

Wolf Harvest Report - 2018-19

North Slave Region

Dean Cluff
Environment and Natural Resources
North Slave Region, Yellowknife NT
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Background

Wolves are harvested as both as a furbearer and as big game in the Northwest Territories (NWT). Most regions in the NWT have introduced a harvest incentive program for wolves since 2010 to encourage more wolves to be killed to facilitate recovery of caribou. The North Slave Region (NSR) further increased its harvest incentive for wolves to \$200/wolf carcass (skinned or unskinned) for the 2015-16 harvest season for the entire region in response to new barren-ground caribou survey results and subsequent herd recovery efforts. This \$200 incentive program has continued each year since. For the 2018-19 harvest year, an additional harvest incentive area for wolves was created as a result of discussions at a gathering of Environment and Natural Resources (ENR) staff and Indigenous leaders/representatives at François Lake in August 2018. This new wolf harvest incentive area was established where the Bathurst and Bluenose East caribou herds were expected to winter in 2018-19 (Fig. 1). The program came into effect 04 February 2019. The incentive for harvesting a wolf (skinned or unskinned) in this new area would be \$900/wolf for both Indigenous and resident hunters (Fig. 2).

For Indigenous hunters, a wolf pelt skinned to traditional standards would receive \$400 under the Genuine Mackenzie Valley Fur Program. Another incentive was given to Indigenous harvesters if they skinned the wolf to taxidermy standards rather than traditionally (potentially \$350 more). Therefore, an Indigenous wolf harvester could earn up to \$1,650/wolf (Fig. 2). Pelts sent to auction are encouraged to be skinned to taxidermy standards, hence a financial incentive to do this. However, an Indigenous harvester receives the \$350 “prime fur bonus” for a wolf pelt that is graded as prime and if it sells for \$200 or more at auction. Skinning a wolf pelt to taxidermy standards is not mandatory for the prime fur bonus.

When an unskinned wolf carcass was submitted, ENR would pay the harvester \$900 for it and then arrange for an Indigenous person to skin the wolf. Skinners then received \$400 for the skinned pelt. That contract skinner could skin the pelt to either traditional or taxidermy standards. However, contract skinners tended to skin the pelt only to traditional standards because they would not be eligible for the additional \$350 “prime fur bonus” because they were not the original harvester of the wolf. Skinning a wolf only to traditional standards is faster and less meticulous than one prepared to taxidermy standards.

There were 31 wolves submitted that were not skinned. Another 28 wolves were submitted as skinned carcasses. Those harvesters that submitted a skinned carcass can either keep the pelt or sell it later. If all pelts are brought to ENR then the total cost of the incentive payments this

winter would be \$65,500 (28 skinned wolves @ \$900/wolf + 31 wolves @ \$1300/wolf carcass & skinning). The total could be higher depending on how many pelts were skinned to taxidermy standards or received the prime fur bonus if sent to auction. However, seven wolf harvesters kept 18 wolf pelts while others went to the Department of Industry, Tourism, and Investment for parka trim for the 2020 Arctic Winter Games team clothing.

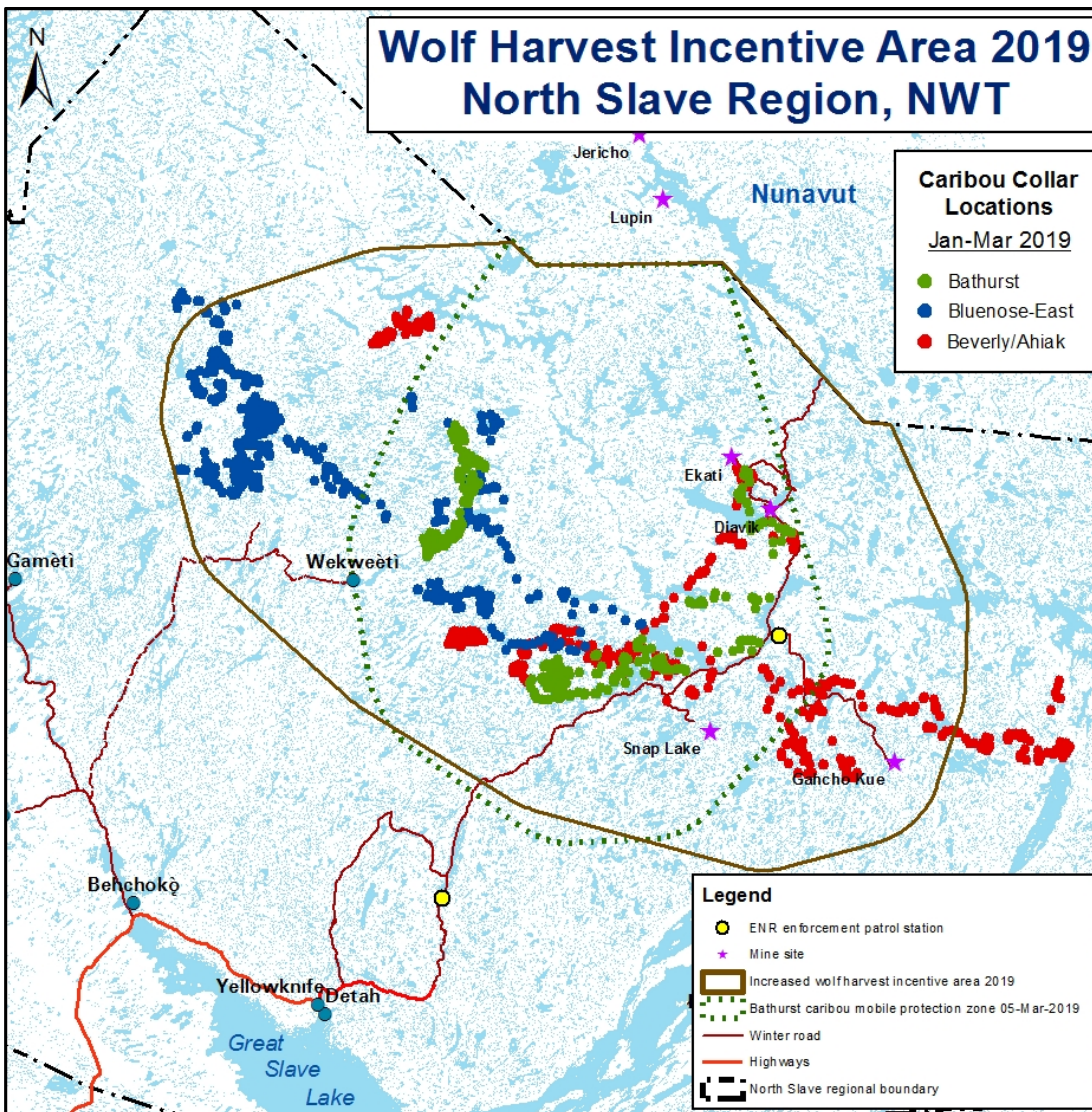


Figure 1. Boundaries for the new, increased wolf harvest incentive area for 2019 were generally based on the winter locations of barren-ground caribou within the North Slave Region. Considerable overlap in the winter ranges occurred in 2019 for the Bathurst, Bluenose-East, and Beverly-Ahiak caribou herds.

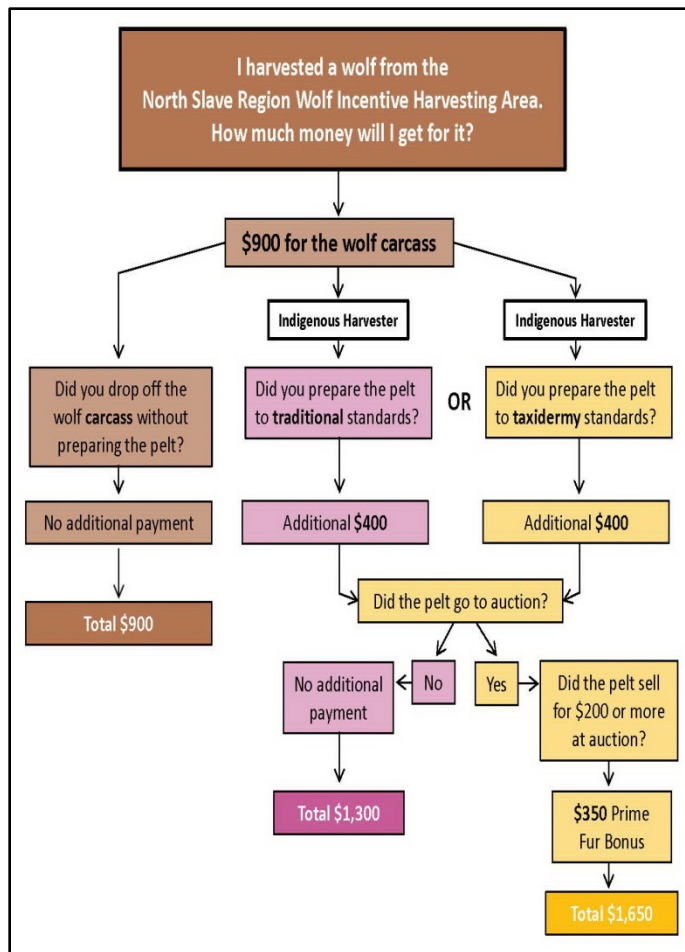


Figure 2. Flowchart for the 2019 increased wolf harvest incentive program.

Number of wolf tags issued

There were 954 hunting licenses sold in the North Slave Region for the 2018-19 harvest year (01 July to 30 June) as of 31 May 2019. This was up slightly from 929 hunting licenses sold the previous year (01 July 2018 to 30 June 2018). When these 2018-19 hunting licenses were sold, 428 wolf tags were purchased with them. However, an additional 629 wolf tags were sold afterward as tag receipts, meaning that hunters subsequently added these wolf tags to their already held license. Therefore, 1,057 wolf tags were purchased in 2018-19 at \$22 each (\$23,254).

For the previous harvest year (2017-18), 275 wolf tags were purchased with the 929 hunting licenses. An additional 167 wolf tags were purchased as tag receipts. Therefore, 372 wolf tags were purchased in the 2017-18 hunting season (\$8,184). The increase in wolf tags purchased in 2018-19 from the previous year (685 tags) was directly a result of the new increased incentive program for

wolves. From 01 February to 31 May 2019, 663 of the 1057 wolf tags were purchased then compared to 103 of the 372 wolf tags for the same time frame for the 2017-18 harvest year. Much of the increase in wolf tags in 2018-19 was due to tag receipts (461) as many hunters would have bought their hunting license earlier in the year and apparently bought wolf tags to take advantage of the new wolf incentive program.

Number of wolves harvested

There were 59 wolves taken by hunters in the new wolf harvest incentive area in winter 2018-19, 56 of which were paid \$900/wolf (\$50,400 total). One hunter in Wekweeti harvested two wolves in the area in mid-December 2018, prior to the new wolf harvest incentive program and therefore he could only collect \$200/wolf. One wolf was shot illegally in February 2019 and the

carcass seized. No payment was made for this wolf and ENR still holds the carcass pending a court appearance later in September.

One other wolf at the Gahcho Kue mine site was euthanized (authorized by ENR) on 15 January 2019 because it was lethargic and largely unresponsive to deterrents. The carcass was received by ENR on 24 January, necropsied on 31 January 2019, and confirmed that the wolf was emaciated. Therefore, 60 wolves were removed in total by people from the new enhanced wolf incentive area. Seven other wolves were harvested outside the new harvest area by seven hunters. Each of these seven hunters received a payment of \$200/wolf (\$1,400 total). Of these seven hunters, five were Indigenous. Therefore, incentive payments totaled \$50,800 (\$900/wolf x 56 wolves + \$200/wolf x 2 wolves) for the new wolf harvest target area and \$1,400 (\$200/wolf x 7 wolves) elsewhere in the NSR.

There were 31 hunters who harvested wolves under the new incentive program. Of these, four hunters were non-Canadian hunters. These four non-resident alien hunters were not eligible to collect the harvest incentive so these payments were collected by their Indigenous guide. Although these four hunters shot two wolves each (8 wolves total), only seven wolves were submitted to the harvest incentive program. Of the remaining 27 hunters, 16 were Indigenous hunters (5 were Tlicho beneficiaries), although one of the 16 hunters included the seized wolf carcass.

The most wolves harvested by one hunter was nine. The next highest submitted total was five wolves (1 hunter), followed by four hunters each taking three wolves, and eight hunters getting two wolves each. There were 18 hunters submitting one wolf carcass. The eight hunters getting two wolves each include the four non-resident alien hunters, although one wolf carcass from this group was not submitted for payment.

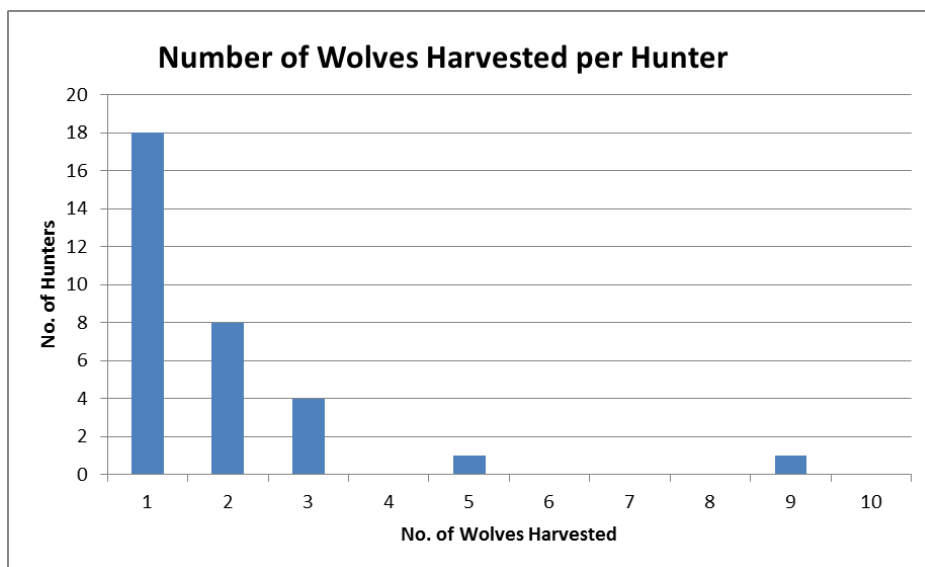


Figure 3. Number of wolves harvested per hunter 2018/19 in the new wolf harvest incentive area.

Wolf necropsies:

The North Slave Region received 65 wolf carcasses from the winter of 2018-19 that were necropsied. Carcasses received included wolves harvested throughout the North Slave Region, but most came from the new wolf harvest incentive area. Although the new enhanced wolf harvest incentive area (\$900/wolf) was officially launched on 04 February 2019, three wolves were harvested in that area in January 2019 and the increased incentive was also paid to these hunters. Two other wolves were harvested in the Wekweeti area in December 2018, and although the harvest locations were in the enhanced wolf harvest area, the incentive for these two wolves remained at \$200/wolf. Therefore, the new wolf harvest incentive program accepted wolf carcasses with the start of the 2019 calendar year.

Wolves harvested in the new harvest incentive area were killed from 15 January 2019 to 29 March 2019, a period of 104 days. There were 19 wolves killed in February, 17 of which were in the new enhanced wolf harvest area. In March, 36 wolves were killed, of which 35 were in the new enhanced wolf harvest area. Therefore, about twice as many wolves were killed in March compared to February. However, the program started in February and was in its inaugural year, so program awareness likely was a factor. March will still be expected as a preferred month though because weather and daylight length are key factors, and it is also when the school's March break from classes occurs.

The spatial distribution of the wolf harvest was mapped by 10 km² grid cells. The 2018-19 harvest spanned 29 grid cells (Fig. 4). Fourteen of these grid cells had just one wolf harvested, another 14 had 2-5 wolves harvested, and one grid cell had 10 wolves taken (Fig. 4). The Tibbitt-to-Contwoyto winter road is a huge factor in accessing the area (Fig. 5), and it typically closes by the end of March. The median timespan for a wolf carcass to be received by ENR from when it was killed was two days but the range was extensive, from 0 to 46 days.

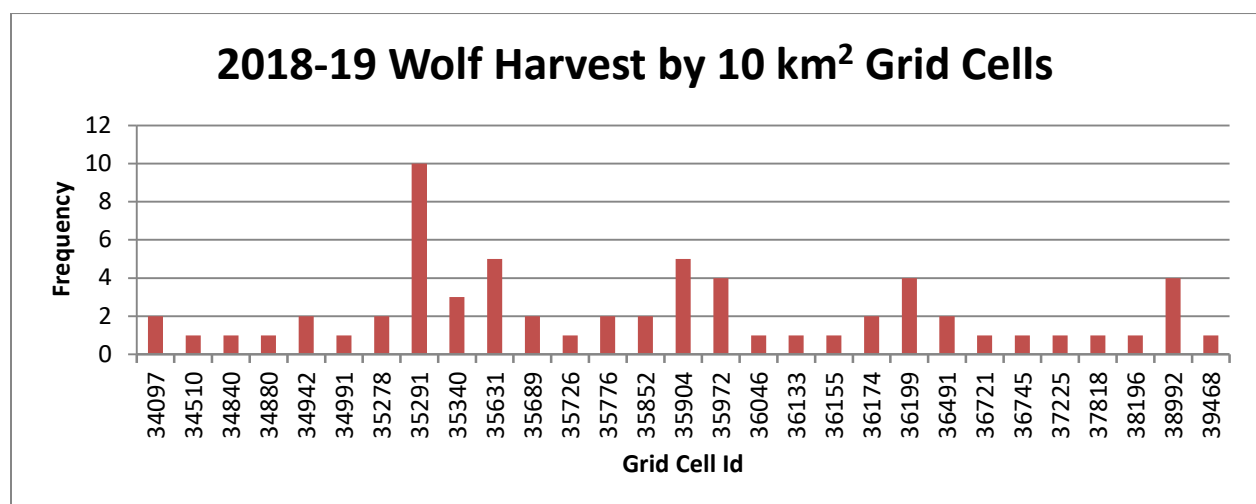


Figure 4. Spatial distribution of the 2018-19 wolf harvest in the North Slave Region based on 10 km x 10 km grid cells. There were 65 wolves harvested from 29 grid cells from December 2018 to April 2019.

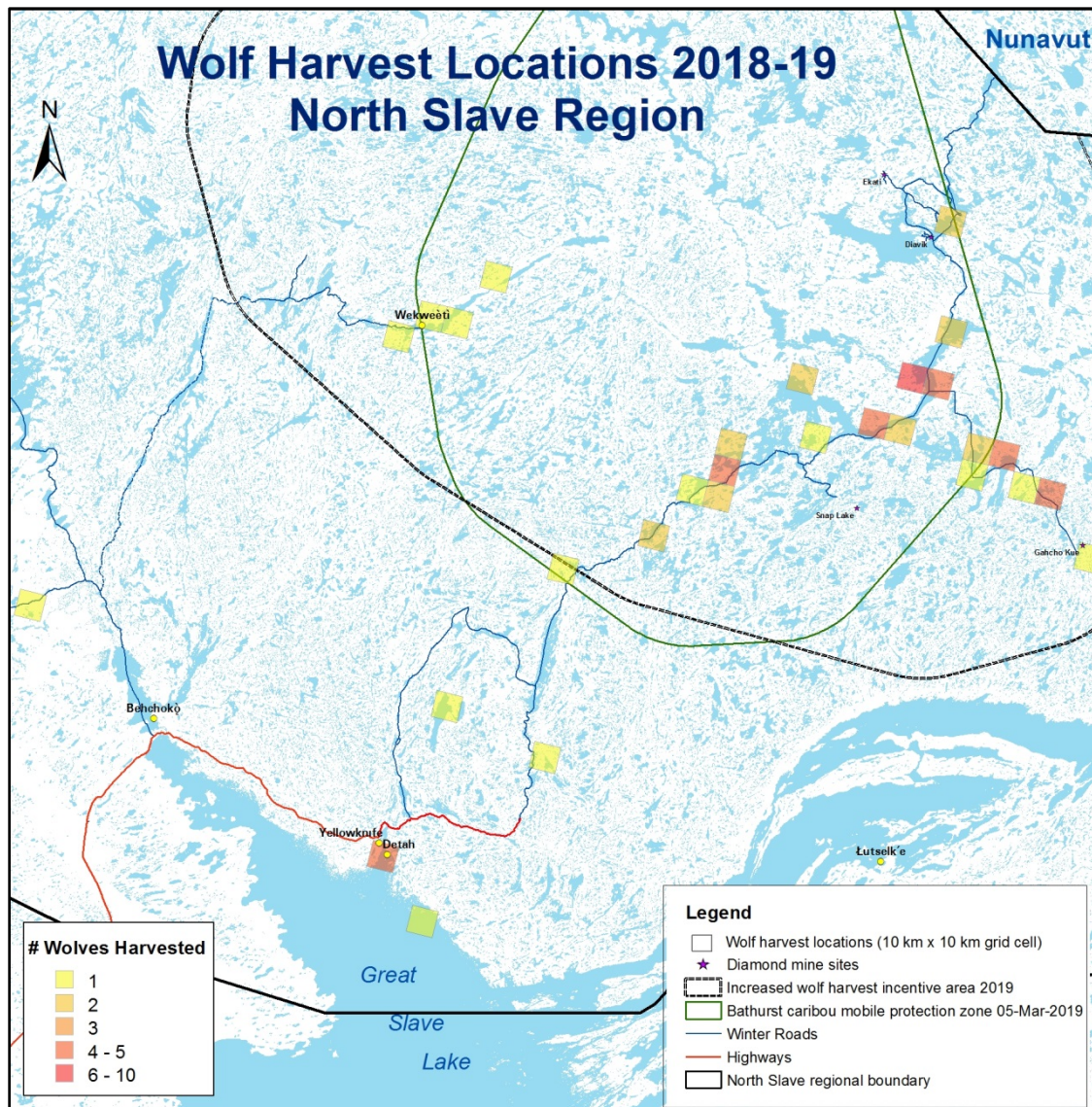


Figure 5. Spatial distribution of wolves harvested in the North Slave Region for winter 2018-19. Most wolves were taken in the new increase wolf incentive area (dashed line) established in February 2019.

The sex ratio of the 2018-19 wolf harvest selected extensively for males at 43 males:22 females. Although the sex of the wolf was recorded on the carcass tag, it was somewhat unreliable. There were two instances of “male” written on a tag when the sex was actually female, and five instances of “female” written on a tag when the wolf was actually a male. There were three tags where the sex of the wolf was unknown or left blank. Most hunters can likely sex a wolf correctly, therefore these gender assignment errors likely resulted from tags assigned at the patrol station and not affixed to the correct individual.

Most (69%) of the wolf carcasses submitted were classified as adults (≥ 3 years) at necropsy although these were estimates based on body size, tooth wear, or uterine scars in females. Fifteen wolves were not assessed at necropsy. Two wolves were classified as 2-year-olds, and

one as a possible yearling. Two wolves were classified as juveniles, suggesting that there was uncertainty between a yearling and 2-year-old classification. Those male wolves classified as adults at necropsy were over 30 kg in skinned body weight. Females classified as adults were 21 kg or more for skinned body weight. Indeed, one female wolf that previously reproduced (had three uterine scars) was 20.9 kg when skinned. Therefore, applying these weight criteria to the remaining unclassified age classes, we estimate them to be six adult males, three adult females, and six juvenile males. If we then add these classifications to the others, we calculate 54 adults, 2 two-year-olds, 1 yearling, and 8 juveniles (1 or 2 years old). Therefore, adults made up 83% of the wolves harvested, which is surprising. We would expect to see more juveniles in the harvest because usually about half the pack in winter is composed of juvenile wolves. Furthermore, juvenile wolves are more naïve than adults and would be more vulnerable to being harvested. All wolves will be aged via tooth cementum annuli and so age class determination will be more certain when these ages are received from the tooth aging lab.

An external body condition score was given to each wolf during the necropsy based on a scale of 0 to 4 for perceived fatness, with four being the fattest. Average external body condition score for all male wolves was 2.1 (SD=1.16) and was also 2.1 (SD=1.43) for all female wolves. Both sexes had individuals that spanned the range from 0 to 4. Rump fat (depth in mm) was taken to further assess body condition and measurements ranged from 0 to 16 mm (Table 1). Some overlap occurred between external body condition rankings and rump fat measurements (Table 1). Indices for evaluation of body condition will be re-examined in future collections to minimize observer bias.

Table 1. Total external body condition rankings (0-4) compared to rump fat thickness for necropsied wolves, 2018-19.

Total External Rank	Sample Size	Rump Fat (mm)	
		range	median
0 (lowest)	7	0	0
1	11	0 to 6	4
2	23	2 to 11	5
3	17	3 to 10	4.5
4 (highest)	7	3 to 16	5

Wolf stomach content analysis

Of the 65 wolves necropsied, 59 had stomachs collected for diet analysis. Stomach content analysis was done by contractor Joachim Obst. Of these 59 stomachs, 16 of them were empty (27%). Of the 43 wolf stomachs that had content, 37 had barren-ground caribou (86%). However, when considering all 59 wolf stomachs (37/59), 63% had eaten barren-ground caribou. Two wolves had eaten snowshoe hare. One of these wolves was taken from the Whati area, and the other wolf was killed in the Drybones Lake area, therefore both areas within the trees and snowshoe hare range. The wolf that had the arctic fox only on its stomach was killed in the Wool Bay area. Arctic foxes are seen around the Yellowknife area at times so therefore is consistent with arctic fox range. Of the three wolves that had garbage in their stomach, one

was from Wool Bay, another was from the Wekweeti area, and the third was from Duncan Lake.

While stomach content analysis is useful to get a general impression of what wolves are eating, the technique is flawed because it only reveals what was eaten for its last meal. Furthermore, a significant portion of those stomachs could be empty. However, the proportion of empty wolf stomachs from a snapshot collection such as this could serve as an index of wolf population health. Interestingly, a wolf study in Minnesota captured and examined wolves from 10 AM to 6 PM and 34% of them had empty stomachs, remarkably similar despite highly disparate times and locations. Another study from Latvia found 44 of 165 wolf stomachs (26.7 %) were empty (Zunna et al. 2009).

Wolf Harvest Questionnaire

Hunters who brought in a wolf to ENR to collect their incentive payment for the new enhanced wolf incentive zone (\$900/wolf carcass) were asked to complete a short questionnaire of 12 questions (Appendix A). The questions asked wolf harvesters what was the main purpose of their trip, how long they hunted, how far they travelled, how many people were involved, and what they saw. There were 28 hunters who harvested wolves in the new enhanced wolf harvest area, and 18 completed the questionnaire (11 Indigenous hunters, 7 resident hunters).

Resident hunters travelled solely to hunt wolves, as caribou hunting is currently prohibited for them. Conversely, many Indigenous hunters (6 of 11) travelled to the area to hunt caribou and wolves. One Indigenous hunter served as a guide to four non-resident hunters (2 tags each) to hunt only wolves. Hunts ranged in length from one hour to six days, but most were 2-3 days in duration. The reported distance travelled was variable, from 1 km to 1800 km. A couple of hunters with cabins in the Mackay Lake area shot wolves nearby as the distance travelled was 1 km and 1 hour in duration. Most of the hunting was facilitated by the Tibbitt-to-Contwoyto winter road (T2CWR), a joint venture between the Ekati™ Diamond Mine, Diavik™ Diamond Mine and the Gahcho Kue™ Diamond Mine (DeBeers Canada) ([https://en.wikipedia.org/wiki/Tibbitt to Contwoyto Winter Road](https://en.wikipedia.org/wiki/Tibbitt_to_Contwoyto_Winter_Road)). The T2CWR road in 2019 was operational from 01 February to 31 March, which is typical for its operation.

The time and distance travelled by hunters using the winter road to get from Yellowknife to Mackay Lake and return was apparently not reported by most hunters. The distance from Yellowknife to the Mackay Lake patrol station is approximately 370 km and takes about six hours to drive, therefore a round trip would be at least 740 km and require 12 hrs. It is likely that some of the travel distances that the wolf harvesters reported (1 km to 440 km) were distances estimated once they arrived at their destination for hunting. Many of the caribou (and wolves) appeared to be centered near Mackay Lake and spread along the Gahcho Kue mine spur road in February/March 2019. Therefore, distances travelled may reflect driving the road in this area a few times. The 1300, 1500, 1700, and 1800 km travel distances (over 2-4 days) reported by some resident hunters (hunting wolves only) likely reflect the actual distances and time spent harvesting wolves from start to finish. The travel distances reported out of Wekweeti were 20-40 km and were specific to hunting wolves. Many Bluenose-East

caribou were in close proximity to Wekweeti this past winter so travel would be minimal for Wekweeti-based hunters this year.

Hunting parties comprised mostly two people (11 groups), but five people reported hunting alone. One party consisted of three people and another of four people. The latter involved the Indigenous guide for non-resident hunters. Therefore, most people hunting wolves did so either alone or with one other person.

Wolf harvesters were asked about the wolves they saw while hunting. Total numbers ranged from 1 to 21 ($SD=5.95$), totaling 112 wolves. The average was 5.9 wolves and a median of 5 ($n=19$ listed excursions). The questionnaire did not reliably capture if hunters made more than one trip, although some hunters did report this. It was also unclear if the numbers of wolves sighted by hunters were in addition to the ones killed or were inclusive. For example, one hunter who got nine wolves over the winter reported seeing eight wolves in the questionnaire, so this could have been for just one excursion, or alternatively he saw another eight wolves from the nine he shot. I contacted this hunter for clarification and he told me that he saw 14 wolves all winter (5 trips to the area) and shot nine of them. In the Wekweeti area, 3 to 4 wolves were reported seen while hunting.

Hunters reported seeing only 1-3 packs of wolves during their excursions. The one report of seeing three packs of wolves was over a 3-day excursion. It wasn't clear if these three packs were seen in one day in different areas or they could have been repeated sightings. The number of wolves per pack that hunters saw ranged from 2 to 7 for a total of 63 wolves. This averaged to 4.2 wolves per pack ($SD=2.0$). These sightings excluded one hunter who reported a pack of one wolf. Normally, a pack of wolves, by definition, would consist of two or more wolves. In the Wekweeti area, 0, 2 and 4 packs of wolves were reported. Given that hunters collectively reported a total of 112 wolves sighted but 63 of them were in packs suggests many wolves (about half) were seen as singles.

Hunters were also asked how many fresh tracks of wolves that they saw. Answers ranged from none to lots and were difficult to quantify further. When asked if they saw caribou killed by wolves, 10 of the hunters said none, four hunters said one caribou, two hunters said two caribou, and another hunter said eight caribou. Finally, hunters were asked if they had any other comments or observations. Only four were provided. One said that they had "seen 6000+ caribou in the middle of Mackay Lake". A second hunter said the wolf they harvested "was not too far from a gut pile", a third hunter said there were "lots of wolf hunters up there", and the wolf hunting guide said "all wolves were healthy".

Results of these hunter questionnaires are limited because 8 of 28 harvesters (29%) didn't complete the questionnaire. This is due in part because the questionnaire was late in getting out (early March) and efforts by ENR staff to contact harvesters who missed the questionnaire and asked them to complete it were not completely successful. Furthermore, the questionnaire only surveyed successful wolf hunters from the new enhanced wolf harvest area. Those hunters hunting wolves who were not successful were not included, and they would have been an

important part of assessing effort in harvesting wolves and the potential changes that might ensue as the program continues. Plans to canvas all hunters hunting wolves and documenting each trip will be in place for next year.

Lessons Learned and Recommendations

1. The recording of harvest information for wolves needs to be more consistent. All unskinned wolves should have duplicate carcass tags (e.g., Fig. 6) so that when skinned, one tag can remain with the carcass while the other goes with the pelt. Harvesters need to pay better attention to sexing the wolf and ensure carcass tags are affixed to the correct carcass. For the log sheets for carcasses received, only one wolf carcass per line is requested to improve the accounting record.

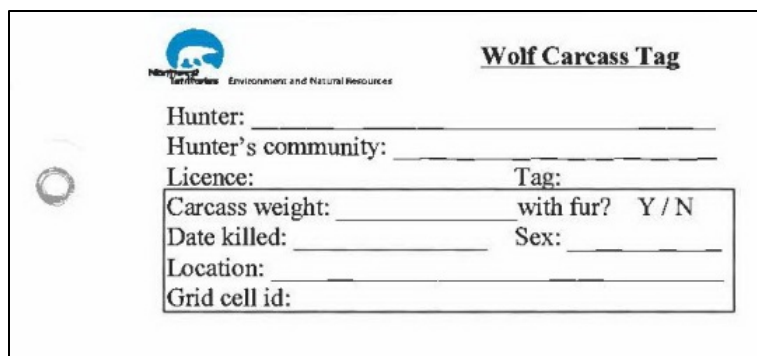


Figure 6.
Example of the wolf carcass tag used.

2. Skinners noted some wolves were shot multiple times and they had to sew these holes in the pelts. Also, some unskinned wolf carcasses were not handled by harvesters properly, especially during transport as gas or oil may have gotten on the pelt. Therefore, it was recommended to improve communications with harvesters for more humane harvesting and handling. One way to do this is at the wolf workshop ENR hosts for wolf harvesters.

3. Wolf carcass disposals after necropsy/sampling were done by returning back to the land. Necropsies this past year were done over a four week period beginning in mid-March. Officers disposing of the carcasses requested that necropsies be spread out more over the winter season so that carcasses do not “pile up”. A disposal tag was affixed to a leg of a wolf to keep carcasses for disposal separate from those not yet necropsied. Officers requested that a disposal tag not be applied as it slowed the disposal process because these tags needed to be removed when disposed of on the land.

4. Kugluktuk Hunters and Trappers Organization (KHTO) requested late in the season that they receive the \$900/wolf incentive for wolves they harvest within their asserted territory within the NWT. This was approved but no carcasses were submitted this year. ENR should initiate discussions with the KHTO prior to the 2019-20 wolf harvest to support their participation in the wolf incentive program and discuss ways that their harvest can be recorded and their carcasses/samples received.

5. A determination is needed on whether non-resident (NR) and non-resident alien (NRA) hunters qualify for the \$900/wolf carcass incentive. Eight wolves that were shot by NRA hunters this year were claimed by their guide.

6. Improve the hunter questionnaire by clarifying questions on harvest effort and travel distance/location. Have all hunters participate in the survey, not just those harvesting wolves. This will

be critical to assessing catch per unit effort to evaluate the program. Consider an incentive such as a gift card and/or draw for gasoline to encourage hunters to participate in the questionnaire each time they travel to the area.

7. Consider ways to encourage more wolf pelts are skinned to taxidermy standards, as they bring in a higher price at auction. There is little incentive to skin a wolf to taxidermy standards except for the increased price it may fetch at auction. Currently, the prime fur bonus applies to both methods of skinning the pelt, as long as the fur sells at auction for \$200 or more. Perhaps the prime fur bonus is changed to a taxidermy standard, but if so the name also needs to change. Consider involving non-Indigenous people the opportunity to skin a wolf carcass. This may also help alleviate the backlog of skinned carcasses we experience which affected the scheduling of necropsies.

8. Refine some of the sampling procedures for the necropsy of wolf carcasses to minimize observer bias, especially the measures to assess body condition.

Acknowledgements

We thank all the officers and community personnel who helped record the wolf harvest and kept records in this pilot program. Special thanks to Shelly Acton who tracked many of the wolf carcasses as they were received from the harvesters and provided hunter license information. Dr. Heather Fenton and Dean Cluff lead the necropsies. Nita Hynes (DVM student), Kayla Buhler (Ph.D. student, University of Saskatchewan), Michele Grabke (ENR-HQ), and three students (Wren Acorn, Nathan Cluff, and Kea Furniss) from Sir John Franklin High School assisted with some of the necropsies.

Literature Cited

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Appendix A

Questions for Successful Wolf Hunters

Q1: How many wolves did you harvest?

Q2: Date & location of your harvest?

Q3: Did you harvest wolves while hunting for hunting caribou or did you hunt wolves only?

Q4: Time spent hunting wolves (hours per day)?

Q5: Distance covered while hunting (km)?

Q6: Did you hunt wolves alone? How many hunters went with you?

Q7: How many wolves did you see while hunting?

Q8: How many packs of wolves did you see?

Q9: How many wolves per pack did you see?

Q10: How many fresh tracks of wolves did you see?

Q11: Did you see caribou killed by wolves?

Q12: Any other comments or observations?