

# Addendum to the Alberta Grizzly Bear Recovery Plan



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Environment and Parks, Government of Alberta

February 2021

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ISBN 978-1-4601-4798-6

Copies of this document can be downloaded at <https://open.alberta.ca/publications/9781460147986>

# Introduction

This document is an addendum to the Alberta Grizzly Bear Recovery Plan. Presented here are updates to Tables 1, 2, and 3 as well as Figures 2 and 3. Environment and Parks will continue to provide information regarding the current status of grizzly bears in Alberta as it becomes available.

**Table 1** DNA-based capture-recapture population and trend estimates of grizzly bear populations in Grizzly Bear Management Areas (BMA) in Alberta.

BMA	Year	Pop. Est. (95% CI)	Trend	Notes	Reference
BMA 1 Chinchaga	2017	20.4 (16.1-33.6)	unknown		NW Grizzly Team 2019
BMA 2 Grande Cache	2008	353.3 (288-516)	unknown		Alberta Grizzly Bear Inventory Team 2009
BMA 3 Yellowhead	2004	36 (28.6-45.3)	increasing	<ul style="list-style-type: none"> <li>- 2004 results reanalysed with SECR methodology</li> <li>- Entire BMA pop est. is 138.6 (114.6-167.7)</li> <li>- 74.2 is the estimate when Jasper NP and White Goat WA area are not included.</li> <li>- 71.3 is the number of bears just on the sampling grid and was used for a fair comparison with 2004.</li> </ul>	Stenhouse <i>et al.</i> 2015
	2014	71.3 (53.9-94.2)			
BMA 4 Clearwater	2005	47 (44-60)	Unknown	Banff NP or Siffleur WA not included	Boulanger <i>et al.</i> 2005
	2018	88 (59-130)	Increasing	6% annual growth rate	Stenhouse <i>et al.</i> 2020
BMA 5 Livingstone	2006	90 (75-116)	unknown	Data being analysed for a new estimate	Alberta Grizzly Bear Inventory Team 2007
	North 2014	96.3 (64.6-143.6)	stable	Data from 2006 reanalysed to allow comparison	AEP 2018
	South 2016	34.8 (19.6-62.1)	likely stable	Data from 2006 reanalysed to allow comparison. Large confidence interval precluded definitive trend determination.	
BMA 6 Castle	2007	51.2 (34.4-86.7)	Stable/ likely increasing		Alberta Grizzly Bear Inventory Team 2008
	2013-2014	67.4 (50.0-91.1)			
BMA 7 Swan Hills	2018	62 (56-64)	unknown	First estimate for this BMA	Stenhouse <i>et al.</i> 2021

**Table 2a** The six-year (2011–2016) average rate of human-caused removals from Grizzly Bear Management Areas (BMA) in Alberta expressed as a percentage of the best estimate of the population in the entire BMA including the National Parks.

BMA	Pop Est	6 yr Average Human-Caused Removals (2011-2016) <sup>a</sup>					
		Mortalities (% population)		Translocations (% population)		Total Removals (% population)	
		Female	Total	Female	Total	Female	Total
BMA 1 Chinchaga	20 <sup>f</sup>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
BMA 2 Grande Cache	390 <sup>b</sup>	3.17 (0.81)	4.67 (1.20)	0.67 (0.17)	0.67 (0.17)	3.84 (0.98)	5.34 (1.37)
BMA 3 Yellowhead	70 <sup>c</sup>	0.33 (0.48)	1.50 (2.15)	0.17 (0.24)	0.17 (0.24)	0.50 (0.72)	1.67 (2.39)
BMA 4 Clearwater	55 <sup>b</sup>	1.33 (2.42)	2.50 (4.54)	0.17 (0.31)	0.33 (0.60)	1.50 (2.73)	2.83 (5.14)
BMA 5 Livingstone	127 <sup>d</sup>	1.00 (0.79)	1.67 (1.31)	1.83 (1.44)	2.00 (1.57)	2.83 (2.22)	3.67 (2.88)
BMA 6 Castle	66 <sup>e</sup>	0.50 (0.76)	0.67 (1.01)	3.00 (4.54)	3.00 (4.54)	3.50 (5.30)	3.67 (5.55)
	168 <sup>e</sup>	0.50 (0.30)	0.67 (0.40)	3.00 (1.79)	3.00 (1.79)	3.50 (2.09)	3.367 (2.19)
BMA 7 Swan Hills	24 <sup>b</sup>	0.17 (0.70)	0.17 (0.70)	0.00 (0.00)	0.00 (0.00)	0.17 (0.70)	0.17 (0.70)

<sup>a</sup>The purpose of the analysis was to assess bear population sustainability in the Recovery Zone. Consequently, male grizzly bears that were killed in, or translocated from, the Support Zone were not included in the analysis. Females were included. No bears killed or translocated from outside of a BMA were included in the analysis. Sources of population information: <sup>b</sup>Festa-Bianchet (2010); <sup>c</sup>Stenhouse et al. (2015); <sup>d</sup>AEP 2018; <sup>e</sup>Morehouse and Boyce (2016) resident (67) and resident plus partially resident grizzly bears (171); and <sup>f</sup>NWGB Team (2019). A conservative annual growth rate (0.02) was used between years from referenced estimate except in BMAs 1 and 7 where little evidence of growth has been observed. The population number used is the mid point in the 6 year period.

**Table 2b** The six-year (2012–2017) average rate of human-caused removals from Grizzly Bear Management Areas (BMA) in Alberta expressed as a percentage of the best estimate of the population in the entire BMA including the National Parks.

BMA	Pop Est	6 yr Average Human-Caused Removals (2012-2017) <sup>a</sup>					
		Mortalities (% population)		Translocations (% population)		Total Removals (% population)	
		Female	Total	Female	Total	Female	Total
BMA 1 Chinchaga	20 <sup>f</sup>	0.17 (0.83)	0.17 (0.83)	0.00 (0.00)	0.00 (0.00)	0.17 (0.83)	0.17 (0.83)
BMA 2 Grande Cache	398 <sup>b</sup>	3.00 (0.75)	4.50 (1.13)	0.67 (0.17)	0.67 (0.17)	3.67 (0.92)	5.17 (1.30)
BMA 3 Yellowhead	71 <sup>c</sup>	0.33 (0.47)	1.33 (1.87)	0.17 (0.24)	0.17 (0.24)	0.50 (0.71)	1.50 (2.11)
BMA 4 Clearwater	56 <sup>b</sup>	1.33 (2.37)	2.33 (4.15)	0.17 (0.30)	0.50 (0.89)	1.50 (2.67)	2.83 (5.04)
BMA 5 Livingstone	130 <sup>d</sup>	1.17 (0.90)	1.67 (1.29)	1.83 (1.41)	2.00 (1.54)	3.00 (2.31)	3.67 (2.83)
BMA 6 Castle	67 <sup>e</sup>	0.50 (0.74)	0.50 (0.74)	2.50 (3.71)	2.50 (3.71)	3.00 (4.45)	3.00 (4.45)
	171 <sup>e</sup>	0.50 (0.29)	0.50 (0.29)	2.50 (1.46)	2.50 (1.46)	3.00 (1.75)	3.00 (1.75)
BMA 7 Swan Hills	24 <sup>b</sup>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)

<sup>a</sup>The purpose of the analysis was to assess bear population sustainability in the Recovery Zone. Consequently, male grizzly bears that were killed in, or translocated from, the Support Zone were not included in the analysis. Females were included. No bears killed or translocated from outside of a BMA were included in the analysis. Sources of population information: <sup>b</sup>Festa-Bianchet (2010); <sup>c</sup>Stenhouse et al. (2015); <sup>d</sup>AEP 2018; and <sup>e</sup>Morehouse and Boyce (2016) resident (67) and resident plus partially resident grizzly bears (171); <sup>f</sup>NWGB Team (2019). A conservative annual growth rate (0.02) was used between years from referenced estimate except in BMAs 1 and 7 where little evidence of growth has been observed. The population number used is the mid point in the 6 year period.

**Table 2c** The six-year (2013–2018) average rate of human-caused removals from Grizzly Bear Management Areas (BMA) in Alberta expressed as a percentage of the best estimate of the population in the entire BMA including the National Parks.

BMA	Pop Est	6 yr Average Human-Caused Removals (2013-2018) <sup>a</sup>					
		Mortalities (% population)		Translocations (% population)		Total Removals (% population)	
		Female	Total	Female	Total	Female	Total
BMA 1 Chinchaga	20 <sup>f</sup>	0.17 (0.83)	0.17 (0.83)	0.00 (0.00)	0.00 (0.00)	0.17 (0.83)	0.17 (0.83)
BMA 2 Grande Cache	406 <sup>b</sup>	3.33 (0.82)	5.33 (1.31)	1.00 (0.25)	1.00 (0.25)	4.33 (1.07)	6.33 (1.56)
BMA 3 Yellowhead	73 <sup>c</sup>	0.33 (0.46)	1.00 (1.38)	0.17 (0.23)	0.17 (0.23)	0.50 (0.69)	1.17 (1.61)
BMA 4 Clearwater	88 <sup>g</sup>	1.00 (1.14)	2.00 (2.27)	0.33 (0.38)	0.67 (0.76)	1.33 (1.51)	2.67 (3.03)
BMA 5 Livingstone	132 <sup>d</sup>	1.33 (1.01)	2.00 (1.51)	1.17 (0.88)	1.33 (1.01)	2.50 (1.89)	3.33 (2.52)
BMA 6 Castle	69 <sup>e</sup>	0.50 (0.73)	0.50 (0.73)	1.67 (2.43)	1.83 (2.66)	2.17 (3.15)	2.33 (3.39)
	174 <sup>e</sup>	0.50 (0.29)	0.50 (0.29)	1.67 (0.96)	1.83 (1.05)	2.17 (1.24)	2.33 (1.34)
BMA 7 Swan Hills	62 <sup>h</sup>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)

<sup>a</sup>The purpose of the analysis was to assess bear population sustainability in the Recovery Zone. Consequently, male grizzly bears that were killed in, or translocated from, the Support Zone were not included in the analysis. Females were included. No bears killed or translocated from outside of a BMA were included in the analysis. Sources of population information: <sup>b</sup>Festa-Bianchet (2010); <sup>c</sup>Stenhouse et al. (2015); <sup>d</sup>AEP 2018; and <sup>e</sup>Morehouse and Boyce (2016) resident (67) and resident plus partially resident grizzly bears (171); <sup>f</sup>NWGB Team (2019); <sup>g</sup>Stenhouse et al. (2020); <sup>h</sup>Stenhouse et al. (2021). A conservative annual growth rate (0.02) was used between years from referenced estimate except in BMAs 1 and 7 where little evidence of growth has been observed. The population number used is the mid point in the 6 year period.

**Table 2d** The six-year (2014–2019) average rate of human-caused removals from Grizzly Bear Management Areas (BMA) in Alberta expressed as a percentage of the best estimate of the population in the entire BMA including the National Parks.

BMA	Pop Est	6 yr Average Human-Caused Removals (2014-2019) <sup>a</sup>					
		Mortalities (% population)		Translocations (% population)		Total Removals (% population)	
		Female	Total	Female	Total	Female	Total
BMA 1 Chinchaga	20 <sup>f</sup>	0.17 (0.83)	0.17 (0.83)	0.00 (0.00)	0.00 (0.00)	0.17 (0.83)	0.17 (0.83)
BMA 2 Grande Cache	414 <sup>b</sup>	2.83 (0.68)	4.33 (1.05)	1.67 (0.40)	1.67 (0.40)	4.50 (1.09)	6.00 (1.45)
BMA 3 Yellowhead	74 <sup>c</sup>	0.50 (0.67)	1.00 (1.35)	0.33 (0.44)	0.33 (0.44)	0.83 (1.12)	1.33 (1.79)
BMA 4 Clearwater	90 <sup>g</sup>	1.00 (1.11)	1.83 (2.04)	0.33 (0.37)	0.67 (0.74)	1.33 (1.48)	2.50 (2.78)
BMA 5 Livingstone	135 <sup>d</sup>	1.33 (0.99)	2.00 (1.48)	0.50 (0.37)	0.67 (0.50)	1.83 (1.36)	2.67 (1.98)
BMA 6 Castle	70 <sup>e</sup>	0.33 (0.47)	0.33 (0.47)	2.00 (2.85)	2.00 (2.85)	2.33 (3.32)	2.33 (3.32)
	178 <sup>e</sup>	0.33 (0.19)	0.33 (0.19)	2.00 (1.12)	2.00 (1.12)	2.33 (1.31)	2.33 (1.31)
BMA 7 Swan Hills	62 <sup>h</sup>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)

<sup>a</sup>The purpose of the analysis was to assess bear population sustainability in the Recovery Zone. Consequently, male grizzly bears that were killed in, or translocated from, the Support Zone were not included in the analysis. Females were included. No bears killed or translocated from outside of a BMA were included in the analysis. Sources of population information: <sup>b</sup>Festa-Bianchet (2010); <sup>c</sup>Stenhouse et al. (2015); <sup>d</sup>AEP 2018; and <sup>e</sup>Morehouse and Boyce (2016) resident (67) and resident plus partially resident grizzly bears (171); <sup>f</sup>NWGB Team (2019); <sup>g</sup>Stenhouse et al. (2020); <sup>h</sup>Stenhouse et al. (2021). A conservative annual growth rate (0.02) was used between years from referenced estimate except in BMAs 1 and 7 where little evidence of growth has been observed. The population number used is the mid point in the 6 year period.

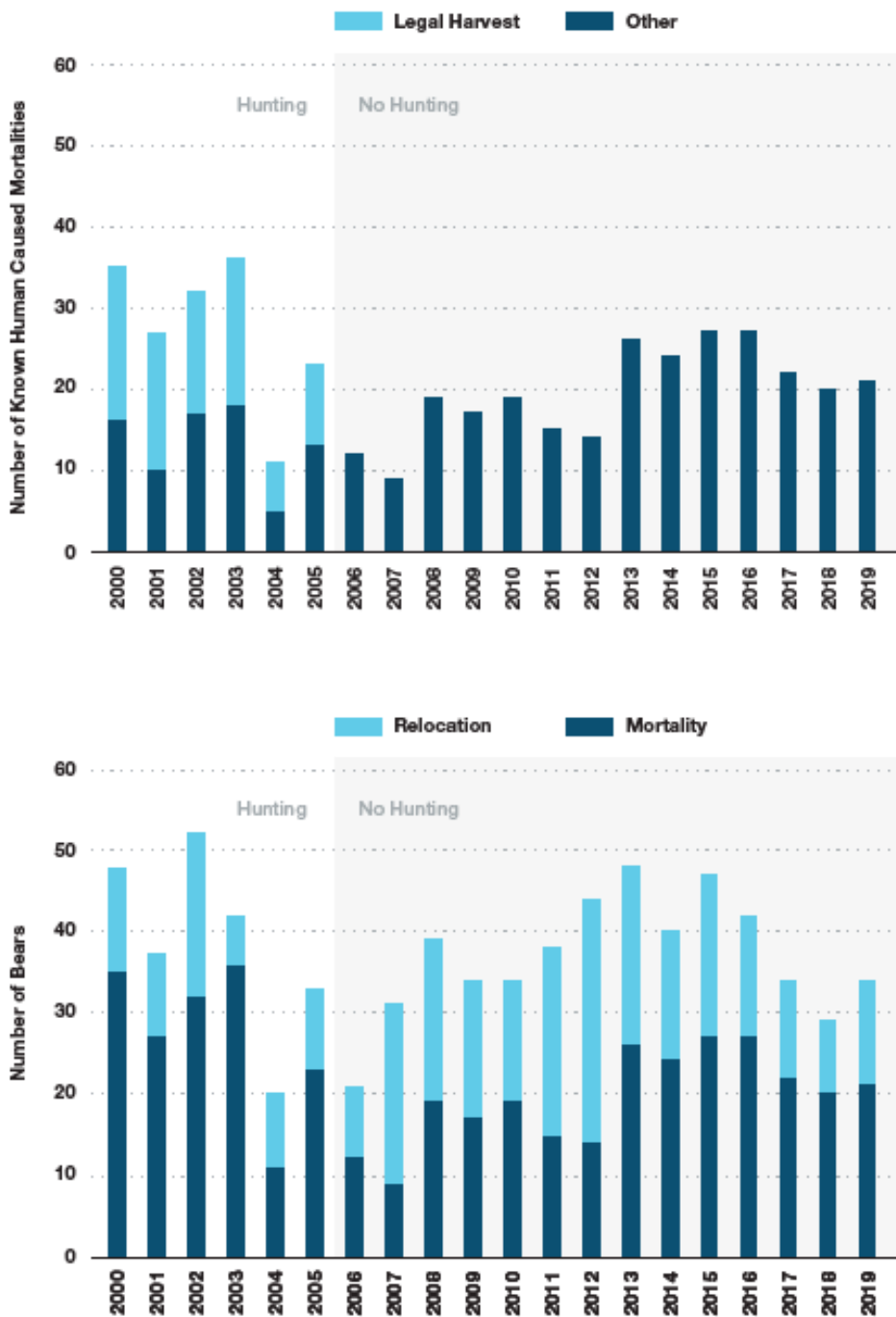


**Table 3** Translocation capture locations recorded in the Government of Alberta ENFOR database from 2016 – 2019.

BMA	Recovery Zone		Support Zone		Outside Bear Management Area		Grand Total (#)
	#	%	#	%	#	%	
1	0	0	0	0			0
2	3	18	14	82			17
3	4	44	5	56			9
4	1	20	4	80			5
5	3	23	10	77			13
6	0	0	19	100			19
7	0	0	2	100			2
Outside BMA					16	100	16
Grand Total	11	13	54	67	16	20	81

**FIGURE 2**

The top graph shows the number of human-caused mortalities from 2000–2019 and shows the contribution of legal harvests during the hunting era. The bottom graph shows the number of bears that were relocated out of the Grizzly Bear Management Areas stacked on the yearly human-caused mortalities. National Park mortalities were not included in this analysis.



**FIGURE 3**

The sources of human-caused grizzly bear mortality in Alberta (National Parks not included) from 2010 to 2019.

