provincial Park and as far north as near Lower Post, BC (Figure 2). In order to determine an estimate of the total number of bison and an approximation of their winter range, an inventory flight was conducted for the Nordquist Herd during January of 2007.

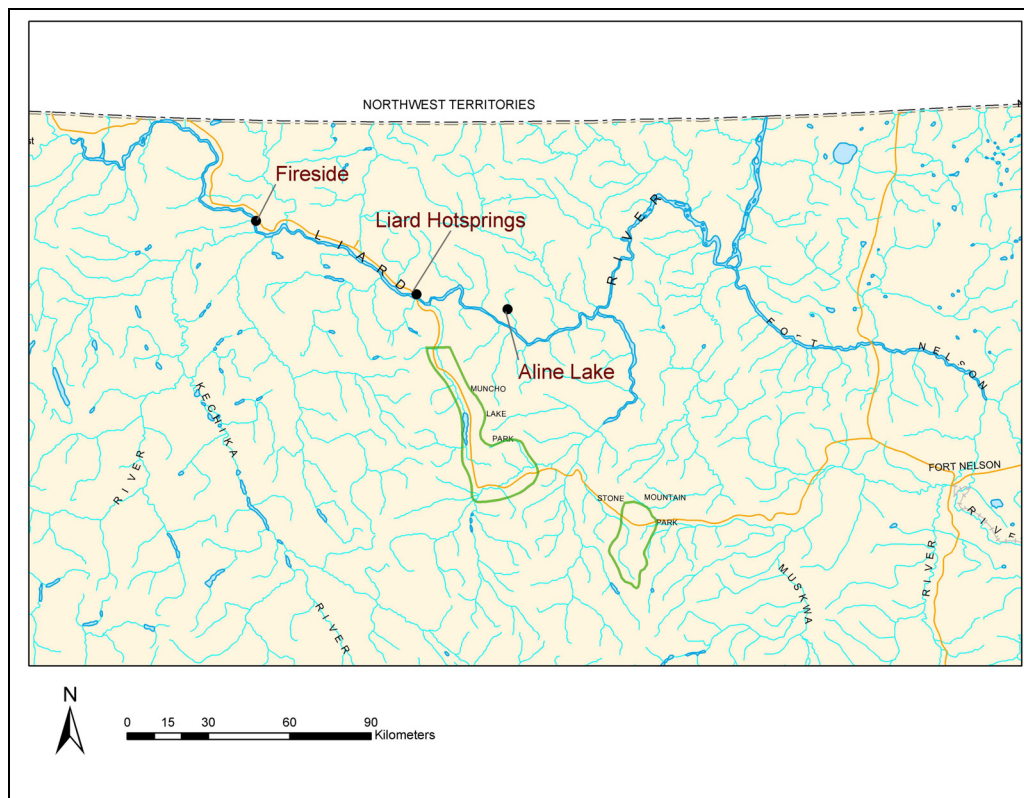


Figure 1. Overview map of northern British Columbia in the area where the Nordquist wood bison herd was introduced near Aline Lake in 1995

Study Area

The study area included as much of the estimated range of the Nordquist Herd as possible. Range delineation had been carried out in the fall of 2006 as part of the national recovery plan for wood bison, but the ranges were delineated without an abundance of data for this herd. Utilization of habitats near the highway had been reported by BC Parks staff but the use of off highway habitats was unclear. It was thought that bison still utilized areas near Aline Lake east of Liard Hotsprings as well as sites north of the Alaska Highway. Figure 2 represents the Nordquist Herd wood bison range to the best of our knowledge as of January 2007. This range will be further refined as research continues into the movement and habitat utilization of this wood bison herd.

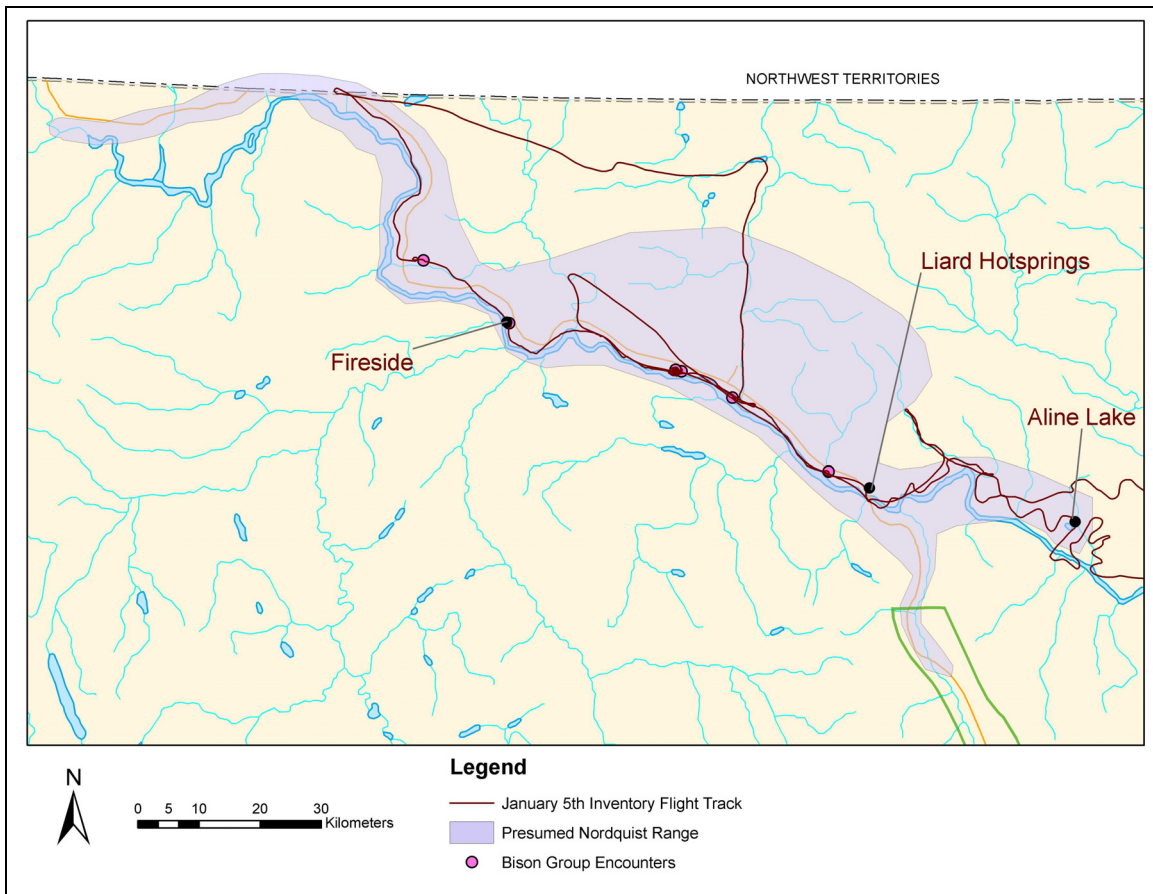


Figure 2. Presumed 2006 range of the Nordquist Herd as well as inventory flight lines and bison group encounters from a January 5, 2007 flight.

Methods

Because of limited inventory funding, the entire presumed wood bison range could not be covered during the aerial census. Instead, effort was focused on areas where bison were most likely to occur (those areas where we had recent reports of bison presence). Bison had been reported near a guide outfitter camp east of Liard Hotsprings earlier in the winter and initial survey effort was focused in this area and around the original release site near Aline Lake. The inventory focus was then shifted to areas north and west of Liard Hotsprings, towards Smith River, and north along the highway to where it first crosses the Yukon border. Bison had been reported north of this turn-around site in the summer and fall of 2006, but it was thought that they usually dispersed southward from this site near the end of the rut. Winter reports of wood bison on the highway typically placed the majority of the herd along the stretch of the highway between the Yukon border and Liard Hotsprings, and this area became a focal point of the inventory.

Results

No recent bison activity (including winter track sign) was observed along the Liard River corridor or near the original release site. The area toward Smith River also appeared to be devoid of bison or bison sign. The only track sign observed during the inventory was along or near the Alaska Highway corridor and it was here that all the bison that were observed were found.

Figure 2 represents the flight line and shows bison encounters from the January 5, 2007 inventory flight. Five groups were observed totalling 97 bison. Two bulls were found north of Fireside, 1 bull was found at Fireside, a group of 8 animals (2 cows, 4 bulls, and 2 yearlings) was found near the Smith River bridge, and 3 bulls were found just north of Liard Hotsprings (all these groups were located close to the highway). A large herd (83 animals) was found south of Coal River near the confluence of Geddes Creek with the Liard River (Figures 4 and 5). This group was on both sides of the highway and in the adjacent forested habitat. Classifications were not completed from the air since there was active traffic on the highway and a danger of causing the bison to stampede across the road into oncoming traffic. Classifications are to be conducted from the ground for bison near the highway in the summer/fall of 2007 in order to better understand the current population parameters.



Figure 3. Bison herd found mostly bedded on both sides of the Alaska Highway south of Coal River, BC during the January 5, 2007 inventory flight.



Figure 4. Closer look at bison bedded near the Alaska Highway south of Coal River, BC during the January 5, 2007 inventory flight.

Discussion

A total estimate of 97 bison from the January 5, 2007 inventory flight is lower than previous estimates based on population modelling. It is plausible that some bison were missed during the 2007 inventory flight, but it seems highly unlikely that surveyors would have missed a medium or large group since no track sign was observed away from the highway. The survey covered the highway areas quite thoroughly, and there had been no recent reports suggesting that bison were utilizing areas away from the highway (excluding east of Liard Hotsprings, which was an area searched extensively). The estimate of 97 animals is therefore considered the best approximation of herd size as of January 2007 (although a lack of correction for sightability error makes this a conservative estimate). This population has grown slowly over previous years. BC parks staff produced a population estimate of 67 bison (including 15 calves of the year) in the summer of 2005 by counting bison near the highway between Muncho Lake and Fireside (McLean 2005), but actual herd numbers were likely higher since the study area did not include summer range north of Fireside.

Predation on bison calves by wolves has been cited as a possible limiting factor for the Nordquist Herd (Harper 2002), but it is now likely that highway mortality has become a more significant mortality sink for this population than predation. The winter of 2005/2006 was an extremely bad one for bison as higher than average snow packs encouraged the bison to walk on the cleared road rather than in adjacent habitats. Approximately 32 bison were thought to have been killed in the calendar year of 2005, and another 17 in 2006 (Hansen, pers. comm.) Although other winters have been less severe, collision risk is still high when bison become habituated to highway habitats.

Management actions have been intensified to help alleviate the risk of road collisions for this herd. Snow was cleared in January of 2007 in the highway right of way to test if the bison would use these cleared areas preferentially over the highway clearings. Some anecdotal success was noted, but additional monitoring is needed to measure actual use of these clearings. Management options that have been suggested include; installing visibility collars on adult bison, GPS collaring to study movement patterns, vegetation modifications in habitats away from the highway, vegetation modification to the highway habitats to make them less desirable to bison, production of additional highway warning signs, intercept baiting with salt or high quality feed, selective harvest of adult bison, and a number of other suggestions. Used in combination, these strategies could help alleviate the problem of bison utilizing roadside habitats.

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