



BISON CONTROL AREA PROGRAM ANNUAL REPORT 2021/2022

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ABSTRACT

Bovine tuberculosis (*Mycobacterium bovis*) and brucellosis (*Brucella abortus*) are endemic in bison (*Bison bison*) herds in and around Wood Buffalo National Park, and the adjacent Slave River Lowlands. In 1987, the Bison Control Area (BCA), and a surveillance program, was created to minimize the risk of disease transmission to the disease-free Mackenzie and Nahanni populations in the Northwest Territories by preventing bison from moving through or establishing herds within the area south of the Mackenzie River between the Trout and Buffalo Rivers. To keep this area free of bison, aerial surveys are flown to search for bison, and public participation by reporting any sightings or signs of bison is encouraged.

This program continued through the 2021/2022 season with two survey flights covering the majority of Zone I and part of Zone II of the BCA. In total, 51.3 hours were spent flying these surveys over 11 days in fixed-wing aircraft.

During the 2021/2022 season, there were no reports of bison in or approaching the BCA.

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INTRODUCTION

The history of wood bison in the Northwest Territories (NWT) and the disease status of bison populations in the NWT were reviewed in previous annual reports on the Bison Control Area (BCA; e.g. Sayine-Crawford et al. 2012, Greig and Cox 2012, among others).

The BCA was established in 1987 to reduce the risk of contact between bison infected with bovine tuberculosis or brucellosis and disease-free bison in the Mackenzie, Nahanni and Hay-Zama (Alberta) populations. The two diseases are endemic in bison in the Slave River Lowlands and Wood Buffalo National Park (WBNP) (Figure 1). The BCA is intended to be a buffer zone between infected and uninfected populations to prevent the spread of disease.

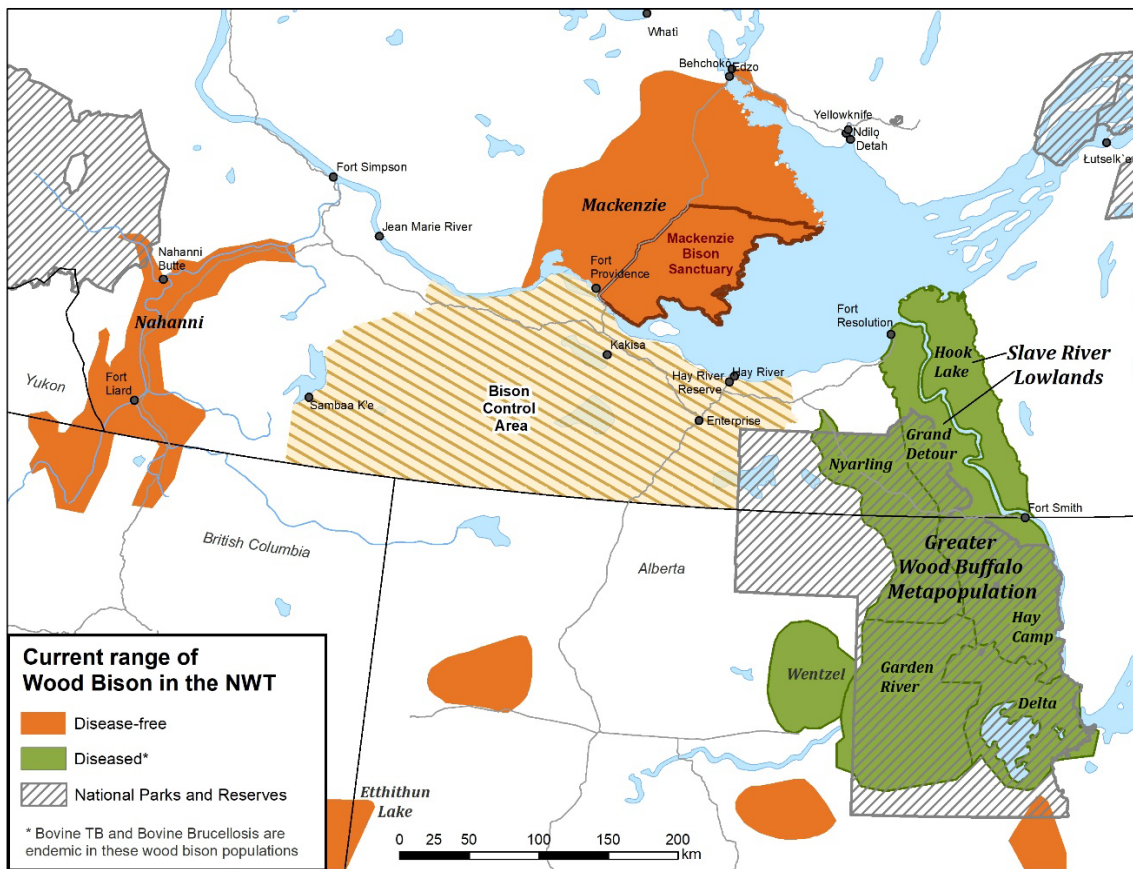


Figure 1. The current distribution of wood bison (*Bison bison athabasca*) in northern Canada.

This zone encompasses over 39,800 km² bounded in the south by the NWT border, in the north by the Mackenzie River and Great Slave Lake, in the west by the Trout River and in the east by the Buffalo River. All bison found within the BCA are assumed to be diseased and are removed and tested.

Since 1993 the BCA program has been jointly funded by the Government of the Northwest Territories' Department of Environment and Climate Change (ECC) (formerly the Department of Environment and Natural Resources (ENR)) and the Government of Canada's Parks Canada Agency. Both governments realize the importance of maintaining healthy wood bison herds and promoting the growth of the species. The BCA program supports the objectives of the national *Recovery Strategy for the Wood Bison (Bison bison athabascaae) in Canada* and the *Recovery Strategy for Wood Bison (Bison bison athabascaae) in the Northwest Territories*.

The objectives of the BCA program are to prevent bison from moving between the Slave River Lowlands/WBNP and the Mackenzie, Nahanni and Hay-Zama populations by detecting and removing any bison that may come into the area. To achieve this objective, the goals of the program are:

- Conduct aerial surveillance of the BCA twice during the winter months;
- Investigate all reports of bison in the BCA;
- Maintain the BCA free of bison and prevent any herds from establishing within its limits;
- Increase public awareness about the program; and
- Confirm disease status of any bison found in the BCA.

METHODS

Survey methods were similar to those used in previous years (Gates et al. 1992, Williamson et al. 1995, Bohnet and Gates 1997, Nishi 2002, Boulanger et al. 2002, Bidwell et al. 2004, Campbell et al. 2004, Hartop et al. 2009) to ensure repeatability and comparability of wildlife sightings. The exception to this is that transect markers were not used on the windows or wings since the purpose of the BCA program is to determine presence/absence of bison and is not to conduct a population survey. Comprehensive surveys are no longer conducted in this program.

The BCA is stratified into three zones (Figure 2). Zone I is the area in which bison are most likely to be seen, since it is the section of the BCA that is nearest to both the Mackenzie population's range and WBNP. Therefore, the program focuses on this particular zone, with aerial surveys conducted twice a year. Zone II is a larger zone and part of this zone is incorporated into the annual aerial surveys (Figure 3). Surveillance of the remaining areas of Zone I, II and III relies on reports from people living and travelling in the area instead of aerial surveys.

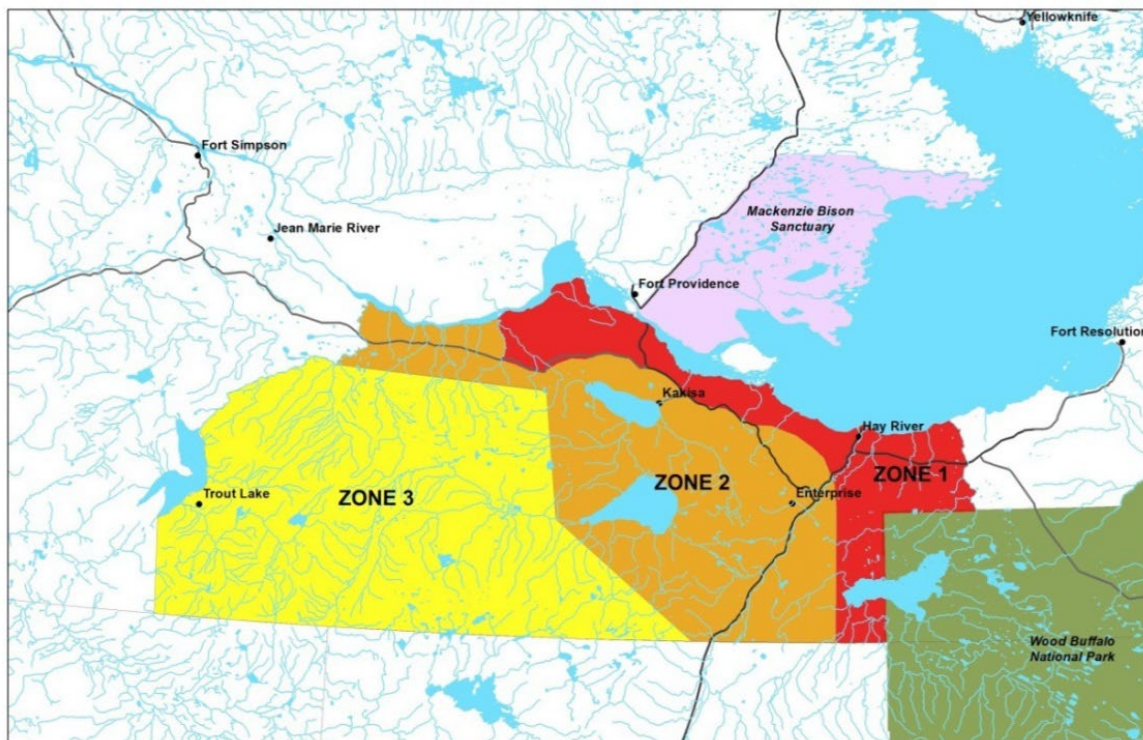


Figure 2. The Bison Control Area and its stratification into three zones.

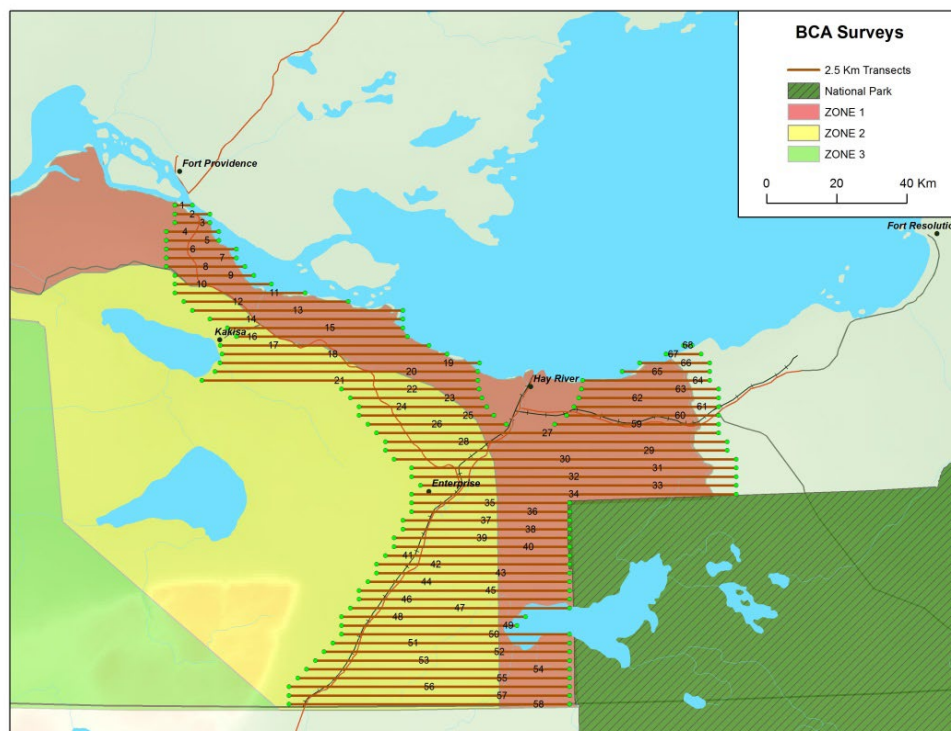


Figure 3. Transects for the two annual Bison Control Area aerial surveys.

Aerial surveillance is conducted during the winter months when bison and signs of their presence (feeding craters and tracks) are most visible. Also, the probability of bison moving through the BCA is potentially higher in the winter because bison may be more likely to walk across the frozen Mackenzie River than swim across it in the summer.

Two survey flights were completed between February 7 - March 19, 2022, using a Cessna 337 from Landa Aviation Ltd. The wildlife technician from the ECC office in Fort Smith conducted both surveys along with local community members as observers.

The first aerial survey was flown in February 7-13, 2022, and the second was flown in March 15-19, 2022. During both surveys the aircraft flew at 150-250 m above ground level (AGL) at speeds of 180-220 km/hr. All tracks and wildlife observed were documented and their location recorded. The aircraft circled all suspected bison tracks so observers could examine closer to determine the type of tracks. Data was recorded on a tablet with GPS capabilities using ArcGIS Survey123.

RESULTS

During the 2021/2022 season, there were no reports of bison either entering or approaching the BCA. A total of 51.3 hours of fixed wing flight was conducted over 11 days (Table 1). Weather conditions were recorded for each survey flight (Table 1). Weather conditions were acceptable (e.g. bright light, clear visibility) for most of the survey days. If the light or weather conditions were poor (e.g. low, flat light) flights were terminated or delayed until the next day. For example, during the first aerial survey of the 2021/2022 winter season, poor weather conditions grounded the aircraft on February 12th and no survey was conducted that day.

Table 1. Summary of Bison Control Area aerial surveys for the 2021/2022 season. Survey types are titled ‘semi’ for semi-comprehensive and ‘comp’ for comprehensive.

Survey Type	Date	Hours Flown	Temp. (°C)	Wind (Direction-knots)	Sky	Brightness	Snow Cover
Semi	7-Feb-2022	2.2	-13	NNW-4kts	Overcast	Medium	Complete
Semi	8-Feb-2022	2.3	-17	ENE-6kts	Partially Obscured	Medium	Complete
Semi	9-Feb-2022	5.0	-18	ESE-4kts	Overcast	Flat	Complete
Semi	10-Feb-2022	6.2	-22	calm	Clear	Bright	Complete
Semi	11-Feb-2022	7.3	-20	SSE-4kts	Clear	Bright	Complete
Semi	13-Feb-2022	2.8	-29	calm	Scattered	Medium	Complete
Comp	15-Mar-2022	6.3	-10	S-4kts	Clear	Bright	Complete
Comp	16-Mar-2022	6.1	-11	calm	Broken	Medium	Complete
Comp	17-Mar-2022	6.6	-4	calm	Scattered	Medium	Complete
Comp	18-Mar-2022	4.0	-3	calm	Broken	Bright	Complete
Comp	19-Mar-2022	2.5	-5	NNE-5kts	Clear	Bright	Complete
Total		51.3					

A total of 90 moose, 75 boreal caribou, and six wolves were observed during both aerial surveys. No bison were observed (Table 2).

Table 2. All recorded observations of animals and tracks seen during Bison Control Area aerial surveys for the 2021/2022 season. Survey types are titled ‘semi’ for semi-comprehensive and ‘comp’ for comprehensive.

Survey #	Date	Moose Tracks	Moose	Boreal Caribou Tracks	Caribou	Wolf Tracks	Wolf	Kill Site
Semi	7-Feb-2022	7		3		4		
Semi	8-Feb-2022	22	9	27	5	5		
Semi	9-Feb-2022	7	10	45		11		
Semi	10-Feb-2022	23	5	90	5	16		
Semi	11-Feb-2022	35	48	85	52	14	1	
Semi	13-Feb-2022	5	8	27	4	4		
Comp	15-Mar-2022	6		90	1	18		
Comp	16-Mar-2022	52	10	43	1	13	1	1
Comp	17-Mar-2022	10		29	7	4		1
Comp	18-Mar-2022	6		68		26		
Comp	19-Mar-2022	1		39		6	4	
	Total	174	90	546	75	121	6	2

These surveys covered approximately 3,488 km of fixed wing flying. This equates to an estimated 17.5% coverage of the BCA assuming an average transect width of 1,000 m on each side of the aircraft. This year there was also >2,500 km of helicopter flying by the collaring crew (December 6-17, 2021, and February 26-27, 2022).

PUBLIC AWARENESS

In 2021/2022 there were no public awareness actions taken. Public advertising of the BCA had been largely reduced since 2017. There are signs along highways informing the public of the BCA that cross into BCA boundaries. Information on the BCA is also provided annually in the Wood Bison section of *Northwest Territories Summary of Hunting and Trapping Regulations* (Figure 4).

IF YOU SEE A BISON IN THE CONTROL AREA...

Please report it to ENR as soon as possible (Toll-free 1-866-629-6438) with as much detail as you can on the location. Immediate reporting increases our response success. The success of this program depends greatly on public cooperation and support.

In the NWT, two populations of disease-free wood bison have been re-established. The Mackenzie population is found north of the Mackenzie River and has been one of the cornerstones of the nation's wood bison recovery program. The Nahanni population occupies a range in the Liard and Nahanni River Valleys.

The greater Wood Buffalo National Park population, which includes bison in the Slave River Lowlands, is infected with bovine tuberculosis and brucellosis. In 1987, the Bison Control Area (BCA) was created to prevent the spread of these diseases to the healthy Mackenzie and Nahanni populations. The BCA program is jointly funded by the Parks Canada Agency and the Government of the NWT.

All bison in the BCA are presumed to be diseased and must be removed and tested.

For more information on the BCA, please visit the ENR website at:
www.enr.gov.nt.ca/services/wood-bison/bison-control-area.

Please report any bison sightings in the BCA as soon as possible to the nearest ENR office. Under the NWT wildlife regulations, a resident may, at any time, hunt bison within the BCA. A hunter who wounds or kills a bison in the BCA is required to report the incident as soon as practical. If you would like more information regarding the Bison Control Program, please contact any ENR office.

Phone Hay River (867) 875-5550, Fort Providence (867) 669-3002, Fort Smith (867) 872-6400, Fort Simpson (867) 695-7450 or Fort Liard (867) 770-4300.

Figure 4. Bison Control Area information provided in the Wood Bison section of *Northwest Territories Summary of Hunting and Trapping Regulations*.

BISON REPORTS

There were no reports from the public of bison in the BCA during the 2021/2022 surveillance season.

BISON CONTROL AREA REVIEW

Surveillance efforts were modified beginning in 2016/2017 with the reduction of the aerial survey area and the removal of shoreline patrols.

A review of the BCA program was conducted in 2016 to assess the effectiveness of the program and to identify any potential cost savings. Recommendations were taken into consideration for future BCA activities. The 2016/2017 surveillance season was the first year to implement the currently used survey area and methods.

Prior to 2016/2017, weekly winter shoreline patrols were conducted along the north and south shores of the Mackenzie River in an effort to detect bison crossing the river. The review recommended discontinuing shoreline patrols for three reasons: (1) there had been few bison using habitat immediately adjacent to the Mackenzie River since 2012/2013, (2) shoreline patrols had not detected crossing events although crossing events had been detected by local residents who are active on the river during the winter, and (3) to shift focus to surveillance of the eastern boundary of the BCA, i.e., where any bison moving into the BCA could be diseased.

Prior to 2016/2017, annual semi-comprehensive and comprehensive surveys were conducted within the boundaries of the BCA. The semi-comprehensive survey did gather observations, but its design did not provide consistent coverage of the survey area. The comprehensive survey was not consistent in transect spacing and alignment, so use of the data for other purposes was more difficult than a standard survey with fixed transect widths with parallel spacing. The review recommended replacing the semi-comprehensive and comprehensive surveys with a redesigned aerial survey with systematic coverage of Zone 1 and part of Zone 2 that would be conducted twice each winter. The new survey was designed to focus on the eastern boundary of the BCA to detect potentially diseased animals moving of WBNP as opposed to non-diseased animals moving south of the Mackenzie River.

ACKNOWLEDGEMENTS

Indigenous governments and Indigenous organizations whose traditional territories overlap with the BCA are engaged annually regarding the survey flights. We are thankful for their support and participation.

We appreciate the support for this program provided by our partner, Wood Buffalo National Park, Parks Canada Agency.

Several people were integral to the Bison Control Area program for the 2021/2022 season. Liam Case led logistics. Ashley McLaren and Terry Armstrong secured program funding and provided logistic support.

The community observers were indispensable, and we thank all of them for assisting on our surveillance flights: Earl Evans, Justin Lafferty, Kyle Bourque, Raelene Lamalice, Kyle Norn, Hawkins Tambour and Charmaine Norn. Many thanks also go to Landa Aviation Ltd. and their pilot Darcy King for his expertise and input.

LITERATURE CITED

- Bidwell, W., J.S. Nishi and T.R. Ellsworth. 2004. Bison Control Area Program Annual Report of Survey Activities, December 2003 – April 2004. Resources, Wildlife and Economic Development, Government of the Northwest Territories. Manuscript Report No. 156. 50pp.
- Bohnet, S. and C.C. Gates. 1997. Bison Control Program: Annual Report of Survey Activities, December 1996 – April 1997. Resources, Wildlife and Economic Development, Government of the Northwest Territories. Manuscript Report No. 100. 33pp.
- Boulanger, J., K. Poole and C. DeMars. 2017. Review of Bison Monitoring Program for the Northwest Territories. Environment and Natural Resources, Government of the Northwest Territories. Manuscript No. 269. 118pp.
- Boulanger, A.J.M., T.R. Ellsworth and J.S. Nishi. 2002. Bison Control Program: Annual Report of Survey Activities, December 1997 – April 1998. Resources, Wildlife and Economic Development, Government of the Northwest Territories. Manuscript Report No. 110. 37pp.
- Campbell, G.D., J.S. Nishi and T.R. Ellsworth. 2004. Bison Control Area Program Annual Report of Survey Activities, December 2002 – April 2003. Resources, Wildlife and Economic Development, Government of the Northwest Territories. Manuscript Report No. 155. 35pp.
- Gates, C.C., B. Elkin, L. Kearey and T. Chowns. 1992. Surveillance of the Bison Free Management Area. Renewable Resources, Government of the Northwest Territories. Manuscript No. 50. 29pp.
- Greig, R. and K. Cox. 2012. Bison Control Program: Annual Report, December 2010 – April 2011. Environment and Natural Resources, Government of the Northwest Territories. Manuscript Report No. 215. 34pp.
- Hartop, B.V., W. Mandeville, N. Lee and D. Johnson. 2009. Bison Control Area Program Annual Report of Survey Activities November 2007 – April 2008. Environment and Natural Resources, Government of the Northwest Territories. Manuscript Report 205. 75pp.
- Nishi, J.S. 2002. Surveillance Activities under the Northwest Territories Bison Control Area Program (1987-2000). Resources, Wildlife and Economic Development, Government of the Northwest Territories. Manuscript Report No. 145. 32pp.
- Sayine-Crawford, H., B. Hartop and T. Armstrong. 2012. Bison Control Area Program Annual Report of Survey Activities December 2008-2009. Environment and Natural Resources, Government of the Northwest Territories. Manuscript Report No. 213. 40pp.
- South Slave Region. 2015. Bison Control Area Program Annual Report December 2012-April 2013. Environment and Natural Resources, Government of the Northwest Territories. Manuscript Report No. 248. 39pp.

Williamson, K, C.C. Gates and A. Allisiak. 1995. Surveillance of the Bison Control Area, January – April 1994. Renewable Resources, Government of the Northwest Territories. Manuscript No. 82. 48pp

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APPENDIX A. SUMMARY OF SURVEILLANCE ACTIVITIES AND REMOVALS OF BISON FROM THE BISON CONTROL AREA (1988/1989 – 2021/2022)

Year	Shoreline Patrols	Semi- Comprehensive Surveys	Comprehensive Surveys	Hours Flown	Snow- mobile Ground Patrols	Bison Removals
1988/1989	1					
1989/1990	2					
1990/1991	2					
1991/1992		7				
1992/1993			3			9 ^a
1993/1994	14 ^b		1		23	
1994/1995	10(26) ^c	6(94)	1(34)	153	33	2 ^d
1995/1996	11(35)	3(48)	1(41)	123		3 ^e
1996/1997	21(62)	3(45)	1(46)	153		
1997/1998	14(43)	3(46)	1(48)	137		
1998/1999	14(43)	2(30)	1(45)	117		
1999/2000	14(42)	2(28)	1(46)	115		
2000/2001	13(40)	2(30)	1(50)	120		
2001/2002	14(42)	2(29)	1(42)	113		
2002/2003	11(25)	2(22)	1(40)	87		
2003/2004	13(31)	1(11)	1(37)	78		
2004/2005	12(29)	1(14)	1(33)	76		
2005/2006	11(23)	1(14)	1(36)	88		
2006/2007	12(38)	1(19)	1(36)	93		
2007/2008	13(40)	1(15)	1(33)	88		
2008/2009	11(33)	1(15)	1(30)	78		
2009/2010	9(27)	1(13)	1(13)	53		
2010/2011	11(30)	1(17)	1(27)	74		1 ^f
2011/2012	10(25)	1(16)	1(23)	64		
2012/2013	2(27)	1(36)	1(18)	81	1 ^g	
2013/2014	14(49)	1(13)	1(30)	92		1 ^h
2014/2015	10(33)	1(12)	1(34)	79		
2015/2016	8(30)	1(12)	1(30)	72		

Year	Shoreline Patrols	Semi-Comprehensive Surveys	Comprehensive Surveys	Hours Flown	Snow-mobile Ground Patrols	Bison Removals
2016/2017		2(62)		62		
2017/2018		2(57)		57		
2018/2019		2(51)		51		
2019/2020		2(39)		39		
2020/2021		2(51)		51		
2021/2022		2(51)		51		

^a 17 May 1992: eight bulls shot near Point de Roche. 31 May 1992: one bull shot near Point de Roche (no lymph nodes collected). Serological testing for *Brucella* was negative for all nine bulls, no lesions consistent with tuberculosis observed on gross pathology or histopathology.

^b Four patrols covered the Hay River area and extended inland to the northwest park boundary.

^c Numbers in brackets represent survey hours (rounded off to the nearest hour).

^d 13 October 1994: prior to the surveillance season beginning, one bison shot by hunter near the eastern boundary of the BCA. Blood and tissue samples collected but no evidence of brucellosis or tuberculosis. 8 March 1995, one cow shot by hunter along south shore of Mackenzie River. Cow had likely been wounded by wolves. Blood serum and retropharyngeal lymph nodes collected.

^e 19 March 1996: three cows killed by hunter on the south shore of Mackenzie River. Blood serum (n=2) and retropharyngeal lymph nodes (n=3) collected. No serological reactors to brucella, and lymphatic tissue normal on gross examination.

^f 5 January 2011: one injured young of the year female was killed by a fisherman north of Hay River on Great Slave Lake (coordinates: 60°59'17.1" N, 115°51'05.5"W). It was collected on January 12th and brought back to Fort Smith. A necropsy was performed, and wounds were found on the front left shoulder and the hindquarters and appeared to be from a wolf attack. Retropharyngeal, submandibular, prefemoral, prescapular, popliteal and bronchial lymph nodes and tonsils were collected for testing.

^g Snowmobile patrol conducted from Fort Providence to investigate bison sighting. No bison observed.

^h 1 January 2014: ENR RRO in Fort Providence received a report of a bison sighting near Axe Handle Creek on Highway 1. On January 2, the RRO found bison tracks in the area. The bison had been feeding in the low areas and tracks went into a gravel pit. On January 6 at 16:30, an RRO located and destroyed the bison in the gravel pit (61.091683N, -118.709583W); the bison had been there for some time. Two local hunters assisted in tracking and skinning the young male (B2) in healthy condition.