Risk assessment for extending the hunting season for Mackenzie bison

Background

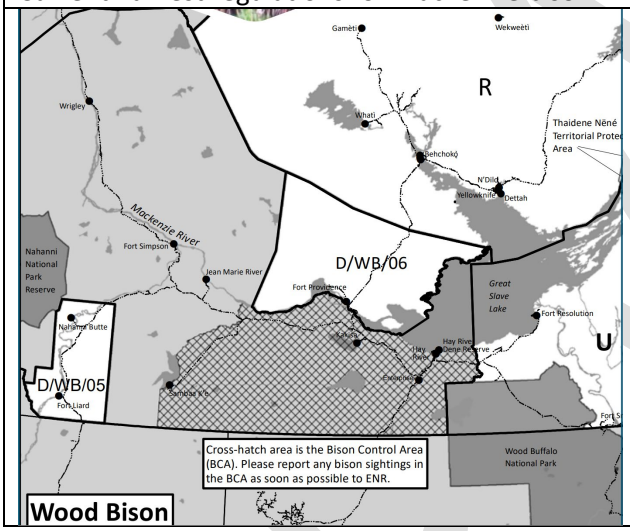
- During the 12-13 April 2022 meeting of the Mackenzie Bison Working Group , representatives from Indigenous governments and organizations (IGOs) reported that their combined harvest was approximately 50% of the current Total Allowable Harvest (TAH). There was consensus for a recommendation to change the regulations to extend the season that would improve access and allow hunters to fulfil their respective allocations.

- The IGOs requested GNWT-ENR conduct a risk assessment to identify and address impacts of a hunting season extension on Mackenzie bison.

Current hunting season

- Harvesting of Mackenzie bison is managed through the *Big Game Hunting Regulations* under the NWT *Wildlife Act*. Hunting occurs in areas wildlife management areas "D/WB/06" and "R" respectively. The hunting season for Mackenzie bison is 1 September to the 15 March, with a Total Allowable Harvest (TAH) of 40 (male only) bison.

Current harvest regulations for Mackenzie bison



Harvester	Tag Fee	Harvest Fee	Bag Limit	Season	Hunting Area
AH or GHL	N/A	N/A	Total of 7 tags - on a quota system (male only)	1 July - 30 June	D/WB/05
AH or GHL	N/A	N/A	On a quota system (male only)[b, c]	1 September - 15 March	D/WB/06, R
AH or GHL	N/A	N/A	Unlimited	1 July - 30 June	U
RES	110.00	N/A	One	1 Sept - 15 Mar	U[b]
RES	110.00	N/A	One male	1 July - 30 June	D/WB/05[a]
RES	110.00	N/A	On a quota system (male only)[b, c]	1 Sept - 15 Mar	D/WB/06, R

- Harvest have to carry their big tag while hunting. Mandatory reporting of harvest is to be submitted to ENR regardless of success.

[a] Tags on a quota system. Harvesters must obtain written approval from a local First Nation in order to obtain a tag. Contact the ENR office in Fort Simpson or Fort Liard for more information. Seven tags are available to GHL/resident hunters at local First Nations Acho Dene Koe Band (Fort Liard) and Nahanni Butte Dene Band (Nahanni Butte).

[b] Reporting on your hunt to ENR is mandatory whether or not an animal was taken. A report form is attached to the information package.

[c] 20 tags distributed by the Deh Gah Got'ie First Nation and the Fort Providence Métis Council, and 4 tags distributed by each of the Tłı̨chǫ Government, the Northwest Territory Métis Nation, the North Slave Métis Alliance, and Yellowknife Dene First Nation; 4 additional tags may be allocated in accordance with the limited entry draw.

Please note that where hunters are required to take males only, they must retain evidence of sex (testicles or scrotum).

Risk analysis approach

- A risk analysis is a process that embraces a series of four distinct steps that include:
  1) Hazard identification;
  2) Risk assessment (qualitative or quantitative);
  3) Risk management; and
  4) Risk communication.

Risks are identified as hazards, which are events or situations that cause harm, loss, or damage. A hazard is characterized by: the magnitude of harm, loss or damage it causes; the incurred costs should it occur;

and its probability of occurrence. An often-overlooked characteristic is the 'perception' of risk, which is the degree by which individuals and groups may perceive, define and assess hazards differently.

Once the hazard is identified, the next step is to conduct a systematic risk assessment that evaluates the likelihood and the biological, environmental, and economic consequences of the proposed action – in this case, an extension of the Mackenzie bison hunting season. The risk assessment is a logical, reasoned, and concise referenced discussion of the pathway(s) of potential impacts to the bison population and/or other values. For this risk analysis, we focused on the first two steps of the process.

Hunting season options

Three hunting season options were compared:

<table>
<tr>
<th>Option 1:
Status quo
15 Sep – 15 Mar</th>
<th>Option 2:
Spring extension
15 Sep – 15 Apr</th>
<th>Option 3:
Year-round hunting
1 Jul – 30 Jun</th>
<th>Legend</th>
</tr>
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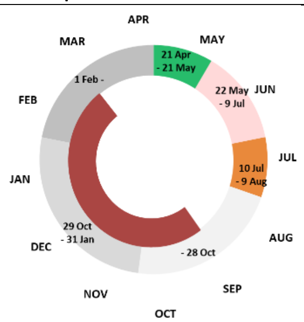
<td> 
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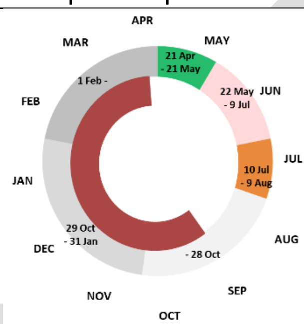
<td> 
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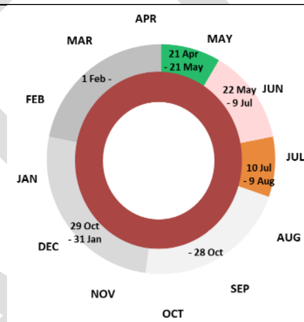
<td> 
</td>
<td><u>Bison Reproduction</u>
Calving
Summer
Rut
1st Trimester
2nd Trimester
3rd Trimester
- Assumptions
• 6 May & 25 July are respective median calving & rutting dates
•early and late calving/rutting dates are 15 days before and after medians
• Gestation is 285 days; each trimester is 95 days (adjusted to median calving/rutting dates)
<u>Hunting Season</u></td>
</tr>
</table>

Assessment - summary

- An increase in potential disturbance from year-round hunting is offset by the limited overall access to pursue and hunt Mackenzie bison across its range during the snow-free season. Other than the HWY 3 corridor, there are limited opportunities to hunt Mackenzie bison during spring, summer, and fall when travel by snowmachine is not possible (Table 1).
- Thus, in comparison to the current fall-winter season, year-round hunting of Mackenzie bison likely presents a negligible increase in potential disturbance to the bison population.
- No other NWT bison populations have a seasonal hunting restriction applied to Indigenous harvesters

Table 1. Summary of qualitative risk assessment for extending Mackenzie bison hunting season, pursuant to quota and non-quota conditions of a total allowable harvest (TAH), where current TAH is 40 male-only

		Risk Criteria Used for Rating			
Hunting season option	**Rationale**	**Disturbance to adult female bison**	**Access**	**Supports Indigenous harvest**	**Overall Risk Rating**
1) Status quo 1 Sep – 15 Mar	Minimize potential impacts of hunting disturbance to adult female bison	Hunting season closure during last trimester of pregnancy	Fall: limited to ATV and/or boat Winter: extensive snowmachine trails Spring/Summer: none • HWY 3 corridor in Fall & Winter	Actual bison harvest is least likely to meet allocated TAH objectives	- cautionary approach, but no supporting evidence that hunting disturbance meaningfully affects bison females at population level
2) Late winter extension 1 Sep – 15 Apr	Extend hunting season to include late winter (early spring)	One month extension with season closure prior to calving period	Fall: limited to ATV and/or boat Winter: extensive snowmachine trails Spring/Summer: none • HWY 3 corridor in Fall & Winter	Actual bison harvest is not likely to meet allocated TAH objectives	- one month extension is likely not meaningfully different to current season
3) Year-round 1 Jul – 30 Jun	Improve food security for Indigenous communities and facilitate year-round access of bison	No season closure – hunting may occur throughout the year	Fall: limited to ATV and/or boat Winter: extensive snowmachine trails Spring/Summer: limited to ATV and/or boat • HWY 3 corridor all year	Actual bison harvest is most likely to meet allocated TAH objectives	- potential increase in disturbance risk to bison cows is offset by limited access throughout the year.

NOTES – Bison Reproduction:

From USDA 2012 (https://www.ams.usda.gov/sites/default/files/media/LSDDGuidanceforAssessingWelfareBisonMay2012.pdf)

- Bison typically mature at two years of age for both male and females. Some yearling females will breed at one year of age and give birth to a calf as they turn two years of age, but this is an exception. The nutrient intake during the pregnancy of first and second calf heifers is significantly higher than a mature cow, especially during the third trimester. These young females must have sufficient nutrient intake to finish growing their own body in addition to finish growing a calf.

From NWTSARC 2016 (https://www.nwtspeciesatrisk.ca/sites/enr-species-at-risk/files/wood_bison_status_report_final_w_assessment_-_may1716_-_w_nyarling_correction.pdf)

- The Wentzel herd and bison in southern Wood Buffalo National Park are known to calve between May and early-June, although young calves have been seen year-round. (p. 43)
- Calves – Young of the year of both sexes, typically being born in April-May with calving largely completed by July. (p. 79)
- Wild plains bison have only a single ovulation per year and the gestation period has been estimated at 285 days or nine months (Haugen 1974). Ovulation and gestation time in wood bison is likely similar; Armstrong pers. comm. (2015) has noted a gestation period of 270-300 days (9-10 months) in wood bison in the NWT. (p.82)

From ACA 2017 (https://www.ab-conservation.com/downloads/AWSR/Mammal%20Reports/Status-of-American-Bison-in-Alberta-Update-2017_July2018.pdf)

- Bison have a polygamous breeding system organized through dominance relationships. Mature males compete for opportunities to tend and copulate with estrous females during the rut (breeding season) (Lott 1974), which typically occurs from the middle of July through to the end of August; an extended late rut occurs from September to early October (Komers et al. 1994b). (p. 30)
- Female bison are physically mature at two years of age and most calve for the first time at three years old. Ninety-five per cent of cows mate only once with conception generally occurring at the first or second estrus (Goodrowe et al. 2007). Observed calving and pregnancy rates for mature bison cows under free-ranging and semi-wild conditions has ranged from 35% to 88% (Reynolds et al. 2003). Most calves are born from late April to early June, after a gestation of approximately 270 to 300 days (Banfield 1974, Rutberg 1984, Jones et al. 2010). (p. 30)