

**Results of the 2022 Yukon
Sheep (*Ovis dalli*) and Goat
(*Oreamnos americanus*)
Hunter Effort Survey**

November 2023



[This page intentionally left blank]

Results of the 2022 Yukon Sheep and Goat Hunter Effort Survey

Government of Yukon
Fish and Wildlife Branch
SR-23-15

Authors

Thomas S. Jung, Catherine Pinard, Édouard Bélanger, and Chris Wall

Acknowledgements

Foremost, we are indebted to the 836 Yukon sheep and goat hunters that completed the survey. We thank Andrew Bark (Yukon Bureau of Statistics) and Meghan Larivee (Environment Yukon) for helping with survey design and implementation, and Florin Tatu (French Language Services Directorate) for translation services. Marc Cattet, Robert Perry, Robin Sharples, and Chantelle Rivest, and Erin Kohler (Department of Environment) reviewed the report.

© 2023 Government of Yukon

Copies available from:

Government of Yukon
Fish and Wildlife Branch, V-5
Box 2703, Whitehorse, Yukon Y1A 2C6
Phone 867-667-5721
Email: environmentyukon@yukon.ca
Online: Yukon.ca and open.yukon.ca

Suggested citation:

Jung TS, Pinard C, Bélanger É, Wall C (2023) Results of the 2022 Yukon sheep and goat hunter effort survey. Yukon Fish and Wildlife Branch Report SR-23-15, Whitehorse, Yukon, Canada. 26 pages.

Summary

- Hunter effort surveys are completed periodically by the Department of Environment as a means of ‘taking the pulse’ of the territory’s hunting community. Information from these surveys can be used to help evaluate harvest management rules and regulations.
- Resident hunters that purchased a sheep or goat hunting seal in 2022 were invited to participate in a survey of hunters, delivered by the Yukon Bureau of Statistics.
- The survey asked questions pertaining to the hunters’ motivation, practices, beliefs, satisfaction and, in particular, how much effort they exerted to harvest a sheep and/or goat.
- We obtained 836 completed surveys, representing a survey response rate of 62%. Among these, about 45% of survey respondents hunted sheep in 2022.
- Key results included:
 - Sheep and goat hunters are predominately male, having an average age of 47 years. About 21% of respondents have gone sheep hunting every year in the last five years. About 9% were new to sheep hunting. Conversely, many others were seasoned sheep hunters.
 - Most sheep hunting occurs in Game Management Zones 5 and 7, usually during August.
 - The number of days hunting sheep varies widely, but 49% of respondents spent 4 to 9 days hunting sheep in 2022. Most sheep hunting parties consisted of 2-3 individuals.
 - Most sheep hunters access sheep hunting areas on foot. They selected where to hunt primarily to avoid other hunters as well as to explore new areas, but other factors were also important for many.
 - The main motivations for sheep hunting were to obtain healthy meat, spend time on the land, and take part in an enjoyable activity. Although several other motivations were also apparent.
 - Sheep hunters were split about when it may be acceptable to limit sheep hunting opportunities but were receptive to information about how to hunt sheep safely and effectively.
- The results of this survey will be useful in better understanding the demographics and motivations of sheep and goat hunters, as well as informing harvest management decisions for these species.

Table of Contents

Summary	iii
Introduction	1
Sheep and Goats in the Yukon.....	1
Sheep and Goat Hunting	2
Hunter Effort Surveys	5
Methods	6
Survey Design	6
Survey Delivery	6
Data Analyses	7
Results (Sheep)	7
Respondents.....	7
Sheep Hunter Effort.....	10
Sheep Hunting Area Selection.....	15
Sheep Hunting Economics	16
Sheep Hunter Satisfaction.....	18
Sheep Hunter Motivation.....	18
Sheep Hunter Education and Practices.....	19
Results (Goats)	22
Respondents.....	22
Goat Hunting Effort	23
Qualitative Analyses of Comments	25
References	26
Appendix: Sheep and Goat Hunter Effort Survey	28

Introduction

Sheep and Goats in the Yukon

Thinhorn sheep (*Ovis dalli*) and mountain goats (*Oreamnos americanus*) live in the Yukon's mountains, where they are among the most conspicuous animals. Sheep are patchy, but broadly, distributed across the territory. They are found where suitable mountainous terrain occurs, from our border with British Columbia north toward the Beaufort Sea (Figure 1). Goats are much more restricted in their Yukon distribution, being found only in a few small areas in the southern part of the territory. The number of sheep in the Yukon is crudely estimated at 22,000 animals (Milligan 2018), while the number of goats is 1,500 (Government of Yukon, unpublished data). Accordingly, Yukon's sheep and goats are classified by the Yukon Conservation Data Centre as 'Apparently Secure' (S4) and 'Vulnerable' (S3), respectively (Government of Yukon, unpublished data). Key stressors to Yukon's sheep and goat populations include climate change, extreme weather, habitat modification, human disturbance, and overharvest. However, these are localized and, apart from climate change, have limited impact on most populations. Disease may also pose a future threat to some populations. Neither thinhorn sheep or mountain goats are a species at risk in Canada or globally.

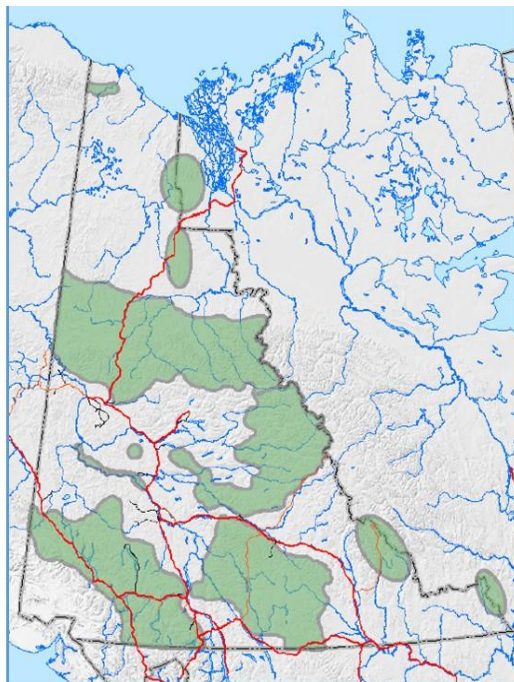


Figure 1. Generalized distribution of thinhorn sheep in the Yukon. Green polygons are the major concentrations of sheep, blue are waterbodies, and the red are roads. Map from Environment Yukon (2019).

Sheep and Goat Hunting

Sheep and goat hunting is an important activity in the Yukon, where it has supported the livelihoods and lifestyles of resident Yukoners for decades, and in the case of Indigenous People, millennia. Thus, careful management of sheep and goat harvest and habitat is necessary to ensure that populations persist for future generations of Yukoners.

Sheep and goats are listed as 'Big Game' in the Yukon *Wildlife Act*. Subsistence harvest is practiced by Indigenous People with an unknown number of animals taken each year. Licensed hunters include resident (Yukon) and non-resident (non-Yukon) hunters, who may obtain a seal to hunt sheep and goats each season. The number of seals sold, and the number of animals harvested each year are tracked by the Department of Environment.

Like caribou (*Rangifer tarandus*) and moose (*Alces americanus*), sheep are among the most highly prized big game animals in the Yukon (Milligan 2018). Between 2000 and 2022, a total of 35,157 seals for sheep were sold in the Yukon, with an average (mean) of 1,529 seals sold annually (range = 1,222 to 1,839). The number of seals sold annually increased between 2000 and 2014 but has been stable at 1,700 to 1,840 since then (Figure 2). The total harvest by licensed hunters between 2000 and 2022 was 5,419 sheep, with an average annual harvest of 236 sheep (range = 196 to 276). The number of sheep harvested by licensed hunters has also remained stable between 2000 and 2022 (Figure 2). Licensed resident hunters harvest an average of 38% of the total licensed harvest each year (range = 31% to 58%), with an average of 62% being harvested by non-resident hunters, an exception during the COVID-19 pandemic when resident hunters harvested more sheep than non-residents.

The harvest of goats is much less than sheep. A total of 5,702 goat hunting seals were sold between 2000 and 2022. Interest in goat hunting seems to be increasing over time with a low of 92 seals sold in 2001 and a high of 484 seals sold in 2020 (Figure 2). The average number of goat hunting seals sold per year is 248. An average of 9 goats have been harvested annually since 2000 (range = 2 to 16) and this has increased slightly in recent years (Figure 2). Since 2000, an average of 51% of goats are harvested by licensed resident hunters (range = 17% to 100%; Figure 2). Only one outfitting concession has access to a goat quota.

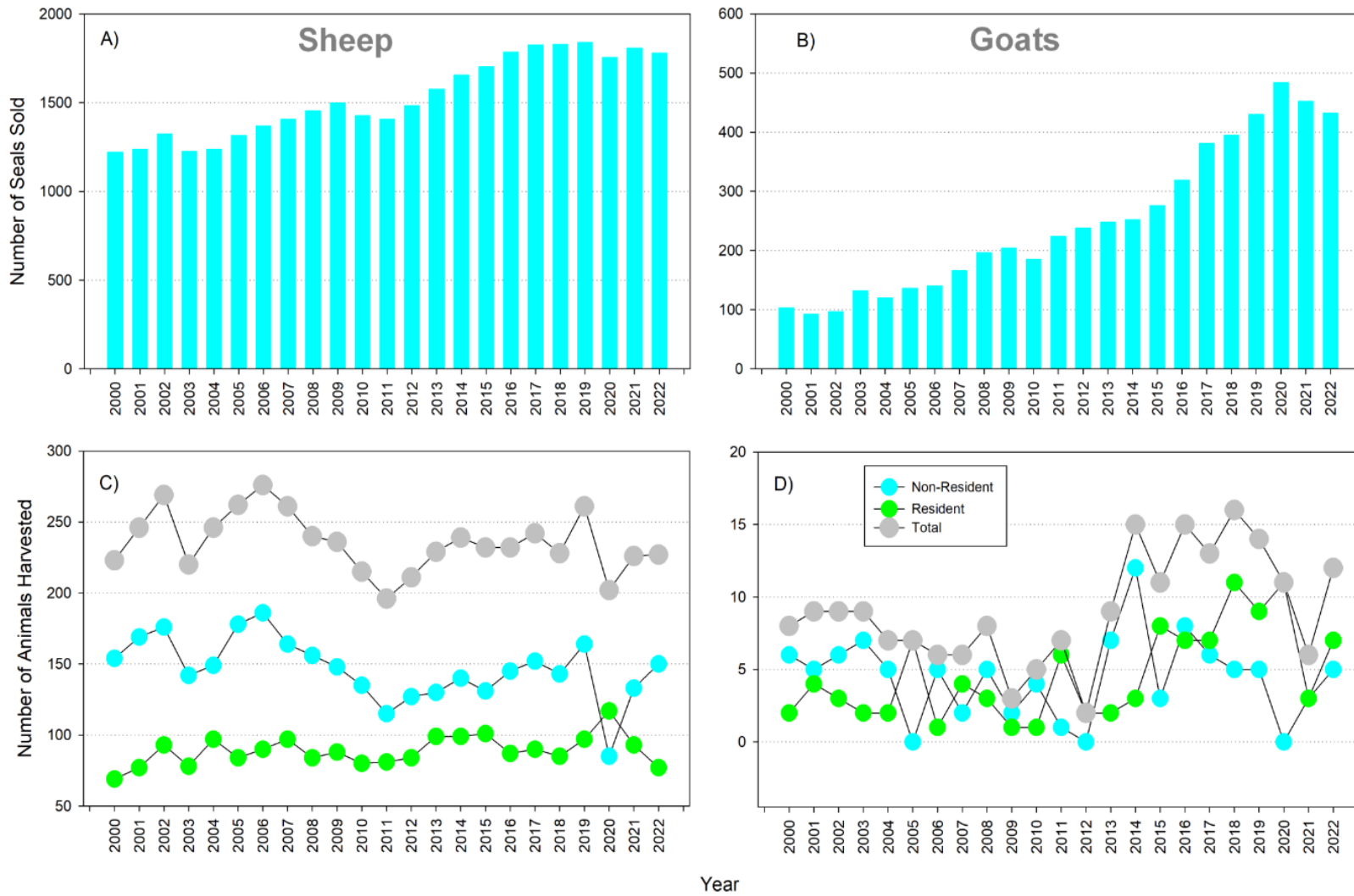


Figure 2. Number of seals sold (panels A and B) and animals harvested (panels C and D) for sheep (left panels) and goats (right panels) in the Yukon from 2000 to 2022.

Sheep and goats are harvested across their distributional range in the Yukon. Harvest management is based on a sex-selective harvest (males only for sheep, and males are encouraged for goats), limited spatial and temporal access to animals (including localized Permit Hunt Authorizations [PHA]), a bag limit of one animal per licensed hunter per year, and, in the case of sheep, an age limit (only full curl or rams 8 years old or older can be harvested – i.e., full curl rule). Scientific guidelines for sheep management may be consulted for a detailed description of how sheep harvest is managed in the territory (Government of Yukon, 2019). In short, sheep harvest management decisions are made using the best available Traditional Knowledge and scientific information, as well as public input, including that of Yukon hunters and outfitters (Figure 3).

The Department of Environment periodically conducts aerial surveys of sheep to assess population size and status in some Game Management Zones (e.g., Lambert Koizumi et al. 2011, Russell and Hegel 2011, Hegel and Russell 2018 a,b, 2019 a,b) and these data directly inform harvest management. Regulations for sheep and goat hunting in the coming season, as well as harvest statistics from the previous season, are provided annually in the Yukon Hunting Regulations Summary.

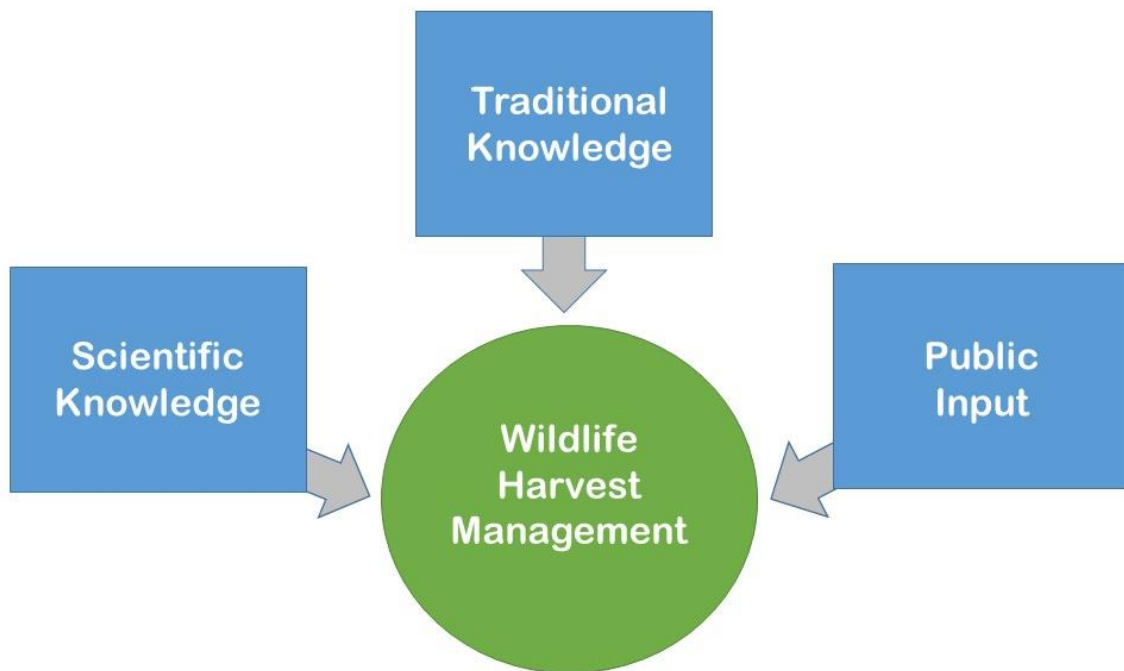


Figure 3. Major sources of information that are incorporated into wildlife harvest management decision making in the Yukon. Adapted from Government of Yukon (2019).

Hunter Effort Surveys

Understanding the values, perceptions and behaviour of hunters can help inform harvest management (Radder and Bech-Larsen 2008, Kaltenborn et al. 2012, Brinkman et al. 2018, Aastrup et al. 2020, Bath et al. 2022). During the last 40 years, the Department of Environment has periodically conducted surveys of hunter effort, their values, and perceptions. These surveys are used to gather data on hunting patterns and hunters' perceptions pertaining to harvest management. They help wildlife managers (including First Nations, Renewable Resources Councils, the Yukon Fish and Wildlife Management Board, and the Wildlife Management Advisory Council (North Slope)) 'take the pulse' of the Yukon's hunting community. Survey information factors into decisions regarding hunting regulations (e.g., Figure 3) and various wildlife management programs, such as the Sheep Hunter Workshop. As information needs become increasingly sophisticated, and the science of survey methodologies improves, our surveys have correspondingly become increasingly complex and nuanced, and in some cases longer.

The last hunter effort survey was conducted by the Department of Environment in 2021 and was focused solely on sheep hunters in Game Management Zone 7 (Pinard et al. 2022). Earlier surveys of Yukon sheep hunters by the Government of Yukon occurred in 1997 (Carey and Tousignant 1998), 2012 (Westfall 2013), and 2017 (Adaman 2017).

The purpose of this survey was to gain current information on the values, perceptions, and behaviour of all resident sheep and goat hunters. We aimed to provide an opportunity for Yukon's sheep and goat hunters to share their thoughts, with a specific focus on their motivations, effort, satisfaction, and interests pertaining to the management of the hunt. Surveys like this can provide information to wildlife managers which helps them in deciding management approaches for sheep and goat. As such, the approaches reflect the wishes of communities and hunters, while considering the species needs.

This report provides a summary of 'what we heard' from survey respondents so that it can be shared with interested persons. We outline our survey design and delivery, and summarize the responses received for questions posed. Responses are provided in aggregate, with respondent confidentiality maintained throughout. Like other Yukon hunter surveys or those related to wildlife management planning initiatives (e.g., Jung et al. 2018, 2021, 2022, Pinard et al. 2022), we do not provide a detailed interpretation of the survey data.

Methods

Survey Design

Given that this survey was focused on the effort, motivation, and satisfaction of resident sheep and goat hunters, we limited our survey to resident hunters that held a seal for sheep or goat during the 2022 hunting season, which ended on October 31, 2022. Non-resident hunters or other Yukoners were not surveyed.

We designed a survey that could be delivered online and take approximately 20 minutes to complete. The survey had 31 questions that were organized into sections (Appendix 1). Most questions pertained to hunter effort and included questions on when and how respondents hunted sheep or goats, and their hunting experiences. These questions were multiple choice or “fill-in-the-blank”. We also used “skip logic” to increase efficiency and save respondents’ time. For example, if a respondent did not hunt sheep in 2022, they were instructed to “skip” those questions that pertained to hunting effort in 2022.

In subsequent sections we used Likert-scale style questions (e.g., Strongly Agree to Strongly Disagree), utilizing a 5-point scale with a neutral option. These questions addressed hunter satisfaction and practices as well as opinions on when they may be comfortable limiting sheep hunting opportunities. Finally, we provided an opportunity for respondents to offer comments regarding sheep and goat hunting. Age, gender, and town of residence were included based on the Department of Environment’s hunting licence database.

Survey Delivery

Our survey was delivered by the Yukon Bureau of Statistics (YBS). All licensed resident hunters that bought a sheep ($n = 1,342$) or goat ($n = 408$) hunting seal for the 2022 hunting season and who supplied a valid email address were invited to participate in the survey ($n = 1,357$). Each invitee was provided a unique four-digit code to access and participate in the online survey. Respondents were able to use either a computer or other device (e.g., phone, tablet, etc.), and were able to take the survey in English or French.

Our online survey was open for 77 days, beginning on November 1, 2022 and closing on January 16, 2023. Reminders were emailed to invited participants on four occasions between November 8 and January 3. The Yukon Bureau of Statistics (YBS) followed up by calling all respondents who had not yet completed the survey between November 21, 2022 to January

13, 2023, allowing them to do the survey over the phone. Completed surveys were managed and compiled by staff at the YBS.

Data Analyses

Here, we provide basic analyses of survey results. We report on the number of respondents answering each question (i.e., sample size) and the percentage for each response option. In keeping with our intent to report the results as “what we heard,” detailed statistical analyses or interpretation of the results were not undertaken.

Results (Sheep)

Respondents

Overall, we received 784 responses by resident hunters that purchased a sheep hunting seal in 2022, representing 57% of the 1,368 resident licensed sheep hunters that year. Most respondents were from Whitehorse (76%), followed by communities in the Kluane (6%), Southern Lakes (6%), Liard (2%), central Yukon (3%), and north Yukon (3%) regions (Table 1). One respondent did not include where they resided.

The average age of respondents was 47 years (range = 16 to 85). The majority of respondents were male ($n = 683$, 87%; Table 2), while 87 (11%) were female, and gender was unknown for the remaining 14 (1.8%). The average age of female respondents was 43 years and 47 for males.

The values in Tables 1 and 2 represent only the sample of respondents that provided information on which they resided or their gender. We did not include those that did not provide an answer to those questions in our calculation of percentages.

Table 1. Respondents who purchased a sheep hunting seal in 2022 by location.

Region	Communities	Number	Percent
Whitehorse	Whitehorse	596	76%
Southern Lakes	Carcross, Tagish, Teslin, Marsh Lake	45	6%
Liard	Watson Lake, Faro, Ross River	50	6%
North Yukon	Dawson City, Old Crow	21	3%
Kluane	Beaver Creek, Champagne, Destruction Bay, Burwash Landing, Haines Junction	49	6%
Central Yukon	Carmacks, Elsa, Mayo, Pelly Crossing	22	3%
Totals		783	100%

Table 2. Respondents who purchased a sheep hunting seal in 2022 by gender and age.

Age Group	Female		Male	
	Number	Percent	Number	Percent
< 25 years old	4	5%	17	3%
25-34 years old	19	22%	116	17%
35-44 years old	33	38%	200	29%
45-54 years old	11	13%	138	20%
55-64 years old	11	13%	86	13%
≥65 years old	9	10%	126	18%
Totals	87	100%	683	100%

Most respondents (88.5%) reported the number of years of experience they had hunting sheep, while the rest (11.5%) preferred not to say. Respondents varied widely in their reported years of experience for hunting sheep (Q2), ranging from 0 to 60 years, with an average of 13 years of experience (SD = 14; median = 8; Table 3).

Table 3. Number of years of sheep hunting experience among survey respondents who purchased a sheep hunting seal in 2022 by gender and age (n = 694). Some respondents (n = 90) did not answer this question, and were not included in the data provided below.

Years of Sheep Hunting Experience	Number	Percent
0	61	9%
1-5	236	34%
6-19	199	29%
20-40	157	23%
>40	41	6%

When we asked how many of the last five years respondents had gone sheep hunting (Q3), 25% of respondents had not gone sheep hunting in the last five years, while 21% of respondents had hunted sheep each of the last five years (Figure 4).

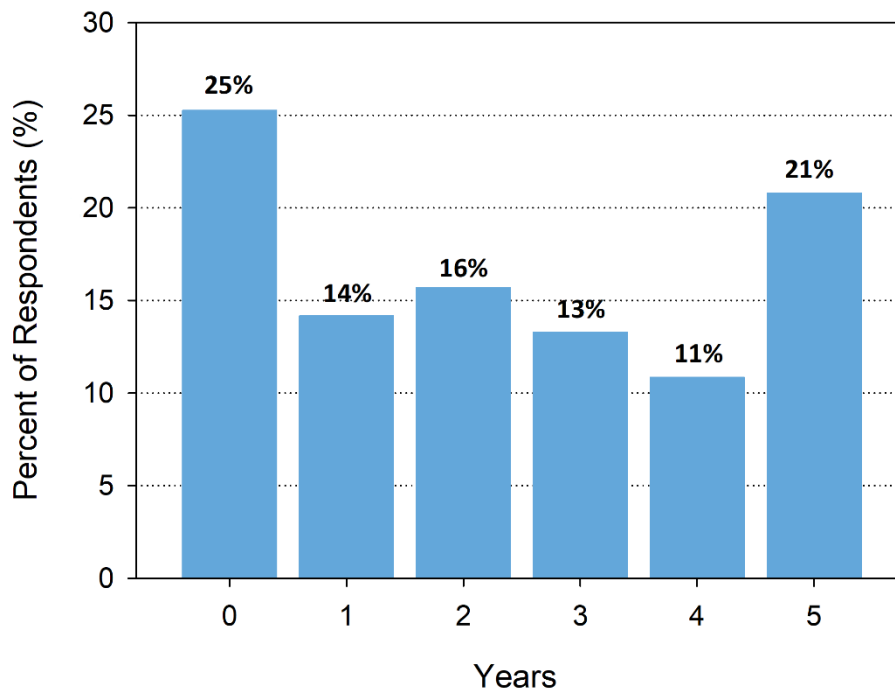


Figure 4. Results from Question 3. — **In the last 5 years, how many years did you go sheep hunting?** Values above the bars are the percent of respondents (n = 784) for each category.

Less than half of respondents hunted sheep in 2022 (45%, n = 351; Q4). Of those respondents, 61 (17%) reported harvesting a sheep, while 291 (83%) did not (Q13). For context, a total of 77 sheep were harvested in 2022 by licensed resident hunters, so our survey captured 79% of licensed resident hunters that harvested a sheep that year.

Sheep Hunter Effort

In 2022, 351 respondents reported hunting sheep for a total of 2,448 days. The number of days hunting sheep in 2022 by respondents varied between 1 and 38 days with a mean (average) and median of 7.0 and 5.0 days per respondent, respectively. Almost half of the respondents (49%) hunted sheep between 4 and 9 days in 2022 (Q8, Figure 5).

Almost half of the respondents (n = 171, 47%) reported that their sheep hunting efforts in 2022 stayed the same, while for 100 respondents (28%) it decreased, and for 90 (25%) it increased (Q5).

Among the 90 respondents that stated their sheep hunting effort increased in 2022 (Q6), the most common reason was because they had more available time (54% of respondents), followed by difficulty finding sheep (28%), an available hunting partner (24%), wanting to get outdoors (24%), receiving a Permit Hunt Authorization (21%), better equipped (i.e., more disposable income; 16%), and other (14%), which included first time sheep hunting, good weather, and being more physically fit. Many respondents (49%) reported more than one reason for why their sheep hunting effort increased in 2022.

The most common reason for a decrease in sheep hunting effort in 2022 reported by 100 respondents was a lack of time (59% of respondents, Q7). The next most reported reasons were lack of available hunting partners (20%), illness or injury (20%), poor weather (14%), did not receive a PHA (12%), not enough sheep (12%), and other (14%). The other category included: too costly, not needing meat, too many other hunters, and insufficient physical condition. About a third of respondents (34%) reported more than one reason for why their sheep hunting effort decreased in 2022.

Respondents that hunted sheep in 2022 did not distribute their sheep hunting effort equally between months. Sheep hunting effort in 2022 was greatest in August, followed by September and October (Q8, Figure 6). Sheep hunting effort in 2022 by respondents is provided by GMZ and month in Table 4.

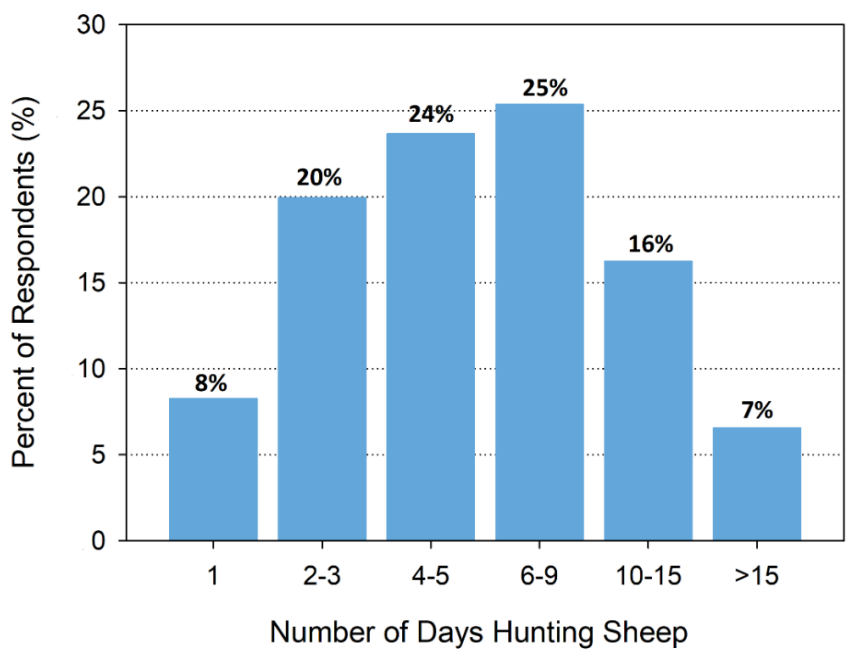


Figure 5. Results from Question 8. Number of days hunting sheep in 2022 reported by respondents ($n = 351$). Values above the bars are the percent of respondents.

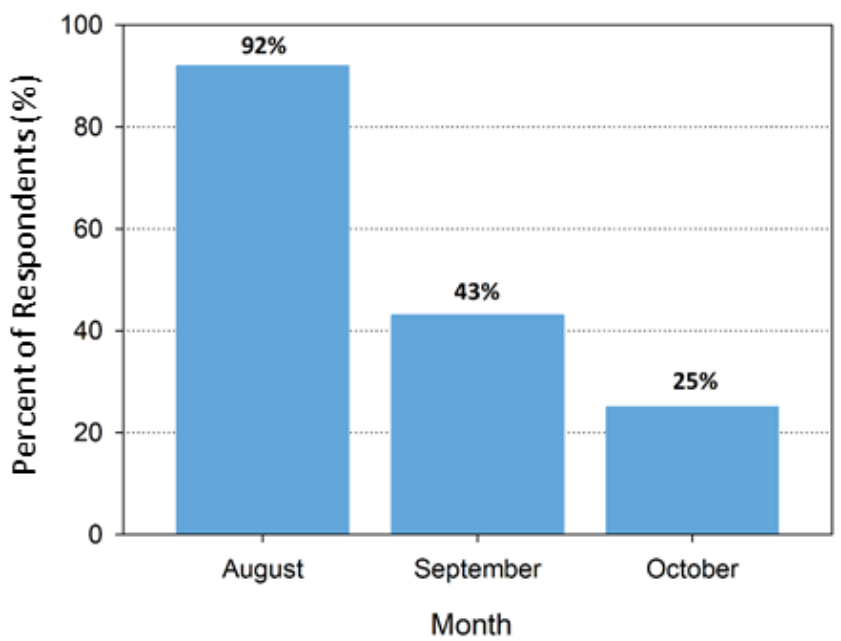


Figure 6. Results from Question 8. — **In what months did you go sheep hunting in 2022?** Values above the bars are the percent of respondents ($n = 351$) that hunted in that month in 2022.

Table 4. Results from Question 8. — **In what months did you go sheep hunting in 2022?** The number of days hunting sheep in 2022 by Game Management Zone and month as reported by respondents that hunted sheep in 2022 (n = 351).

Game Management Zone	Number of Days Hunting Sheep											
	August				September				October			
	N day	Min-Max	Mean	Median	N day	Min-Max	Mean	Median	N day	Min-Max	Mean	Median
1	28	1-22	5.0	3.5	17	1-14	4.1	3.0	9	1-9	2.9	2.0
2	28	1-14	5.3	5.0	9	1-12	5.0	5.0	3	1-3	1.7	1.0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	21	1-12	5.1	5.0	14	1-8	4.2	4.5	5	1-5	3.2	3.0
5	99	1-31	4.8	5.0	40	1-15	3.9	3.0	29	1-17	4.0	3.0
6	1	5	5.0	5.0	3	1-5	3.0	2.0	1	1	1.0	1.0
7	100	1-22	4.4	5.0	49	1-7	3.6	4.0	27	1-7	2.6	2.0
8	17	2-9	4.4	4.0	7	2-8	4.4	4.0	4	2-8	4.3	3.5
9	7	1-6	2.9	1.0	3	1-5	2.7	2.0	1	1	1.0	1.0
10	16	1-15	4.5	4.0	6	2-15	7.5	4.0	11	2-7	4.3	5.0
11	4	1-8	4.8	5.0	4	1-14	6.0	4.5	3	1-15	5.7	1.0

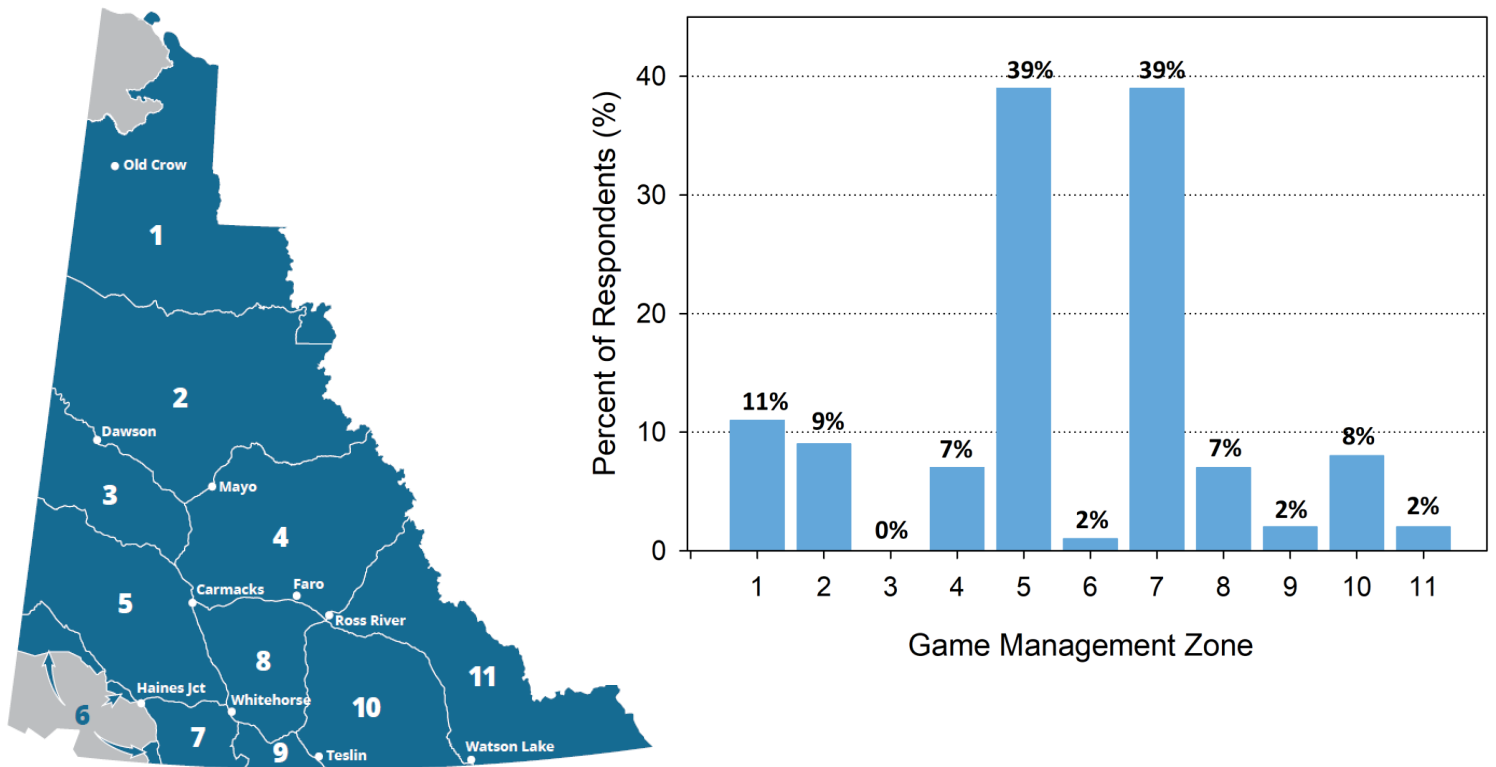


Figure 7. Results from Question 8. Values above the bars are the percent of survey respondents ($n = 351$) that hunted in each Game Management Zone (GMZ) in 2022. Note that values exceed 100% because some respondents hunted in more than one GMZ. The 11 Yukon GMZ are indicated on the map – grey areas are national parks.

Respondents hunted in all Game Management Zones (GMZ) in 2022, except GMZ 3. Most respondents (78%) reported hunting in GMZ 5 and 7 (Q8, Figure 7). Most respondents (81%) hunted in only one GMZ in 2022, followed by two (14%), three (4%), and four or five (1%) GMZs. The average (mean) and median number of GMZs that respondents hunted sheep was 1.3 and 1.0, respectively. We asked respondents to identify each subzone they hunted sheep (Q9) but many preferred not to say or gave a location (i.e., by a certain lake, river, or road) rather than the subzone number. As such we were unable to adequately summarize these data.

Respondents reported hunting-party sizes that ranged from 1 to 6 people, with an average of 2.2 people per party. Over half of the respondents (59%) reported a party size of 2 people (Q10, Figure 8).

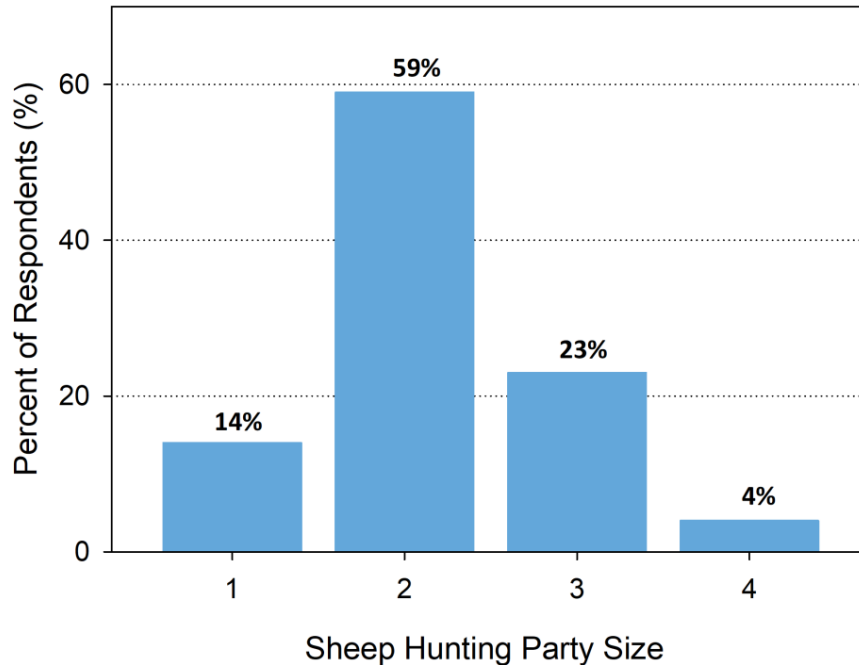


Figure 8. Results from Question 10. – **Including yourself, what was the average number of people in your sheep hunting party in 2022?** Values above the bars are the percent of respondents ($n = 336$) for each category.

Most respondents (83%) reported accessing their sheep hunting area on foot (walking) (Q11, Figure 9). Other forms of transportation included: truck (52%), off-road recreational vehicle (ORV, e.g. ATV, Argo, motorcycle, 38%), boat (21%), aircraft (18%), and horse (3%).

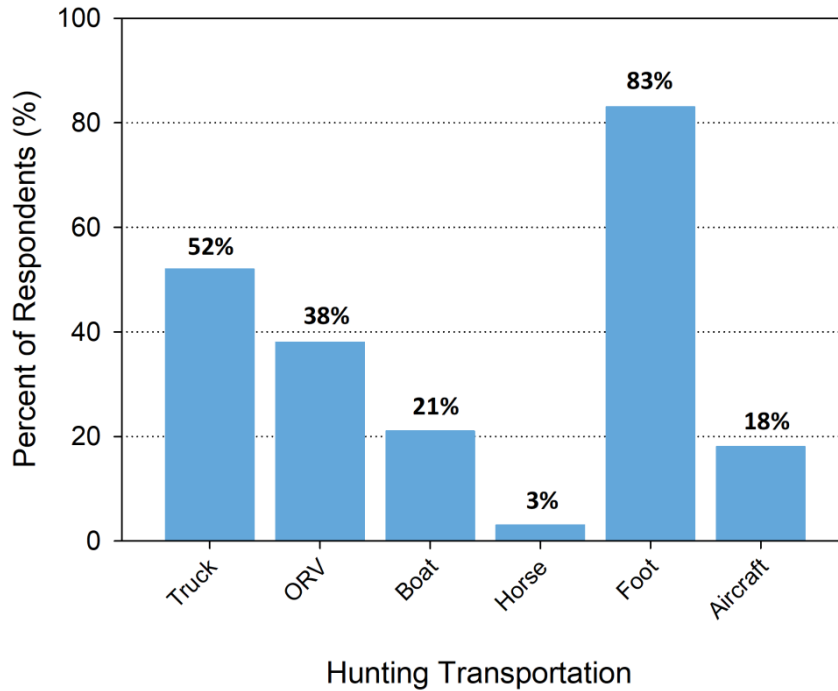


Figure 9. Results from Question 11. — **When you hunted for sheep in 2022, what type of hunting transportation did you use? (Check all that apply)?** Values above the bars are the percent of respondents (n = 351) for each category.

Sheep Hunting Area Selection

In 2022, 110 of 784 respondents (14%) reported applying for and receiving a Permit Hunt Authorization (PHA, Q18). Another 310 respondents (40%) applied for a PHA and did not receive one in 2022. The remaining 46% of respondents did not apply for a sheep PHA in 2022. Of the 110 respondents that received a sheep PHA, 74 (67%) hunted in a PHA (Q19), and 84 (76%) did not hunt in a non-PHA area (Q20).

Similar to results of the 2017 survey (Adaman 2017), over two-thirds of the 784 respondents indicated that a key factor in their choice of areas to hunt sheep was few other hunters in the area and an opportunity to explore new areas. The other four factors presented to respond were also highly regarded, being selected as influential by 44%-50% of respondents (Q21, Figure 10).

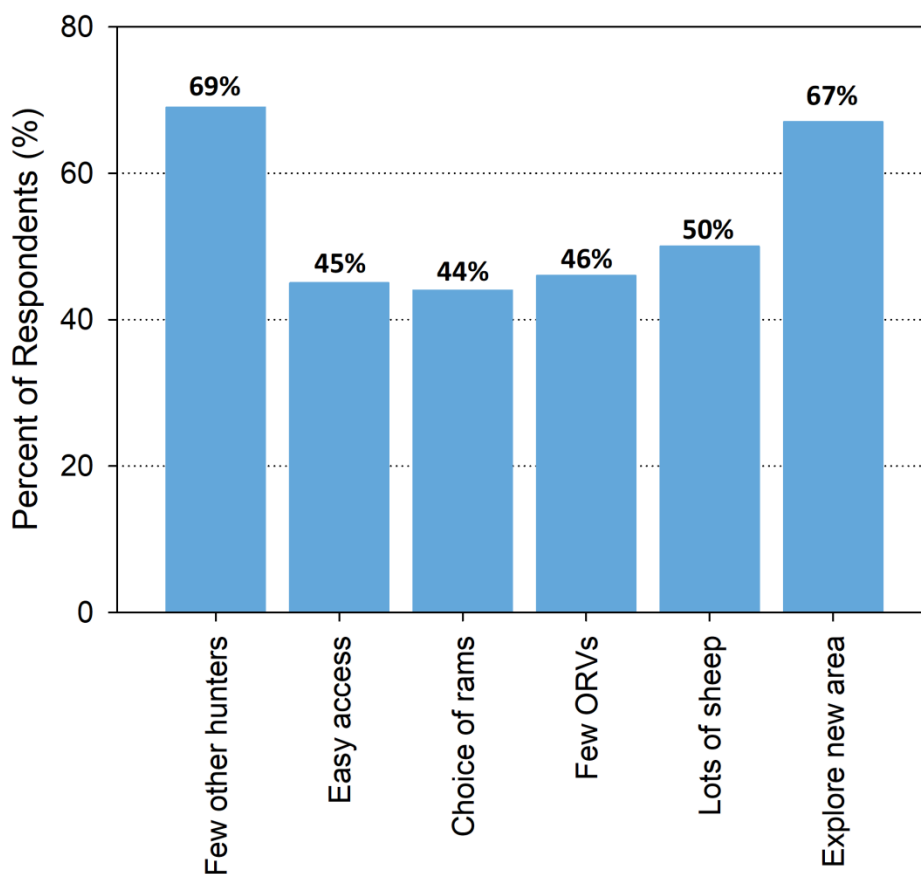


Figure 10. Results from Question 21. Factors influencing choice of sheep hunting areas. Values above the bars are the percent of respondents (n = 784) for each category.

Sheep Hunting Economics

Of the 351 respondents that reported going on a sheep hunt in 2022, 331 (94%) reported the approximate amount of money they spent on the activity (Q12). Almost half of these hunters reported spending less than \$1,000 (Figure 11). Only 64 of the respondents (18%) reported spending more than \$2,500 on sheep hunting in 2022 (Figure 11).

Respondents reported that the 55 sheep that they collectively harvested were distributed among 128 households (Q14). Respondents typically shared the sheep they harvested with between one to four households (Figure 12).

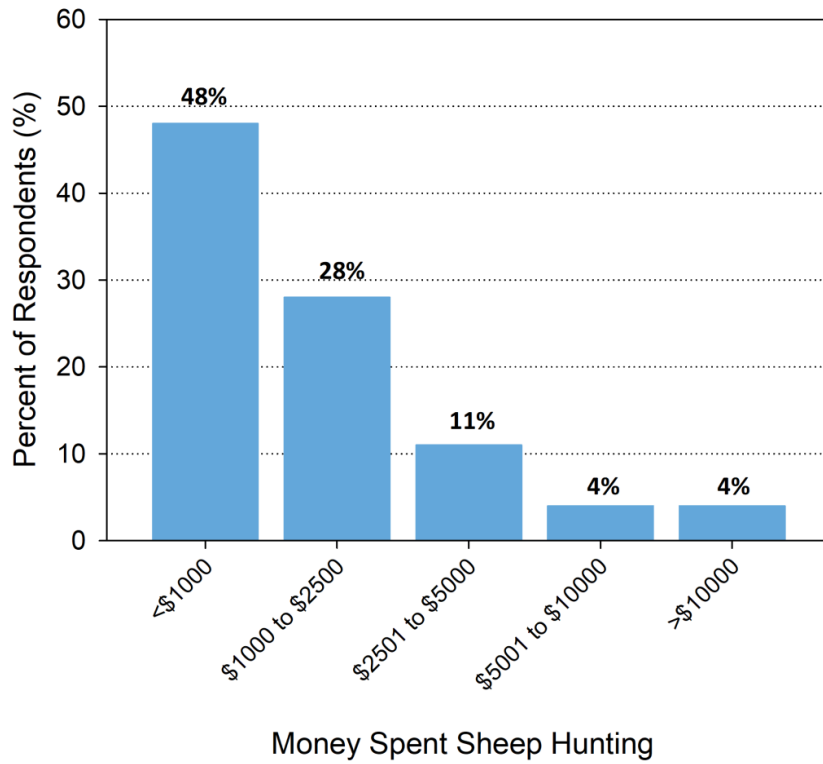


Figure 11. Results from Question 12. Values above the bars are the percent of respondents (n = 351) for each category.

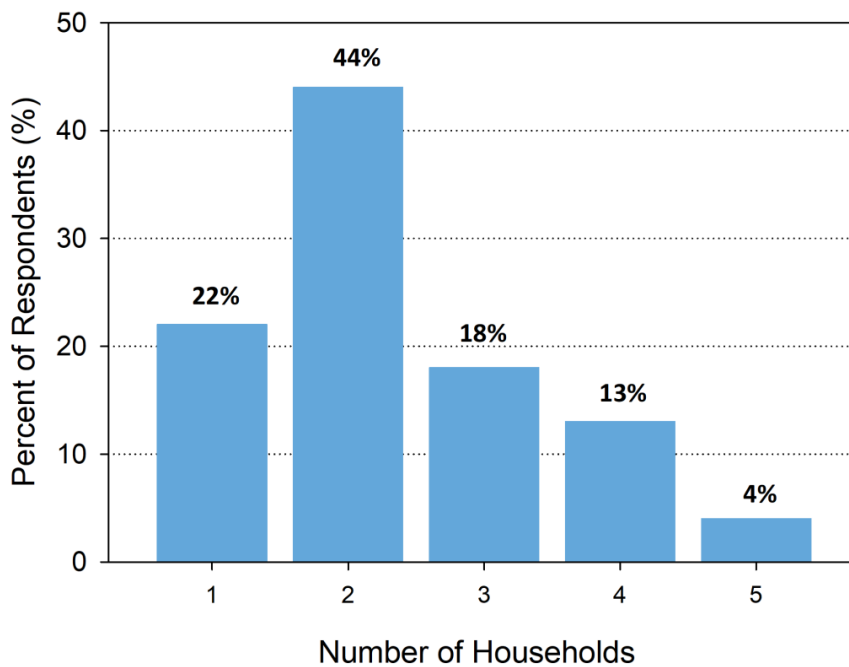


Figure 12. Results from Question 14. — **Including your own household, how many households received sheep meat from your hunt?** Values above the bars are the number of respondents (n = 55) for each category.

Sheep Hunter Satisfaction

Respondents tended to disagree with the statement that they were not satisfied unless they harvested a sheep during the season (Q15; Table 5). However, most respondents agreed that they could still be satisfied with a sheep hunting trip by just seeing sheep in the wild, whether they harvested one or not (Q16; Table 5).

Table 5. Summary of results from questions posed to sheep hunters with respect to their satisfaction with sheep hunting. Included are the sample size (n), median response, and frequency distribution of responses.

Question	n	Median	Frequency Distribution				
			Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Q15. I am NOT satisfied unless I harvest a sheep during the season.	346	Disagree	8 (2%)	27 (8%)	60 (17%)	137 (40%)	114 (33%)
Q16. I could be satisfied with a hunting trip that resulted in just seeing sheep in the wild even if I am unable to harvest one.	347	Agree	113 (33%)	172 (50%)	34 (10%)	22 (6%)	6 (2%)

Sheep Hunter Motivation

Respondents were presented with 11 motivations (Q17, Figure 13) for why they hunt sheep and could choose all that applied. Respondents most commonly picked obtaining healthy food as a primary motivation for sheep hunting (84%). Other key motivating factors were to spend time on the land (78%) and as an enjoyable activity (67%), to see wild sheep (55%), and for the sport or challenge (54%). That said, all 11 motivational factors were moderately to highly selected by respondents (Figure 13), indicating that there are a range of reasons why respondents hunt sheep.

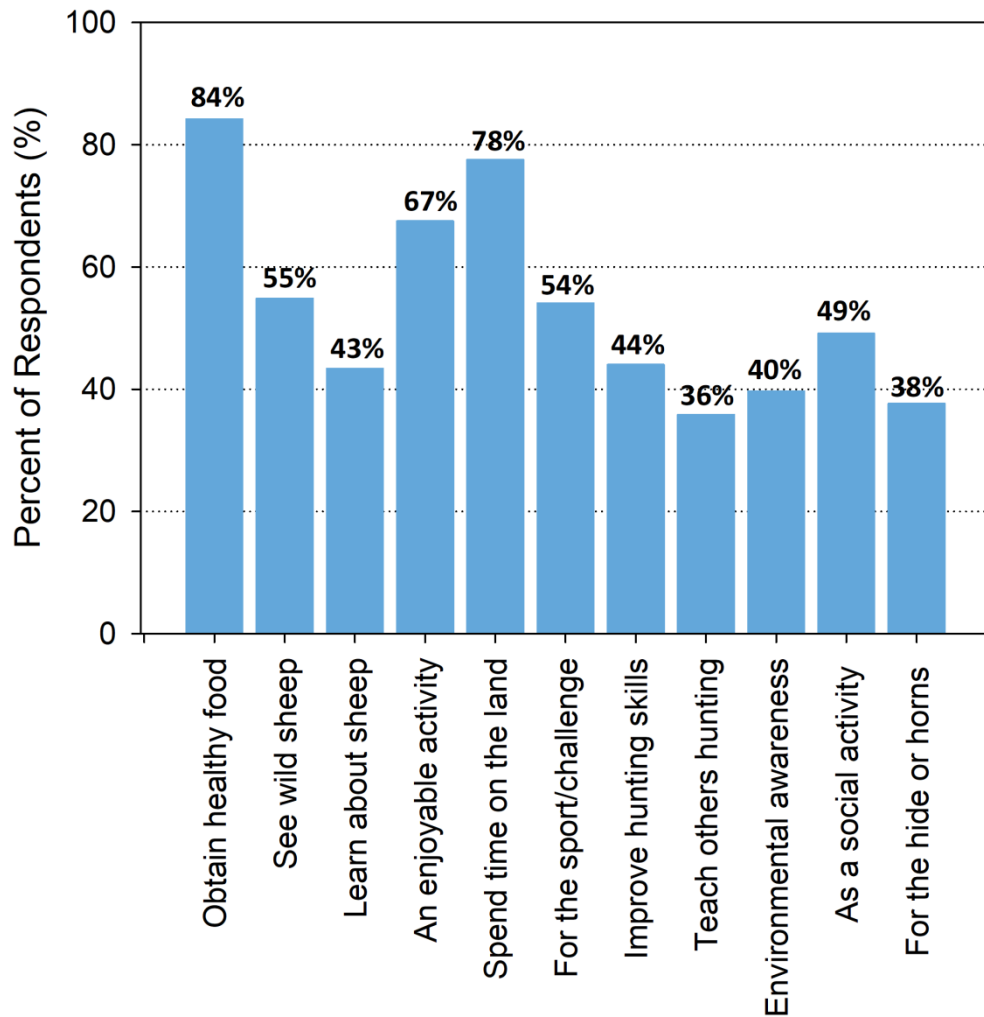


Figure 13. Results from Question 17. Motivational factors influencing why respondents hunt sheep. Values above the bars are the percent of respondents ($n = 784$) for each factor.

Sheep Hunter Education and Practices

The final set of survey questions dealt with sheep hunter education and practices, as well as how comfortable respondents might be with hypothetical changes to the harvest regime (Q22 and 24-29). Results are presented in Table 6 and summarized below.

With respect to learning more about sheep hunting, 72% of respondents either agreed or strongly agreed that even seasoned sheep hunters could benefit from learning new information on how to safely and effectively hunt sheep (Q22, Table 6). Yet, only 21% of respondents (161 of 766) reported that they had taken the Sheep Hunting Workshop in the past (Q23). More than half of the respondents (53%) agreed or strongly agreed that they would take a Sheep Hunting Workshop if available (Q24). More than three-quarters (78%) of respondents agreed

or strongly agreed that they would be comfortable reviewing educational information prior to a sheep hunt to ensure that their hunt was effective and safe (Q25). This suggests that a more passive approach to disseminating information may be better received by some sheep hunters than a workshop.

A large percentage of respondents (81%) agreed or strongly agreed that they are confident determining if a ram is full curl from a reasonable shooting distance (Q26). However, respondents were split regarding their comfort with shooting a sheep based solely on age as judged in the field (Q27), and the median response was neutral (Table 6).

Respondents were also split with respect to their comfort in having more limited sheep hunting opportunities. About a third of respondents (39%) agreed or strongly agreed that they would be comfortable with more limited sheep hunting opportunities to lessen the impacts on wildlife and the land (Q28, Table 6), while the same percentage (39%) disagreed or strongly disagreed. However, respondents were neutral on whether they would be comfortable with limited sheep hunting opportunities to ensure they see less hunters, with 42% agreeing and 39% disagreeing (the rest were neutral, Table 6).

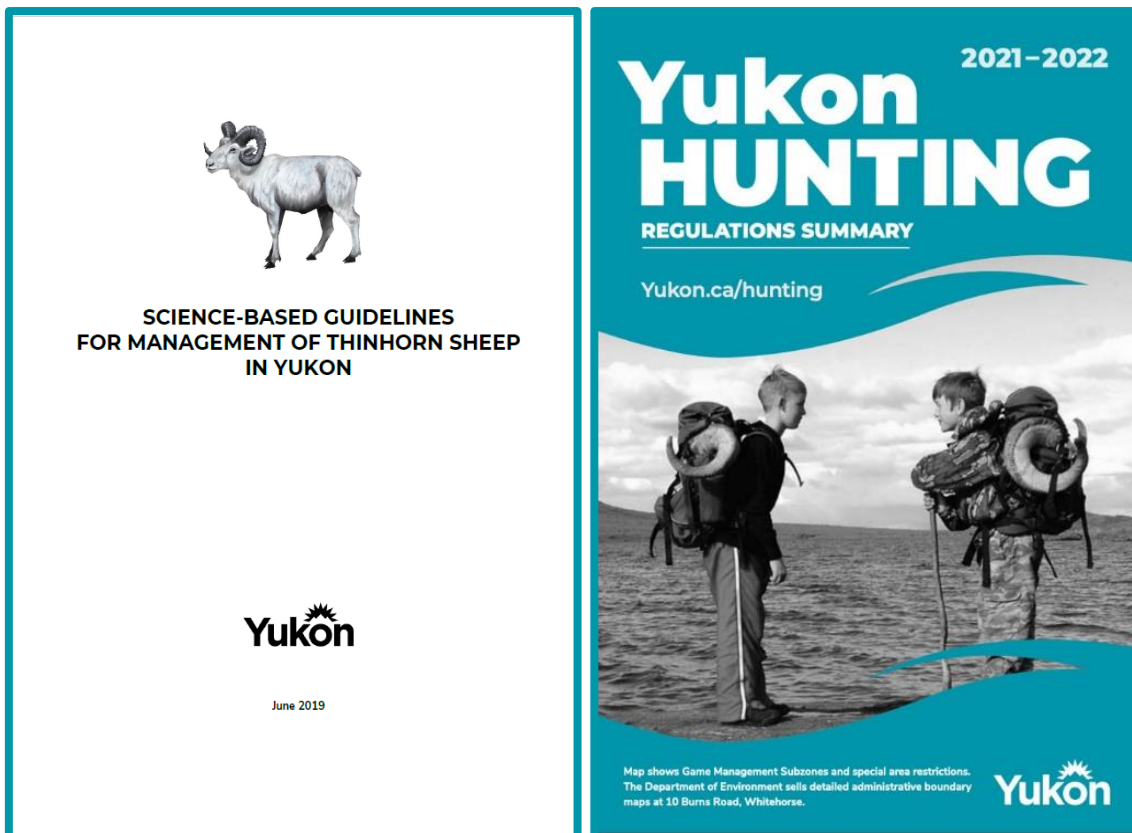


Table 6. Summary of results from questions posed to sheep hunters with respect to their comfort level with sheep hunting practices (questions 22 and 24-29; Appendix 1). Included are the sample size (n), median response, and frequency distribution of responses.

Question	n	Median	Frequency Distribution				
			Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Q22. Even seasoned sheep hunters need to learn or review new information to effectively and safely hunt sheep.	772	Agree	236 (31%)	315 (41%)	129 (17%)	57 (7%)	35 (5%)
Q24. I would take a Sheep Hunter Workshop, if available, to increase my knowledge about sheep and sheep hunting.	747	Agree	161 (22%)	233 (31%)	191 (26%)	118 (16%)	44 (6%)
Q25. I would be comfortable with reviewing available educational information prior to hunting sheep to ensure my hunt is effective and safe.	768	Agree	215 (28%)	365 (48%)	120 (16%)	45 (6%)	23 (3%)
Q26. I am confident that I am knowledgeable about determining if a ram is full curl or not, even from a reasonable shooting distance.	766	Agree	253 (33%)	364 (48%)	111 (14%)	30 (4%)	8 (1%)
Q27. I would shoot a sheep based solely on age judged in the field.	745	Neutral	84 (11%)	196 (26%)	126 (17%)	236 (32%)	103 (14%)
Q28. I would be comfortable with having more limited sheep-hunting opportunities to ensure less impacts to the land and other wildlife.	748	Neutral	85 (11%)	207 (28%)	163 (22%)	174 (23%)	119 (16%)
Q29. I would be comfortable with having more limited sheep-hunting opportunities to ensure I encounter fewer other hunting parties.	756	Neutral	93 (12%)	225 (30%)	148 (20%)	187 (25%)	103 (14%)

Results (Goats)

Respondents

Overall, we received 197 responses to the survey from the 432 resident Yukon hunters that purchased a goat hunting seal in 2022, representing approximately half (46%) of all licenced goat hunters in 2022. All but 5 respondents also had a sheep hunting seal for the same season.

Most respondents were from Whitehorse (74%), followed by communities in the Liard (12%), Kluane (5%), Southern Lakes (5%), and central Yukon (3%) regions (Table 7). Only one respondent was from northern Yukon.

Table 7. Respondents who purchased a goat hunting seal in 2022 by location.

Region	Communities	Number	Percent
Whitehorse	Whitehorse	146	74%
Southern Lakes	Carcross, Tagish, Teslin, Marsh Lake	10	5%
Liard	Watson Lake, Faro, Ross River	23	12%
North Yukon	Dawson City, Old Crow	1	<1%
Kluane	Beaver Creek, Champagne, Destruction Bay, Burwash Landing, Haines Junction	9	5%
Central Yukon	Carmacks, Elsa, Mayo, Pelly Crossing	8	4%
Totals		197	100%

The average age of respondents was 47 years old and ranged from 18 to 83. The majority of respondents were male (n = 172, 87%; Table 8), while 21 (11%) were female, and gender was unknown for the remaining 4 respondents. The average age of female (44 years old) and male (48 years old) respondents was similar. The average age of those that purchased a goat hunting seal was very similar to those that also had a sheep hunting seal for the same year.

Table 8. Respondents who purchased a goat hunting seal in 2022 by gender and age-class.

Age Group	Female		Male	
	Number	Percent	Number	Percent
<25 years old	0	-	4	2%
25-34 years old	9	43%	29	17%
35-44 years old	3	14%	51	30%
45-54 years old	2	10%	38	22%
55-64 years old	4	19%	17	10%
≥65 years old	3	14%	33	19%
Totals	21	100%	172	100%

Note that the values in Table 8 represent only the sample of respondents that provided information on their age or gender. We did not include those that did not provide an answer to those questions in our calculation of percentages.

Goat Hunting Effort

Only 37 of the 197 (19%) respondents that held a goat hunting seal in 2022 reported that they went goat hunting that year. Of these hunters, 11 reported hunting goats for 1 day in 2022, 7 for 2-3 days, 7 for 4-5 days, 10 for 6-10 days, and 2 for 12-14 days (Figure 14). The total number of days reported goat hunting in 2022 (37 respondents) was 165 days, with an average of 4.5 days per hunter.

The number of days respondents spent goat hunting was similar in August and September (Figure 15). These two months essentially accounted for all goat hunting in the Yukon. Only 3 days were spent goat hunting by all respondents in October.

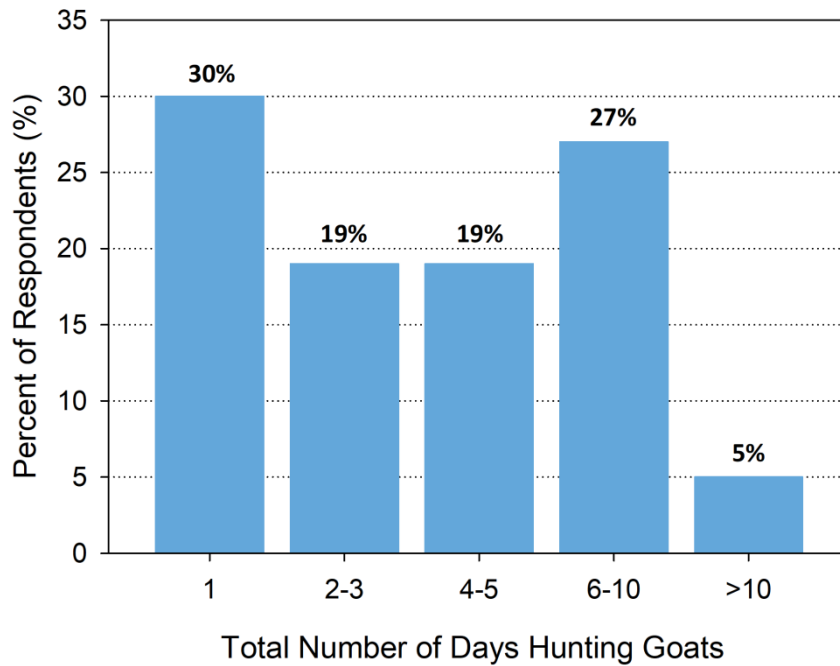


Figure 14. The number of days survey respondents hunted goats in 2022. The numbers above the bars are the percent of the 37 respondents that reported hunting goats in 2022.

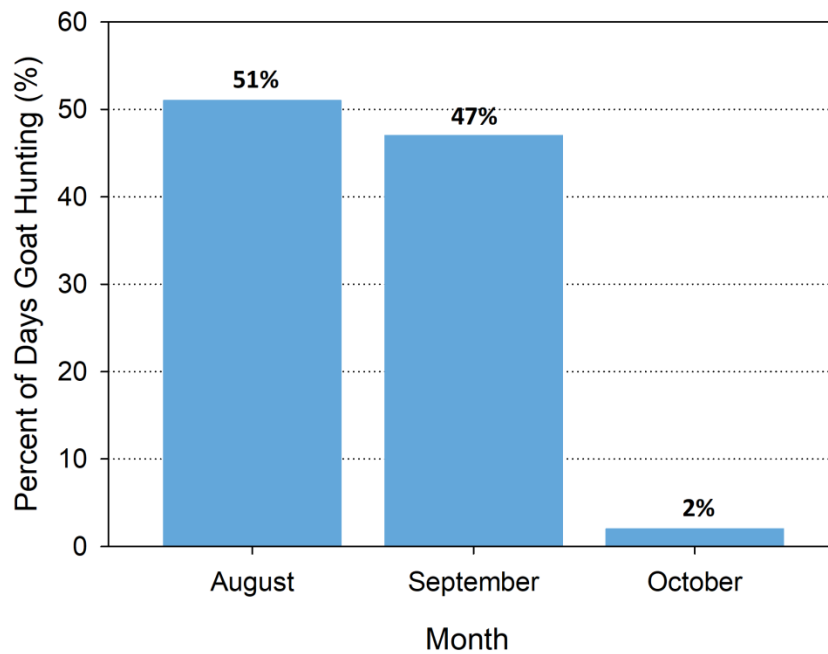


Figure 15. The percent of days hunting goats reported by survey respondents (n = 37) spread over months of the 2022 goat hunting season. The numbers of the bars are the percent of the 37 respondents that reported hunting goats in 2022.

Qualitative Analyses of Comments

Above we focused on a quantitative analysis of the survey data. However, at the end of the survey the participants had the opportunity to provide comments. A social scientist with appropriate academic training in qualitative analyses was retained to summarize the main themes in the comments provided by 221 respondents. A separate report was produced and is available upon request.

The key findings of the qualitative analysis included:

- (1) About 10% of the survey comments raised concerns about sheep populations, with some hunters observing fewer older, legal rams and others raising concern about sheep populations declining.
- (2) A minority of survey comments (8%) described negative opinions of and experiences with other hunters.
- (3) 17% of the survey comments discussed factors that influence hunting opportunities and the quality of hunting experiences. Main concerns included negative impacts of outfitters and non-resident hunters on local hunters, issues of hunter density/hunter conflict, and the accessibility of hunting areas. Many of the survey comments (39%) discussed changes to hunting regulations. Over a third of the comments about hunting regulations focused on the need to restrict non-resident harvest (16% of all survey comments). Changes to resident hunter regulations were also suggested, such as decreasing the number of permit hunt authorizations available in specific zones. A few comments suggested creating limits for hunters with seals for multiple species or creating limits for hunters who have been successful. In contrast, roughly one quarter of the comments about hunting regulations proposed a less restrictive approach (11% of all survey comments).
- (4) Regulatory changes related to how hunters access hunting areas (i.e., mode of transportation) were also discussed (10% of survey comments). These comments primarily suggested creating new restrictions on motorized access to hunting areas or better enforcing existing restrictions.
- (5) A few hunters (5%) suggested that more hunter education is required, either in general or on specific topics (e.g., how to age rams). Other management actions - beyond regulatory changes or hunter education - were also suggested (5% of comments), focusing on the need for more data (e.g., sheep survey data).

References

- Aastrup ML, Doney ED, Sponarski CC, Seaton CT, Bath AJ, Downer BR (2020) The influence of self-assessed skill level on segmented hunting motivations in Alaska. *Human Dimensions of Wildlife* 26:197-207.
- Adaman M (2017) 2017 Hunter Effort Survey Report Sheep & Goat. Yukon Bureau of Statistics, Government of Yukon, Whitehorse, Yukon, Canada.
- Bath AJ, Engel MT, van der Marel R, Kuhn TS, Jung TS (2022) Comparative views of the public, hunters, and wildlife managers on the management of reintroduced bison (*Bison bison*). *Global Ecology and Conservation* 34: e02015.
- Brinkman TJ (2018) Hunter acceptance of antlerless moose harvest in Alaska: importance of agency trust, proximity of hunter residence to hunting area, and hunting experience. *Human Dimensions of Wildlife* 23:129-145.
- Carey J, Tousignant J (1998) Views from the mountain: what resident Yukon sheep hunters have to say. Yukon Fish and Wildlife Branch Report TR-98-2. Government of Yukon, Whitehorse, Yukon, Canada.
- Environment Yukon (2019) Science-based guidelines for management of thinhorn sheep in Yukon. Yukon Fish and Wildlife Branch Report MR-19-01. Government of Yukon, Whitehorse, Yukon, Canada.
- Fontaine JJ (2011) Improving our legacy: incorporation of adaptive management into state wildlife action plans. *Journal of Environmental Management* 92:1403-1408.
- Hansen WD, Brinkman TJ, Chapin FS, Brown C (2013) Meeting Indigenous subsistence needs: the case for prey switching in rural Alaska. *Human Dimensions of Wildlife* 18:109-123.
- Hegel TM, Russell K (2019a) Status of the Joe Mountain thinhorn sheep population, 2016. Yukon Fish and Wildlife Branch Report SR-19-02. Government of Yukon, Whitehorse, Yukon, Canada.
- Hegel TM, Russell K (2019b) Status of Dall's sheep and mountain goats in Game Management Zone 9, 2017. Yukon Fish and Wildlife Branch Report SR-19-03. Government of Yukon, Whitehorse, Yukon, Canada.
- Hegel TM, Russell K (2018a) Status of thinhorn sheep in Game Management Zone 7, 2015-2016. Yukon Fish and Wildlife Branch Report SR-18-03. Government of Yukon, Whitehorse, Yukon, Canada.

- Hegel TM, Russell K, O'Donoghue M (2018b) Status of thinhorn sheep in Game Management Zone 5, 2014-2016. Yukon Fish and Wildlife Branch Report SR-18-01. Government of Yukon, Whitehorse, Yukon, Canada.
- Jung TS, Pinard C, Westfall RE (2022) Results of the 2021 bison hunter effort survey. Yukon Fish and Wildlife Branch Report SR-22-02. Government of Yukon, Whitehorse, Yukon, Canada.
- Jung TS, Kukka PM, Florkiewicz RF (2021) Results of a Yukon small game hunter survey. Yukon Fish and Wildlife Branch Report SR-21-01. Government of Yukon, Whitehorse, Yukon, Canada.
- Jung TS, Thomas JP, Thomas F, Chambers R, Clark DA, Dar S, Doran-Myers D, King J, Kuhn TS, Mccutchen NA, Osborne R, Schmidt AL, Sicotte M, Van Bussel T, Van Tighem G, Westfall RE (2018) Results of a public survey about grizzly bears (*Ursus arctos*) and their management in Yukon, Canada. Yukon Fish and Wildlife Branch Report MR-18-01. Government of Yukon, Whitehorse, Yukon, Canada.
- Kaltenborn BP, Andersen O, Vittersø J, Bjerke TK (2012) Attitudes of Norwegian ptarmigan hunters towards hunting goals and harvest regulations: the effects of environmental orientation. *Biodiversity and Conservation* 21:3369-3384.
- Lambert Koizumi C, Carey J, Branigan M, Callaghan K (2011) Status of Dall's sheep (*Ovis dalli dalli*) in the Northern Richardson Mountains. Yukon Fish and Wildlife Branch Report TRC-11-01. Government of Yukon, Whitehorse, Yukon, Canada.
- Manfredo MJ, Teel TL, Bright AD (2003) Why are public values toward wildlife changing? *Human Dimensions of Wildlife* 8:287-306.
- Milligan HE (2018) Licensed harvest trends in Yukon: 1980 to 2014. Yukon Fish and Wildlife Branch Report MR-18-05. Government of Yukon, Whitehorse, Yukon, Canada.
- Pinard C, McCarney P, Jung TS (2022) Results of the 2020-2021 sheep (*Ovis dalli*) hunter survey for Game Management Zone 7 East Permit Hunt Authorization Area. Yukon Fish and Wildlife Branch Report SR-22-04. Government of Yukon, Whitehorse, Yukon, Canada.
- Radder L, Bech-Larsen T (2008) Hunters' motivations and values: a South African perspective. *Human Dimensions of Wildlife* 13:252-262.
- Russell K, Hegel T (2011) Dall's sheep survey: Southern Lakes Region, 2009. Yukon Fish and Wildlife Branch Report TR-11-09. Government of Yukon, Whitehorse, Yukon, Canada.
- Westall R (2013) Hunter effort survey: resident sheep and goat hunters, 2012. Yukon Fish and Wildlife Branch Report SR-13-05. Government of Yukon, Whitehorse, Yukon, Canada.

Appendix: Sheep and Goat Hunter Effort Survey

2022 Sheep and Goat Hunter Effort Survey

Yukon Bureau of Statistics is conducting this survey on behalf of the Yukon Government Department of Environment.

The purpose of the survey is to get a better understanding of sheep and goat hunter effort, satisfaction, and motivations, as well as your thoughts on sheep hunting practices. Your responses will help to manage sheep harvest in the future.

Participation in this survey is voluntary and your responses are confidential. Information collected through this survey is protected in accordance with Yukon's Statistics Act. Your responses will be shared with the Department of Environment. Individual responses will be combined with others for reporting purposes.

The survey should take about 10-15 minutes to complete.

SECTION 1: Hunting Effort

1. Did you purchase a sheep seal in 2022?

- Yes
- No → **Go to Section 6, Q31**

2. How many years of **sheep** hunting experience do you have?

Number of years: _____

3. **In the last 5 years**, how many years did you go sheep hunting in the Yukon?

- 1 year
- 2 years
- 3 years
- 4 years
- 5 years
- I did not hunt for sheep

4. Did you hunt for sheep in the Yukon in 2022?

- Yes
- No → **Go to Section 2, Q17**

2

5. Compared to the last year you hunted sheep, please indicate if your 2022 sheep hunting effort:

- Increased (→ **Go to Q6**)
- Decreased (→ **Go to Q7**)
- Stayed the same (→ **Go to Q8**)

6. Which factors led to you **increasing** your sheep hunting effort in 2022? (Check all that apply).

- More available time
- Available hunting partner(s)
- Better equipped/more disposable income
- Received a PHA permit
- Wanted to get outdoors
- First time sheep hunting
- Weather
- Difficulty finding sheep
- Other: _____

7. Which factors led to you **decreasing** your sheep hunting effort in 2022? (Check all that apply).

- Lack of time
- Too costly
- Harvested a sheep early on in the season
- Available hunting partner(s)
- Did not receive a PHA permit
- Not enough sheep
- Health or injury
- Weather
- Other: _____

8. In what GMZ's did you go sheep hunting **in 2022**? (Check all that apply.)

Then for each GMZ we would like to know number of days per month

- August..... xx days
- September..... xx days
- October..... xx days

9. In what Game Management Subzones did you go sheep hunting **in 2022**? (Please list all that apply.)

10. Including yourself, what was the average number of people in your sheep hunting parties in 2022?

Number of people: _____

11. When you hunted for sheep in 2022, what type of hunting transportation did you use?

- Vehicle (Truck/Car)
- Off-road vehicles such as ATV/Argo/Motorbike
- Motorized boat
- Non-motorized boat
- Horseback
- On Foot
- Bicycle
- Aircraft
- Other: _____

12. About how much money did you spend hunting sheep (including equipment) **in 2022**?

- Less than \$1,000
- \$1,000 to \$2,500
- \$2,501 to \$5,000
- \$5,001 to \$10,000
- More than \$10,000
- Don't know
- Prefer not to say

13. Did you harvest a sheep **in 2022**?

- Yes
- No → **Go to Section 1, Q13**

14. Including your own household, how many households received sheep meat from your hunt?

Number of households: _____

SECTION 2: Hunter Satisfaction

Please indicate your level of satisfaction or agreement with the following statements.

15. I am **not** satisfied unless I harvest a sheep during the season.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Don't know
- Prefer not to say

16. I could be satisfied with a hunting trip that resulted in just seeing sheep in the wild even if I am unable to harvest one.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Don't know
- Prefer not to say

SECTION 3: Hunter Motivations

Here, we are interested in why you hunt sheep.

17. Please rank the following criteria for the why you hunt sheep?

- To obtain healthy food.
- To see sheep in the wild.
- To learn more about sheep.
- As an enjoyable outdoor activity.
- To spend time on the land.
- For the sport/challenge of it.
- To improve my hunting skills.
- To teach others how to hunt animals.
- It makes me more aware of the environment.

- As a social activity with friends or family.
- For the hide or horns.

SECTION 4: Hunting Locations

In this section, we are primarily interested in where you hunted sheep in 2022 and how you determined where to hunt them.

18. Which of the following best describes your sheep Permit Hunt Authorization activity in 2022?

- I applied for and received a sheep PHA in 2022. → **Go to Section 4, Q19**
- I applied for but did not receive a sheep PHA in 2022. → **Go to Section 4, Q21**
- I did not apply for a sheep PHA in 2022. → **Go to Section 4, Q21**

19. Did you hunt for sheep in a PHA area in 2022

- Yes
- No

20. Did you hunt for sheep in a non-PHA area in 2022

- Yes
- No

21. Please rank the following criteria you use to select a Sheep hunting area from most important to least.

- Few other hunters in the area
- Easy access into the area
- Choice of rams to hunt
- Not likely to see ATVs or Argos
- Want to see a lot of sheep
- Explore new areas

SECTION 5: Hunting Practices

In this section, we are interested in your thoughts on Sheep-hunting ethics and practices. 6

22. Even seasoned Sheep hunters need to learn or review new information to effectively and safely hunt Sheep.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Don't know
- Prefer not to say

23. Have you ever participated in a sheep Hunting Workshop?

- Yes
- No
- Don't know

24. I would take a Sheep Hunter Workshop, if available, to increase my knowledge about Sheep and Sheep hunting.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Don't know
- Prefer not to say

25. I would be comfortable with reviewing available educational information prior to hunting Sheep to ensure my hunt is effective and safe.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Don't know
- Prefer not to say

26. I am confident that I am knowledgeable about determining if a ram is full curl or not, even from a reasonable shooting distance.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Don't know
- Prefer not to say

27. I would shoot a sheep based solely on age judged in the field

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

- Don't know
- Prefer not to say

28. I would be comfortable with having more limited Sheep-hunting opportunities to ensure less impacts to the land and other wildlife.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Don't know
- Prefer not to say

29. I would be comfortable with having more limited Sheep-hunting opportunities to ensure I encounter fewer other hunting parties.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Don't know
- Prefer not to say

SECTION 6: Goats

30. Did you purchase a goat seal in 2022?

- Yes
- No

31. How many days did you hunt goat for in 2022?

Thank you for sharing your time and thoughts about Sheep hunting!

SECTION 7: Final Comments

Please feel free to leave comments about your Sheep hunting effort, motivation, or satisfaction, or your thoughts on Sheep hunting practices.