

Technical Paper No. 377

Subsistence Land Mammal Harvests and Uses, Yukon Flats, Alaska: 2008–2010 Harvest Report and Ethnographic Update

by

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October 2012

Alaska Department of Fish and Game
Division of Subsistence



Council of Athabaskan Tribal Governments
Natural Resources Department



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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly-accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H_A
gram	g			base of natural logarithm	e
hectare	ha			catch per GMU effort	CPUE
kilogram	kg			coefficient of variation	CV
kilometer	km	all commonly-accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	common test statistics	(F, t, χ^2 , etc.)
liter	L			confidence interval	CI
meter	m			correlation coefficient (multiple)	R
milliliter	mL	at	@	correlation coefficient (simple)	r
millimeter	mm	compass directions:		covariance	cov
		east	E	degree (angular)	$^\circ$
		north	N	degrees of freedom	df
Weights and measures (English)		south	S	expected value	E
cubic feet per second	ft ³ /s	west	W	greater than	>
foot	ft	copyright	©	greater than or equal to	≥
gallon	gal	corporate suffixes:		harvest per GMU effort	HPUE
inch	in	Company	Co.	less than	<
mile	mi	Corporation	Corp.	less than or equal to	≤
nautical mile	nmi	Incorporated	Inc.	logarithm (natural)	ln
ounce	oz	Limited	Ltd.	logarithm (base 10)	log
pound	lb	District of Columbia	D.C.	logarithm (specify base)	log ₂ , etc.
quart	qt	et alii (and others)	et al.	minute (angular)	'
yard	yd	et cetera (and so forth)	etc.	not significant	NS
		exempli gratia (for example)	e.g.	null hypothesis	H_0
Time and temperature		Federal Information Code	FIC	%	%
day	d	latitude or longitude	lat. or long.	probability	P
degrees Celsius	°C	monetary symbols (U.S.)	\$, ¢	probability of a type I error (rejection of the null hypothesis when true)	α
degrees Fahrenheit	°F	months (tables and figures)	first three letters (Jan, ..., Dec)	probability of a type II error (acceptance of the null hypothesis when false)	β
degrees kelvin	K	registered trademark	®	second (angular)	"
hour	h	trademark	™	standard deviation	SD
minute	min	United States (adjective)	U.S.	standard error	SE
second	s	United States of America (noun)	USA	variance	
		U.S.C.	United States Code	population	Var
Physics and chemistry		U.S. state	two-letter abbreviations (e.g., AK, WA)	sample	var
<i>all atomic symbols</i>					
alternating current	AC	Measures (fisheries)			
ampere	A	fork length	FL		
calorie	cal	mideye-to-fork	MEF		
direct current	DC	mideye-to-tail-fork	METF		
hertz	Hz	standard length	SL		
horsepower	hp	total length	TL		
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

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FLATS, ALASKA: 2008–2010 HARVEST REPORT AND
ETHNOGRAPHIC UPDATE**

by

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In Memoriam

This report is dedicated to the life of Steven Joseph Flitt of Chalkyitsik, Alaska. A loving son, a hard worker, a youth mentor, a strong hunter, a provider of food for his community, and a man who carried his culture.

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Development and publication of this manuscript were partially financed by funds from ANILCA 809, the Federal Office of Subsistence Management (OSM); Beaver Tribal Council Tribal Wildlife Grant (USFWS), Council of Athabascan Tribal Governments Annual Funding Agreement with the Yukon Flats National Wildlife Refuge (USFWS), and State of Alaska General Fund provided by the ADF&G Division of Subsistence.

October 2012

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This document should be cited as:

Van Lanen, J. M., C.M. Stevens, C. L. Brown, K.B. Maracle, and D. S. Koster. 2012. Subsistence land mammal harvests and uses, Yukon Flats, Alaska: 2008–2010 harvest report and ethnographic update. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 377, Anchorage.

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ABSTRACT

This report presents the results of a harvest survey and ethnographic research project that investigated the subsistence uses of large land mammals and furbearers in Game Management Unit 25 in the Yukon Flats region of Interior Alaska. Large land mammal species harvested and used by Yukon Flats residents include moose *Alces alces*, caribou *Rangifer tarandus*, black bear *Ursus americanus*, and brown bear *Ursus arctos*. Furbearing species included in this study are marten *Martes americana*, lynx *Lynx canadensis*, and wolf *Canis lupus*. For the 2008–2009 study year a total of 284 of 467 households (approximately 61%) were surveyed in the 7 Yukon Flats communities of Beaver, Birch Creek, Chalkyitsik, Circle, Fort Yukon, Stevens Village, and Venetie. For the 2009–2010 study year a total of 260 of 414 households (approximately 63%) were surveyed in the same 7 Yukon Flats communities.

Overall findings show that moose continue to be the primary wild food resource harvested in Yukon Flats communities. An estimated 105 moose were harvested during the first study year and an estimated 124 moose were harvested during the second study year. Survey findings also demonstrate that strong food sharing networks continue to operate as an essential part of the subsistence economies in these communities. During the first study year 73% of households used moose while only 23% harvested moose, and during the second study year 78% of households used moose while only 26% harvested moose. While certain aspects of Yukon Flats hunting methods, strategies, and perceptions have changed over time, the importance of big game resources for subsistence has not declined. The health of moose and caribou populations in the region is constantly affected by ecological dynamics such as changing climatic conditions, wildfire, and predation, but is also impacted by the local demand for subsistence meat. Additionally, hunting and trapping success in the Yukon Flats is affected by rising fuel costs and the inability to afford motor boat fuel for long distance travel.

Respondents consistently expressed a desire to empower resource management at the community level based upon the revival and maintenance of traditional knowledge, the conservation of cow and calf moose, and measured predator control efforts. Respondents envisioned the integration of traditional ecological knowledge into formal education for youth hunters and the implementation of community based wild resource stewardship at the grassroots level as the means to ensure successful management in the future.

Key words: Yukon Flats, Yukon River, Beaver, Birch Creek, Chalkyitsik, Circle, Fort Yukon, Stevens Village, Venetie, Black River, Porcupine River, Interior Alaska, Gwich'in, Koyukon, moose, caribou, brown bear, black bear, furbearer trapping, subsistence harvests, participant observation, moose hunting, bear hunting, moose processing, predator management, traditional ecological knowledge, experiential ecological knowledge, co-management, community based stewardship, adaptation, socio-ecological resilience.

CHAPTER 1: INTRODUCTION

This report summarizes the results of a harvest survey and ethnographic project that investigated the subsistence uses of large and small land mammals in Game Management Unit (GMU) 25 in the Yukon Flats region of Interior Alaska. The Yukon Flats, bordering Canada in northeast Alaska and extending for approximately 10,000 square miles, is a broad expanse of tributary rivers, streams, sloughs, lakes, meadows, muskies, and forests dividing the rugged Brooks Range to the north and the White Mountains to the south. The participating communities are Beaver, Birch Creek, Chalkyitsik, Circle, Fort Yukon, Stevens Village, and Venetie (Figure 1). This project took place between 2008 and 2010. According to the U.S. Census, these communities had a combined estimated population of 1,117 people in 450 households in 2010 (Table 1). Project partners were the Alaska Department of Fish and Game Division of Subsistence (ADF&G), the U.S. Fish and Wildlife Service (USFWS), the Council of Athabascan Tribal Governments (CATG), and the Beaver Traditional Council (BTC).

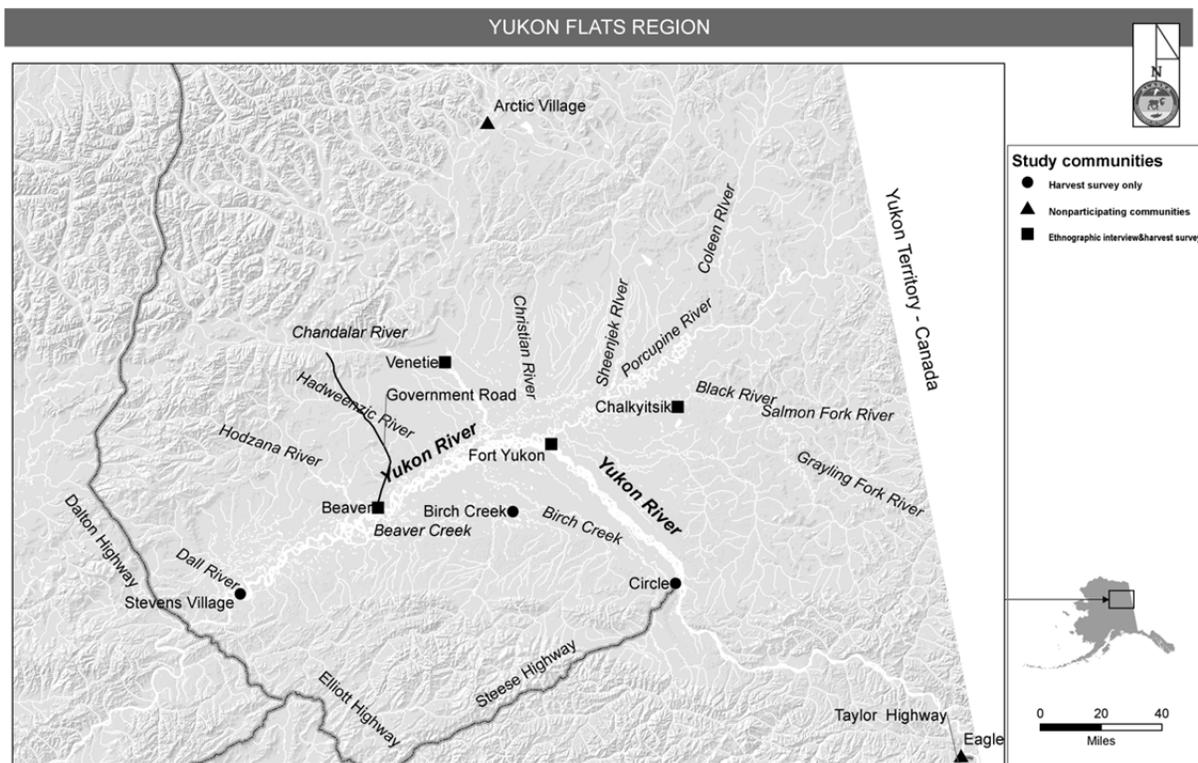


Figure 1.–Map of the Yukon Flats region.

Table 1.—Population of Yukon Flats communities, 2008, 2009, and 2010.

Community	Study findings for 2008				Study findings for 2009				Census year 2010			
	Total population		Alaska Native population		Total population		Alaska Native population		Total population		Alaska Native population	
	Households	Population	Number	Percentage	Households	Population	Number	Percentage	Households	Population	Number	Percentage
				of total				of total				of total
Beaver	29	57	—	—	34	44	—	—	36	84	82	98%
Birch Creek	21	31	—	—	15	31	—	—	17	33	33	100%
Chalkyitsik	26	60	—	—	18	31	—	—	24	69	59	86%
Circle	40	98	—	—	30	68	—	—	40	104	88	85%
Fort Yukon	262	434	—	—	206	439	—	—	246	583	520	89%
Stevens Village	22	64	—	—	22	58	—	—	26	78	66	85%
Venetie	67	151	—	—	89	193	—	—	61	166	152	92%

Sources ADF&G Division of Subsistence household survey, 2009; CATG and ADF&G Division of Subsistence household survey, 2010; and U.S. Census 2010.

— = data not collected.

CATG has been promoting increased participation in wildlife management by local users and tribal governments since the early 1990s. CATG is mandated by the member tribal governments to document traditional and customary use of wildlife that maintains reciprocity and accountability between all Yukon Flats resource management stakeholders. Resource management stakeholders in the Yukon Flats include USFWS Yukon Flats National Wildlife Refuge, ADF&G, tribal governments, Alaska Native corporations, and traditional users. This mandate led to the establishment of CATG's harvest data collection program. Since 1993, CATG's Natural Resources Department, in partnership with ADF&G and USFWS, has been administering a household survey designed to assess annual harvest levels of moose *Alces alces*, caribou *Rangifer tarandus*, black bears *Ursus americanus*, and brown bears *Ursus arctos* by Yukon Flats communities. Since 2003, CATG has published harvest data reports based upon the results of these household surveys (Thomas and Fleener 2003; Thomas 2004; Thomas and Fleener 2005; Thomas and Fleener 2007; Thomas 2008).

Management of moose in the region became more robust with the 2002 development of the Yukon Flats Cooperative Moose Management Plan (YFCMMP) by ADF&G, USFWS, and CATG. This plan established the goals to improve moose harvest reporting to more accurately document subsistence needs and obtain traditional knowledge to better inform management (ADF&G 2002). CATG has maintained an Annual Funding Agreement (AFA) with the USFWS Yukon Flats National Wildlife Refuge since 2004. The AFA has allowed continued cooperative work in the area of moose management, funding local outreach, and organizing around the YFCMMP.

Prior to 2008, CATG survey methods summarized total reported harvests. As part of the effort to improve available harvest data, the partners elected to implement 2 rounds of harvest surveys: the fall and winter hunts of 2008–2009 and the fall and winter hunts of 2009–2010. These surveys were administered using standard Division of Subsistence household survey methods, which establish community harvest estimates based on expansion. Due to local and management interests in better understanding furbearer and small game harvests, martens *Martes americana*, lynx *Lynx canadensis*, and wolves *Canis lupus* were added to the 2008–2009 survey. The results of the 2008–2009 survey contained significant harvests of snowshoe hares *Lepus americanus* in the field provided for "write-in" species, thus snowshoe hares were added to the 2009–2010 survey form. At the request of the CATG Department of Natural Resources, muskrats *Ondatra zibethicus* were also added as a species category to the 2009–2010 survey form. The additions of snowshoe hares and muskrats reflect local knowledge of species that are harvested primarily for food rather than for the sale of fur. For context, the results of the 2008–2009 and 2009–2010 harvest surveys are integrated into this report.

The mission of ADF&G Division of Subsistence is to scientifically gather, quantify, evaluate, and report information about customary and traditional uses of Alaska's fish and wildlife resources.

CATG participates in harvest data collection to protect and sustain customary and traditional use in the Yukon Flats. Harvest data is needed to:

- Provide accurate subsistence harvest estimates for Yukon Flats communities (harvest ticket systems may substantially underestimate harvests);
- Produce scientifically sound data accepted within management and regulatory decision-making arenas; and
- Inform and improve regulations and management decisions to protect Traditional and Customary use in the Yukon Flats, and promote sustainable resources to accommodate Traditional and Customary use in the Yukon Flats (see Appendix D).

As noted in earlier harvest survey studies (Brown et al. 2004a), the harvest ticket system for reporting big game harvests in Alaska may substantially underestimate harvests of rural resident hunters (see Andersen and Alexander 1992). Andersen and Alexander (1992) compared harvests reported through harvest tickets to subsistence baseline studies for 9 Interior Alaska communities during the regulatory year 1987–1988.

On average, the harvest tickets reports represented approximately 28% of the harvest estimates documented in the community baseline studies (Andersen and Alexander 1992).

Andersen and Alexander (1992) contend harvest tickets do not represent accurate harvests by rural communities for a variety of reasons:

- Some individuals hunt and harvest without ever obtaining a license or harvest ticket.
- The harvest ticket system is not compatible with local patterns of group hunting and sharing networks that characterize many local subsistence-based communities.
- Hunting is typically done by groups and harvests are shared among these households.
- Select hunters (“super-households” or “super-hunters”) may be responsible for providing moose meat for a large, extended family of several inter-related households in addition to their own.
- One moose may not feed a household heavily reliant on wild foods to meet their needs.

The harvest survey project described in this report maintains the same purposes as the first CATG published harvest data collection report:

This project was designed specifically in response to Yukon Flats Tribes, Eastern Interior Regional Advisory Council (EIRAC)¹, Yukon Flats Fish & Game Advisory Committee, Yukon Flats National Wildlife Refuge (YFNWR) and Alaska Department of Fish & Game (ADF&G) concerns...The primary intent of this project is to provide information that will help guide decision-making of the CATG Natural Resource managers, and the Yukon Flats Moose Management Planning Committee, a committee made up of Yukon Flats residents, ADF&G Wildlife Conservation, and Yukon Flats NWR staff. (Thomas and Fleener 2005:3)

As identified by the USFWS, ADF&G, and CATG, the purpose of this harvest survey project was to document subsistence harvests of wildlife species by season, month, and geographic location for the 2008–2009 and 2009–2010 harvest seasons. By documenting the subsistence harvest, this project supports the Yukon Flats National Wildlife Refuge in providing opportunity for continued subsistence uses by local residents and helps meet the ADF&G Division of Wildlife Conservation’s 2008 and 2009 management objective to “implement and conduct systematic household harvest surveys (in coordination with the Division of Subsistence) for communities in [GMU] 25D” (Caikoski 2010:624).

This project incorporates survey requirements across programs to prepare a comprehensive report of subsistence use on the Yukon Flats. Objectives of the harvest survey project included:

- Train a person in each village in interview techniques and use of the survey form.
- Estimate the number of animals harvested by species and approximate geographic location (to drainage or township level when possible).
- Estimate the percentage of households using, harvesting, hunting, receiving, and giving away subsistence harvested animals.
- Estimate the number of active hunters and trappers in each village.
- Estimate the quarterly moose harvest for the villages in GMU 25D West to ensure harvest does not exceed the quota for the subunit.
- Communicate the objectives of the YFCMMP to residents of Yukon Flats villages.

During early discussions among CATG, USFWS, ADF&G, and BTC about the redesign of CATG’s big-game harvest survey effort, participants identified the need for an updated ethnographic description of hunting and trapping in the Yukon Flats. The most recent ethnographic descriptions (Caulfield 1979; 1983; Nelson 1973; Sumida and Alexander 1985) were nearly 30 years old.

1. As of 2012, the legal name for the Regional Council is Eastern Interior Alaska Subsistence Regional Advisory Council.

Between September 2009 and May 2010, ADF&G staff conducted ethnographic research in the Yukon Flats communities of Beaver, Chalkyitsik, Fort Yukon, and Venetie. In this report, the results of those interviews are analyzed and compared with the results of past ethnographic research conducted on the Yukon Flats. These interviews addressed the following study objectives:

- To develop an in-depth understanding of contemporary large land mammal harvest and use practices on the Yukon Flats and how these practices have changed over time.
- To further understand contemporary furbearer trapping effort on the Yukon Flats and how these efforts have changed over time.
- To understand any challenges contemporary Yukon Flats residents face in maintaining adequate harvests of large and small land mammal resources for subsistence uses.
- To understand local perspectives on the role of predation in the Yukon Flats ecosystem, especially the effect of predation on the moose population in the region.
- To understand local efforts of predator management and the grassroots approach to implementation.
- To understand local perspectives on the effectiveness of current resource management efforts to conserve and improve moose populations.
- To understand local perspectives on the effectiveness of current resource management in allowing adequate opportunity for Yukon Flats residents to meet their subsistence needs.
- To understand local perspectives on the future of large land mammal hunting and furbearer trapping on the Yukon Flats.

The project met these objectives through ethnographic research including key respondent interviews and participant observation. The research results presented in this report represent the first multi-community ethnography of Yukon Flats hunting and trapping since 1983 (Caulfield 1983), providing an updated description of contemporary hunting and trapping in the Yukon Flats.

The results of the ethnographic research are intended to assist ADF&G Division of Wildlife Conservation with achieving its current management goals for GMUs 25B and 25D (Caikoski 2010):

- Provide for subsistence use and for the greatest opportunity to harvest moose.
- Protect, maintain, and enhance the Yukon Flats moose population and habitat, maintain traditional lifestyles, and provide opportunities for use of the moose resource.
- Increase the harvestable surplus of bull moose in key hunting areas near local communities by reducing mortality from bear and wolf predation.
- Improve moose harvest reporting
- Minimize cow moose harvest, recognizing that some cows will probably be taken for ceremonial purposes.
- Work with local communities to implement harvest strategies to increase bear and wolf harvest.
- To understand local perspectives on the effectiveness of current resource management in allowing adequate opportunity for Yukon Flats residents to meet their subsistence needs.
- To understand local perspectives on the future of large land mammal hunting and furbearer trapping on the Yukon Flats.

The results of this ethnographic research are also intended to provide valuable information to support the activities being employed by the Division of Wildlife Conservation to reach the above goals, including:

- Continue to communicate with and educate local residents about moose management and the effects of cow moose harvest.
- Work with natural resource offices in local communities to obtain and exchange information on moose populations and management issues
- Develop cooperative management programs involving state, federal, and tribal management organizations to help improve local harvest monitoring and reporting.

Ultimately, the results of this report are intended to further the implementation of the YFCMMP, particularly by providing information needed to update the plan. Results are also intended to assist the communities in developing their own grassroots methods of localized resource stewardship.

CHAPTER 2: METHODS

SYSTEMATIC HOUSEHOLD SURVEYS

The primary method for collecting harvest information in this project was through a systematic household survey. Approval for the survey project was obtained from the tribal governments in each community prior to data collection. CATG and ADF&G staff worked with individual tribal governments to select a local resident to administer the surveys during face-to-face interviews. These local residents were contracted as tribal natural resources technicians (TNRTs); they administered 2 rounds of surveys: 1 in 2008–2009 and 1 in 2009–2010. Table 2 lists all project staff. The list includes those individuals involved in project management, field research, data entry, data analysis, map production, and report writing.

Following project approval, ADF&G researchers traveled to Fort Yukon to conduct training for the 2008–2009 survey with CATG staff and the TNRTs from Beaver, Fort Yukon, and Stevens Village. USFWS staff also attended this training. Later, ADF&G staff traveled to Venetie to conduct training for TNRTs from Chalkyitsik, Birch Creek, and Venetie, and then traveled to Circle to train the TNRT there. For the 2009–2010 survey, training for TNRTs was conducted by CATG staff in Fort Yukon, with ADF&G staff and USFWS staff in attendance. For both survey years, TNRTs, in concert with their tribal councils, were responsible for compiling current household lists for their communities prior to the survey effort. However, the criteria by which some TNRTs and local governments compiled household lists were inconsistent across the 2 study years. As a result of this, the demographic results obtained during both the study years are not necessarily comparable due to what appear to be different criteria used for generating the household lists by local researchers in Venetie, Circle, and Fort Yukon. The criteria used to make the household lists for those communities in 2009–2010 are uncertain. Before the project continues in the future, clear documentation of the guidelines used to develop the household lists should occur.

A 2-page survey form was used to collect information from households, documenting basic demographic information for households, harvest by species, seasonality, hunt area, sex of animal, and hunter effort. The survey design followed ADF&G Division of Subsistence household survey methodology used to develop community harvest estimates. A copy of the survey form for both 2008–2009 and 2009–2010 is included in Appendix A.

Both the 2008–2009 and 2009–2010 survey contained a mapping component by which TNRTs recorded the locations of moose, caribou, black bear, brown bear, and wolf harvests by households in the participating communities. Harvest locations were recorded by the Uniform Coding GMU (UCU) within the GMU and corresponding subunit in which the harvests occurred. The study location falls within GMU 25, which is divided into 4 subunits: 25A, 25B, 25C, and 25D. Uniform Coding Units break GMU subunits further down into smaller geographic areas in order to provide managers with more specific harvest location information.

During the first study year, 2008–2009, a total of 467 households were identified in the 7 participating communities (Table 3). Surveys were completed with 284 households (61%). With the exception of Fort Yukon, researchers attempted a census sample due to the small size of the participating communities. Not including Fort Yukon, local research assistants achieved a 90% sample of households in the participating communities. Because of the larger size of Fort Yukon, the original design was a 50% random sample. Fort Yukon TNRTs successfully surveyed 73% of the 50% random sample. However, the sample achieved (96 households) represents only 37% of the total number of households recorded in Fort Yukon (262). Excluding Fort Yukon, the lowest contact rate occurred in Stevens Village, where 16 of 22 (73%) households were surveyed, and the highest occurred in Circle, where 100% of the households were surveyed (Table 3). Not all surveyors documented the refusal rate, but where it was documented (Beaver, Birch Creek, Chalkyitsik, and Circle); it was low when compared to households not surveyed because of a failure to contact. In most of the communities, surveys were administered in May and June 2009.

Table 2.–Project staff.

Task	Name	Organization
Project design and management	Caroline L. Brown	ADF&G Division of Subsistence
Data management lead	David S. Koster	ADF&G Division of Subsistence
Field research lead	James M. Van Lanen	ADF&G Division of Subsistence
Programmer	Patricia M. Fox	ADF&G Division of Subsistence
Data entry	Jennifer Bond	ADF&G Division of Subsistence
	Tammi Chittim	ADF&G Division of Subsistence
	Maegan Smith	ADF&G Division of Subsistence
	Rebecca Fink	ADF&G Division of Subsistence
Cartography	Davin Holen	ADF&G Division of Subsistence
	Nicole Braem	ADF&G Division of Subsistence
	Malla Kukkonen	ADF&G Division of Subsistence
Editorial review lead	Lisa Ka' aihue	ADF&G Division of Subsistence
CATG field research coordinator	Carrie Stevens	Council of Athabascan Tribal Governments
Field research staff (TNRTs)	Andrew Firmin	Council of Athabascan Tribal Governments
	James Kelly	Council of Athabascan Tribal Governments
	Jay Stevens	Council of Athabascan Tribal Governments
	Gary Lawrence	Council of Athabascan Tribal Governments
	Wilma Pitka	Beaver Village Council
	Tamara Henry	Gwichyaa Zhee Gwich'in Tribal Government
	Deb George	Stevens Village
	Herb George	Stevens Village
	Delma Fields	Fort Yukon
	Stanley Phillip Jonas	Fort Yukon
	Phillip Solomon	Fort Yukon
	Amanda Alexander	Fort Yukon
	Wally Solomon	Fort Yukon
	Chris James	Venetie
	Danny Sam	Venetie
	Donald Carroll	Venetie
	Albert Carroll Jr.	Circle
	Steven Flitt	Chalkyitsik
	Mary Y. James	Birch Creek

During the second study year, 2009–2010, a total of 414 households were identified in the 7 participating communities (Table 3). Surveys were completed in 260 households (63%). Not including Fort Yukon, local research assistants achieved a 76% sample of area households. Because of the larger size of Fort Yukon, the original design was a 50% random sample. Fort Yukon TNRTs successfully surveyed 98% of the 50% random sample. However, the sample achieved (101 households) represents only 49% of the total number of households recorded in Fort Yukon (206). Excluding Fort Yukon, the lowest contact rate occurred in Circle, where 15 of 30 (50%) households were surveyed, and the highest occurred in Birch Creek, where 100% of the households were surveyed (Table 4). In most of the communities, surveys were administered in June and July 2010.

Results from surveyed households were expanded to derive community harvest estimates. Fractions of animals result from the expansion procedure and are rounded to the nearest tenth in accompanying report tables.

Table 3.–Demographic characteristics of Yukon Flats communities, 2008.

Characteristics	Beaver	Birch Creek ^b	Chalkyitsik ^b	Circle	Fort Yukon	Stevens Village ^b	Venetie
Total households	29	21	26	40	262	22	67
Sampled households	27	20	22	40	96	16	63
Percentage sampled	93%	95%	85%	100%	37%	73%	94%
Mean household size	2.0	1.5	2.3	2.5	1.7	2.9	2.3
Estimated population							
Survey	57	31	60	98	434	64	151
2008 DOL estimate ^a	58	31	60	99	585	64	185
2009 DOL estimate ^a	65	23	72	94	585	58	177
2010 U.S. Census	84	33	69	104	583	78	166

a. Information comes from the Alaska Department of Labor annual population estimates.

b. Survey population characteristics are taken from the Alaska Department of Labor 2008 estimates.

Table 4.–Demographic characteristics of Yukon Flats communities, 2009.

Characteristics	Beaver	Birch Creek ^b	Chalkyitsik	Circle	Fort Yukon	Stevens Village	Venetie
Total households	34	15	18	30	206	22	89
Sampled households	31	15	15	15	101	19	64
Percentage sampled	91%	100%	83%	50%	49%	86%	72%
Mean household size	1.3	2.1	1.7	2.3	2.1	2.6	2.2
Estimated population							
Survey	44	31	31	68	439	58	193
2008 DOL estimate ^a	58	31	60	99	585	64	185
2009 DOL estimate ^a	65	23	72	94	585	58	177
2010 U.S. Census	84	33	69	104	583	78	166

a. Information comes from the Alaska Department of Labor annual population estimates.

b. Survey population characteristics are taken from the Alaska Department of Labor 2008 estimates.

SURVEY DATA ENTRY AND ANALYSIS

Prior to analysis, completed survey forms underwent several reviews. Surveyors were asked to review forms for completeness and legibility prior to submitting them to ADF&G and CATG project coordinators. Responses were coded following standardized conventions used by ADF&G to facilitate data entry. Project coordinators then reviewed the completed forms for logical errors or omissions and resolved any problems with the surveyors. The completed forms were then sent to ADF&G Division of Subsistence Information Management section where a double-entry method was used to enter information into a computerized system for data analysis.

Information management staff within the Division of Subsistence set up database structures within Microsoft SQL Server² at ADF&G in Anchorage to hold the survey data. The database structures included rules, constraints, and referential integrity to ensure that data were entered completely and accurately. Data entry screens were available on a secure Internet site. Daily incremental backups of the

2. Product names are given because they are established standards for the State of Alaska or for scientific completeness: they do not constitute product endorsement.

database occurred, and transaction logs were backed up hourly. Full backups of the database occurred twice weekly. This ensured that no more than 1 hour of data entry would be lost in the unlikely event of a catastrophic failure. All survey data were entered twice and each set compared in order to minimize data entry errors.

Once data were entered and confirmed, information was processed with the use of Statistical Package for the Social Sciences (SPSS) software, Version 19. Initial processing included the performance of standardized logic checks of the data. Logic checks are often needed in complex data sets where rules, constraints, and referential integrity do not capture all of the possible inconsistencies that may appear. Harvest data collected as numbers of animals, or in gallons or buckets were converted to pounds usable weight using standard factors (see Appendix B for conversion factors).

ADF&G staff also used SPSS for analyzing the survey information. Analysis included review of raw data frequencies, cross tabulations, table generation, estimation of population parameters, and calculation of confidence intervals for the estimates. Missing information was dealt with on a case-by-case basis according to standardized practices, such as minimal value substitution or using an averaged response for similarly-characterized households. Typically, missing data are an uncommon, randomly-occurring phenomenon in household surveys conducted by the division. In unusual cases where a substantial amount of survey information was missing, the household survey was treated as a “non-response” and not included in community estimates. ADF&G researchers documented all adjustments.

Harvest estimates and responses to all questions were calculated based upon the application of weighted means (Cochran 1977). These calculations are standard methods for extrapolating sampled data. These calculations are standard methods for extrapolating sampled data. As an example, the formula for harvest expansion is

$$H_i = \bar{h}_i S_i \tag{1}$$

where:

$$\bar{h}_i = \frac{h_i}{n_i} \quad (\text{mean harvest per returned survey})$$

H_i = the total harvest (numbers of resource or pounds) for the community i ,

\bar{h}_i = the mean harvest per returned survey for the community i ,

h_i = the total harvest reported in returned surveys,

n_i = the number of returned surveys

S_i = the number of households in a community.

As an interim step, the standard deviation (SD), or variance (V; which is the SD squared), was also calculated with the raw, unexpanded data. The standard error (SE), or SD, of the mean was also calculated for each community. This was used to estimate the relative precision of the mean, or the likelihood that an unknown value would fall within a certain distance from the mean. In this study, the relative precision of the mean is shown in the tables as a confidence limit (CL), expressed as a percentage. Once the standard error was calculated, the CL was determined by multiplying the SE by a constant that reflected the level of significance desired, based on a normal distribution. The constant for 95%

confidence limits is 1.96. Though there are numerous ways to express the formula below, it contains the components of an SD, V, and SE.

Relative precision of the mean (CL%):

$$CL\%(\pm) = \frac{t_{\alpha/2} \times \frac{s}{\sqrt{n}} \times \sqrt{\frac{N-n}{N-1}}}{\bar{x}} \quad (2)$$

where:

s = sample standard deviation,

n = sample size,

N = population size, and

$t_{\alpha/2}$ = Student's t statistic for alpha level ($\alpha=.95$) with $n-1$ degrees of freedom, and

\bar{x} = sample mean.

Small CL percentages indicate that an estimate is likely to be very close to the actual mean of the sample. Larger percentages mean that estimates could be further from the mean of the sample.

The corrected, final data from the household survey will be added to the Division of Subsistence Community Subsistence Information System (CSIS)³. This publicly-accessible database includes community-level study findings.

ETHNOGRAPHIC RESEARCH

Between September 2009 and May 2010, ADF&G researcher James Van Lanen conducted 22 semi-structured, open-ended ethnographic interviews with local residents of the Yukon Flats communities of Beaver (10), Venetie (2), Chalkyitsik (1), and Fort Yukon (9) (a copy of the interview guide is included as Appendix C). Additionally, Van Lanen used methods of participant observation to document moose and black bear hunting on the Black River with Chalkyitsik hunters, September 9–15, 2009.

Key respondents were largely selected by local tribal councils or through snowball methods, in which identified participants identify other potential participants to be added to the list. Respondents represented a diverse cross-section of Yukon Flats residents, including “mature active hunters” (defined in this research as those between the age of 25–55), “knowledgeable elders” (defined as those over the age of 55), and “youth” (defined as those under the age of 25). Of the participating respondents, 7 were elders, 13 were mature active hunters, and 2 were youth representatives. The perspectives of both men and women are important in obtaining a thorough understanding of subsistence harvest and use practices. Therefore, gender also played a role in the selection of respondents. Four women were interviewed: 3 elder women and 1 mature active female hunter. The remaining 18 respondents were male. Respondents from the participating communities ranged from 19 to 91 years of age.

Ethnographic results presented here are limited by the small sample size (22 interviews) relative to the estimated combined population of the participating communities (1,117 persons, U.S. Census Bureau 2010). Also because ethnographic research was only conducted in 4 of the 7 study communities and only

3. ADF&G CSIS: <http://www.adfg.alaska.gov/sb/CSIS/>. Hereinafter cited as CSIS.

covered a single year's observations from those communities, the results presented here are not complete representations of the views and experiences of all Yukon Flats residents. Variables discussed in the ethnographic reporting, such as harvest strategies, locations of harvest, use of a particular resource, etc., likely vary somewhat by family and community.

In addition to ethnographic interviews and participant observation, researchers compiled an extensive literature review of subsistence-related research in the Yukon Flats. In the planning phase, the literature review helped frame the questions for key respondents. In the write up phase, the literature review provided comparisons to frame the presentation of the ethnographic results within a broader context. Information compiled by past studies is thus consistently referenced in this report.

CHAPTER 3: ETHNOHISTORY OF THE YUKON FLATS

PRE-CONTACT ETHNOHISTORY

The Yukon Flats and surrounding areas are the traditional territory of the Gwich'in⁴ and Koyukon Athabascan people who remain the principal inhabitants of the region today. "Gwich'in" is translated in English to mean "those who dwell" or "dwellers of" (Nelson 1973; Slobodin 1981). "Koyukon" is derived from the Yukon and Koyukuk rivers, the watersheds that make up the territory of the Koyukon people (Nelson 1983:1). The first documented contact between European explorers and inhabitants of the Yukon Flats region was in July 1789 on the Mackenzie River, Yukon Territory, by explorer Sir Alexander MacKenzie (Osgood 1936).

Archaeological evidence suggests that contemporary Gwich'in people are the descendants of Paleo-Indian hunters who first occupied the region approximately 6,000 years ago (USFWS 2008). In the early 1970s, the remains of 46 caribou surrounds (fences) of Gwich'in origin were found in Alaska and Yukon Territory, providing insight into the pre-contact land use patterns of the Upper Porcupine Gwich'in (Warbelow et al. 1975; Caulfield 1983). It is uncertain how long humans have used the Yukon Flats region but archaeologists generally agree that human occupation of the greater area extends to at least 11,000 years ago (USFWS 2008). Artifacts of definitive Athabascan origin approximately 3,000 years old have been found on the Old Crow River in the Yukon Territory, an area used traditionally by Gwich'in people and still inhabited by them today (USFWS 2008).

Prior to settlement, the Gwich'in were mobile hunter-gatherers dispersed into small bands moving with the ebbs and flows of the natural resources they were dependent upon (Nelson 1973; Acheson 1977). Arnold (1968) reported that pre-contact Gwich'in territory extended from *Nuklukayet*, the junction of the Tanana and Yukon rivers in the west, to the Peel River basin and the lower Mackenzie Valley in the east. Similarly, Caulfield (1983) reported the historical Gwich'in land use area spread for approximately 36,800 square miles—from the middle fork of the Koyukuk River east to the Sheenjek and Coleen rivers, the lower Porcupine River, the Black River and the entire Yukon Flats. Slobodin (1981:515) reported that groups who spoke the Gwich'in language "may have ranged as far west as the headwaters of the Noatak and Kobuk rivers at the beginning of the nineteenth century." A Fort Yukon elder relayed a traditional Gwich'in story about an ancient man called *Ts'iteehaakwaii* who traveled by canoe from the Yukon Flats all the way to the headwaters of the Yukon River, paddling over 1,000 miles upriver into present-day Canada.

Alongside the Gwich'in, Koyukon people inhabited and relied upon the resources of the western Yukon Flats area. The Koyukon are the northwestern most Athabascans in Alaska. During the 19th century Koyukon territory extended from the southern slope of the Brooks Range in the north, south to Lake Minchumina in the Kantishna River drainage, west to beyond Kaltag on the Yukon River, and east to just above of the mouth of the Dall River on the Yukon River (Clark 1981). The Upper Yukon band of Koyukon inhabited the eastern segment of this territory in the Upper Yukon River drainage and were observed to be a small band of not more than 50 people at the time of contact (Clark 1981). The Upper Yukon Koyukon are closely related to the Koyukuk River drainage band of Koyukon through intermarriage and trade alliances (Clark 1981). Around the 1940s, some Upper Yukon Koyukon and Gwich'in people eventually settled together in communities of Stevens Village and Beaver (Schneider 1976; Clark 1981; Sumida 1988). Limited historical ethnographic information specific to the Upper Yukon Koyukon people inhabiting the Yukon Flats region exists. Clark (1981) provides a brief description of the pre-contact Upper Yukon band and Sumida (1988) provides an ethnographic

4. Earlier researchers have variably used the terms "Kutchin" and "Gwich'in" to describe Yukon Flats inhabitants. However, Caulfield (1983:xi) strongly suggests the contemporary usage of "Gwich'in" in keeping with the practice of using the modern form of spelling developed by the Alaska Native Language Center.

description of Koyukon social organization and subsistence use. Nelson (1983) provides an in-depth description of Koyukon worldviews and modern subsistence practices.⁵ The descriptions of traditional Koyukon subsistence uses of wild resources for food, clothing, shelter, and technology found in these works are not dissimilar from those reported for Gwich'in groups throughout this report.

Due to the cyclical and marginal nature of wild resources in the region, pre-contact Gwich'in and Koyukon people traveled in highly dispersed small bands. Bands were usually composed of several small extended families related by kinship. Wild subsistence resources in the Yukon Flats region were generally of low-density and/or only seasonally abundant. Thus band dispersion was a highly adaptive and successful measure of survival for the Gwich'in people (McKenna 1965; Arnold 1968; Slobodin 1981). The Gwich'in possessed extensive ecological knowledge of the landscape in which they inhabited (Slobodin 1981). Because year-round sedentary concentration into large villages would have likely led to famine, larger congregations of people usually only gathered in certain areas for fishing in the summer months (McKenna 1965; USFWS 2008). From fall to winter, Gwich'in bands dispersed to semi-permanent locations, with small hunting parties often traveling and camping in pursuit of large game (USFWS 2008).

Pre-contact Gwich'in and Koyukon people were entirely dependent upon the harvest of wild resources for survival. Fish and waterfowl were the most abundant resources on the Yukon Flats and were prone to heavy use. Large mammals such as moose and caribou were the most significant caloric component of the traditional diet and thus of central importance as a subsistence resource (Slobodin 1981). Large mammals were also critical in providing materials for the manufacture of shelter, clothing, and tools (Osgood 1936; Hadleigh-West 1963; McKenna 1965, Arnold 1968; Slobodin 1981, Ducker 1982). Surviving the winter required a successful fall hunt (Acheson 1977).

Osgood (1936) reported that the Gwich'in were divided into 9 distinct bands according to the principal geographical territory utilized for subsistence:

- Yukon Flats (*Kutch*)
- Birch Creek (*Tennuth*)
- Chandalar River (*Natsit*)
- Koyukuk River Headwaters (*Dihaii*)
- Black River (*Tranjik*)
- Crow River (*Vunta*)
- Upper Porcupine River (*Tukkuth*)
- Peel River (*Tatlik*)
- Mackenzie Flats (*Nakotch*)

Taken together, Arnold (1968), Schneider (1976), Slobodin (1981), Caulfield (1983), and USFWS (2008) provide a detailed account of the traditional territories of these separate bands, and Acheson (1977) describes the fluid boundaries between band territories and band membership. The eventual settlement of pre-contact Gwich'in bands into contemporary Yukon Flats communities can be generally divided in the following manner:

- *Kutch* (now referred to as *Gwichyaa*)—Fort Yukon, Beaver, Stevens Village, Circle, and Birch Creek
- *Tranjik*—Chalkyitsik
- *Natsit* (now referred to as *Neets'aiti*)—Venetie, Arctic Village

5. Nelson's (1983) work concerns the Koyukuk River band of Koyukon people who inhabit the communities of Hughes and Huslia, on the Koyukuk River, Alaska. While these communities are somewhat outside the geographic region of focus in this report, the worldviews and subsistence practices described by Nelson (1983) are nonetheless highly useful and relevant as a reference here.

- *Tennuth* (now referred to as *Deenduu*), and possibly *Tata*—Birch Creek
- *Dihaii*—Venetie, Arctic Village
- *Nakotch*, *Tukkuth*, *Tatlik*, *Vunta*—Old Crow and other Yukon Territory communities

Additionally, the communities of Beaver, Stevens Village, and Fort Yukon contain residents of Koyukon ancestry and Beaver contains residents of Inupiaq Eskimo ancestry.

SETTLEMENT AND CONTEMPORARY COMMUNITIES

Motivated by the fur trade and later by the discovery of gold, Euroamericans began arriving in the Yukon Flats area in large numbers by the 1880s (Ducker 1982). Euroamerican influence in the region was firmly positioned with the Hudson's Bay Company's establishment of Fort Yukon in 1847 (USDOI 1974). However, an elder from Fort Yukon interviewed during this research explained that many Gwich'in people from the Upper Porcupine River region migrated toward Fort Yukon in the late 19th century, motivated less by the potential benefits of participating in the burgeoning fur trade and more so because of a perceived abundance of subsistence resources on the Yukon Flats. The respondent related how in 1900, his father, at the age of 15, floated down the Porcupine River from Canada to Fort Yukon with his family in a moose skin boat. "...There's no caribou up that way, they said, nothing...down here is big flat country right here. So everything here, you know, ducks, [musk]rats, beaver, good for trapping fur, so they coming down, no food up that way, around here a lot of food."

In time, the establishment of the fur trade and the Hudson's Bay Company's trading post initiated an evolving process of change in several aspects of Gwich'in socio-economic composition. During what Schneider defined as the *early historic period* (1830–1898) "large groups of related people traveled together over rather loosely defined territories, organized around chiefs who held powerful positions...the power of the latter stemmed from their relations with the trading companies and from the extended families that lived with them" (1976:223). As more Euroamericans arrived in the region in pursuit of trapping and trading wealth, Gwich'in bands began to fragment, breaking up extended family groups into smaller groups supported by individual traplines (Schneider 1976). Recruited by Euroamerican trappers and motivated by the acquisition of trade goods, many Gwich'in and Koyukon thus became professional trappers, trading fur for metal tools, weapons, and stores (Hadleigh-West 1963; Arnold 1968; Schneider 1976; Clark 1981; Slobodin 1981). By the 1880s, firearms were common among Athabaskan trappers (Ducker 1982). The shift to a more efficient hunting technology meant that cooperative, band-level, hunting practices organized by a central charismatic figure like a chief (*kuskaa* in Gwich'in), were no longer required for hunting success (McKenna 1965, Schneider 1976). Yukon Flats society thus evolved to become more focused on the individual and/or the nuclear family:

The gun...allowed Athabascans more personal independence. A gun could bring down sufficient game to feed a man, his family, and his dogs. There was less need to congregate along the river banks with the rest of the group to fish or resort en masse to the mountains to kill caribou in the surrounds. Most of the bands began to spend more time in family groups hunting and trapping. (Ducker 1982:84)

Although trading began to provide access to Euroamerican food goods, the dependence on wild resources for subsistence and the reliance on traditional customs of sharing, division of labor, and land use remained. Trappers designated and adhered to familial trapping territories and traplines. Men continued to hunt and trap while women took care of camps and processed meat. The communal distribution of food continued to be common practice.

With the establishment of trading camps, churches, and Bureau of Indian Affairs (BIA) schools, settlement into permanent villages occurred in the 1930s and 1940s. With settlement along the river corridors, moose hunting maintained an extreme level of importance with Yukon Flats residents. The

customary and traditional practice of hunting and using moose for subsistence has remained a major facet of Yukon Flats culture throughout the 20th and into the 21st century.

A strong subsistence economy and culture continues among the residents of the Yukon Flats (Stephen R. Braund & Associates 2007). Subsistence hunting, fishing, and gathering generally take place in locations traditionally used by residents of specific communities, which Caulfield (1983) describes as a form of traditional law. “Areas mapped by residents of the participating communities largely fall within those areas utilized by 19th century Gwich’in bands at the time of their first contact with Euroamericans” (Caulfield 1983:187).

In contemporary times, the Yukon Flats area is a complex amalgam of tribal-, corporate-, state-, and federally-owned land, with the largest land manager being the Yukon Flats National Wildlife Refuge, established in 1978. The refuge boundaries enclose about 11.2 million acres of which 2.6 million acres are lands conveyed to, or selected by, 6 Native village corporations and the Native regional corporation (Doyon) as part of the 1971 Alaska Native Claims Settlement Act (ANCSA)⁶ (USFWS 2005:2). The Yukon Flats National Wildlife Refuge is the third largest refuge in the United States.

Approximately 1,400 local residents inhabit 8 communities in or near the Yukon Flats region today: Arctic Village,⁷ Beaver, Birch Creek, Chalkyitsik, Circle, Fort Yukon, Stevens Village, and Venetie. Fort Yukon is the governmental, economic, and educational hub of the region. Although each community is administered by its own tribal government, CATG unites the 8 communities into a cooperative political body. A brief description of each community is provided here. Population information for the communities is included in Table 1.

Arctic Village, sitting at the base of the Brooks Range, is the northernmost community in the region. Located on the East Fork of the Chandalar River, 6 miles southwest of its junction with the Junjik River (Orth 1967), Arctic Village is bordered to the north, west, and east by the Arctic National Wildlife Refuge (ANWR). Arctic Village is home to the Neets’aii Gwich’in Athabascan people. According to the 2010 U.S. Census, Arctic Village has a population of 152 people occupying 65 households. The population of Arctic Village is 89% Alaska Native (U.S. Census Bureau 2010).

Beaver is located on north bank of the Yukon River 17 miles northeast of its confluence with Beaver Creek, 60 miles southwest of Fort Yukon, and 110 miles north of Fairbanks. The community of Beaver officially formed in 1910 when a Japanese immigrant named Frank Yasuda recruited a group of Eskimo and Athabascan trappers to assist him in establishing a trading post at the Government Road–Yukon River encampment (Schneider 1976). Today the population of Beaver is almost entirely Alaska Native (82%), containing a mix of Gwichyaa Gwich’in, Upper Koyukon, and Inupiaq ancestries (U.S. Census Bureau 2010).

Birch Creek is located on the north bank of Lower Mouth Birch Creek, 26 miles southwest of Fort Yukon (Orth 1967). Caulfield (1983) reported that the contemporary community site is the former location of an traditional semi-permanent camp referred to as “place where the water melts.” The population of Birch Creek is 100% Alaska Native (U.S. Census Bureau 2010).

6. The Alaska Native Claims Settlement Act (ANCSA) is a law that was enacted by Congress on December 18, 1971. This legislation was a land claims settlement that entitled Alaska Natives to receive 43.7 million acres of land and monies totaling \$962.5 million in compensation for the extinguishment of any claims to additional lands based on aboriginal title.

7. Although not a community participating in this research, and not technically located in the Yukon Flats, Arctic Village is described in this section because of its important relationship to the participating communities, its consistent mention by ethnographic respondents in this report, and its geographical setting in relation to caribou harvest and use in the region. Arctic Village did not participate in the 2008–2009 or 2009–2010 land mammal harvest surveys or the ethnographic research described in this report. But because of its cultural and economic ties to the participating communities, Arctic Village is included here and elsewhere in this report.

Chalkyitsik is located on the south bank of the Black River, 7 miles above the Arctic Circle, 4 miles north of Ohtig Lake, and about 70 miles east of the confluence of the Black and the Porcupine rivers. Chalkyitsik sits at the location of a historical seasonal whitefish camp and its Gwich'in name translates to mean "fishhook" or "fish hooking place" (Orth 1967; Nelson 1973; Caulfield 1983). Chalkyitsik was eventually settled permanently by people of the Tranjik, or Black River, Gwich'in band. First encountered by Euroamerican explorers in 1863, the Tranjik people are said to have primarily utilized and occupied the Black River drainage during pre-contact times (Caulfield 1983). Tranjik Gwich'in translates to mean "cache river people" and refers to the many food storage caches constructed by the band along the Black River (Nelson 1973). Caulfield (1983) reported that pre-contact Tranjik spent the fall and winter months in the vicinity of the headwaters of the Black River, harvesting moose, caribou, and Dall sheep *Ovis dalli*, then moved downriver for fishing in the spring and summer months. The Black and Porcupine River drainages are the primary subsistence use areas of contemporary Chalkyitsik residents. Chalkyitsik's geographic location on the eastern edge of the Yukon Flats makes it unique among Yukon Flats communities to the west. Traveling up the Black River from the community, the terrain becomes more rugged with hills, eventually becoming mountainous. As Nelson (1973) pointed out, the Black River country is one of the largest uninhabited wildernesses of North America, extending for 300 miles to the Peel River, and another 200 miles to the Mackenzie River, Yukon Territory. Because of such attributes, and the relative abundance of moose in the area (an observation relayed by several of the respondents in this study), Nelson (1973) suggested that Chalkyitsik residents choose to remain there as opposed to Fort Yukon in order to avoid the increasing hunting and trapping pressure of the larger community. The population of Chalkyitsik is 86% Alaska Native (U.S. Census Bureau 2010).

Circle is located on the west bank of the Yukon River, 130 miles northeast of Fairbanks. Circle's geographic setting denotes the location on the course of the Yukon River's northwesterly flow where the Yukon Flats begin. It is at Circle where large bluffs and hillsides give way to downriver flats (Caulfield 1979). Circle is the only Yukon Flats community accessible by road and can be reached by traveling the Steese Highway north from Fairbanks. Circle was established as a trading post in approximately 1887. Residents of Circle use both the Yukon Flats National Wildlife Refuge lands downriver to the north of the community and the Yukon-Charley Rivers National Park lands upriver to the south of the community for subsistence harvests (Webb 1977; Caulfield 1979). The population of Circle is 85% Alaska Native (U.S. Census Bureau 2010).

Fort Yukon is located on the north bank of the Yukon River at its junction with the Porcupine River and originates from the 1847 trading post established by Alexander Hunter Murray of the Hudson's Bay Company as a Canadian outpost in what was then Russian territory (Osgood 1936). Today Fort Yukon is a regional hub for the area and has the largest population of the Yukon Flats communities as well as the highest population of non-native residents (11%) (U.S. Census Bureau 2010). The population of Fort Yukon is 89% Alaska Native (U.S. Census Bureau 2010). Alaska Native inhabitants of Fort Yukon are generally of Gwich'yaa descent but members of other Gwich'in bands are also residents.

Stevens Village is located on the north bank of the Yukon River 5 miles east of the Dall River and 17 miles upriver from the Yukon River Bridge on the Dalton Highway. Stevens Village was likely first established as a trading camp in the 1880s or 1890s by a Koyukon chief named Old Steven (Orth 1967, Schneider 1976). According to Sumida (1988:19), the location of Stevens Village "represents the eastern boundary of the Koyukon Athabascan people. It is the furthest east predominantly Koyukon settlement along the Yukon River." The location of the community on the Yukon River's mainstem is likely related to their heavy dependence on salmon above any other resource (Sumida 1988). The population of Stevens Village is 85% Alaska Native (U.S. Census Bureau 2010).

Venetie is located 45 miles northwest of Fort Yukon on the north bank of the Chandalar River. Venetie is the location of a traditional camp called *Viinihtaii*, which translates to mean "trail comes down between two hills" (Caulfield 1983, USFWS 2008). Venetie was established as a permanent community in 1895 by Old Robert, a Neets'ain chief. Venetie residents are likely descendants of both the Neets'ain and Dihaii

Gwich'in, or Chandalar River Gwich'in bands (Schneider 1976, Caulfield 1983). The population of Venetie is 92% Alaska Native (U.S. Census Bureau 2010). Venetie's geographic location is unique in that it sits on the threshold between the Brooks Range foothills and the Yukon Flats, providing opportunities to use resources in each of these ecotones (Caulfield 1983). Thus Venetie residents have somewhat the same level of access to moose as they do caribou.

The following chapters describe large game hunting and related topics in the Yukon Flats region, as documented through household harvest surveys conducted in Beaver, Birch Creek, Circle, Chalkyitsik, Fort Yukon, Stevens Village, and Venetie, and ethnographic fieldwork in Fort Yukon, Chalkyitsik, Beaver, and Venetie. Where applicable, earlier research is used to contextualize the ethnographic results reported here but the focus is on the contributions to the understanding of big game hunting in the Yukon Flats made by the results of 2008–2009 and 2009–2010 land mammal harvest surveys and the 2009–2010 ethnographic research.

CHAPTER 4: MOOSE

In terms of effort, use, and social significance, moose is the single most important game resource for Yukon Flats communities. Both ethnographic research and harvest assessments demonstrate that for many Yukon Flats residents moose hunting is the primary fall harvesting activity and moose provides the primary source of wild meat (Thomas and Fleener 2003; Thomas 2004; Thomas and Fleener 2005; Stephen R. Braund & Associates 2007; Thomas and Fleener 2007; Thomas 2008; Caulfield 1983; Sumida 1989). Moose hunting in the Yukon Flats has been described as “deliberate and sustained” throughout the fall season (Sumida 1988) and moose meat “the one meat they [Chalkyitsik residents] could least think of doing without” (Nelson 1973:85). Similarly, ethnographic respondents during this study from Beaver, Chalkyitsik, Fort Yukon, and Venetie echoed this sentiment, that moose meat is critical for long-term survival. An elder from Beaver recalled that the community’s interest in moose hunting and dependence upon moose meat as a food resource has never diminished over the course of his life. “That’s what we live on” stated another.

Despite Yukon Flats communities’ heavy reliance on moose for subsistence, the Yukon Flats maintains some of the lowest moose densities in Alaska: fewer than 50 moose per 100 square miles compared to approximately 500 moose per 100 square miles in the Lower Koyukuk River area (ADF&G 2002; Caikoski 2010). Long-term fluctuations in moose populations on the Yukon Flats have been well documented. Prior to the mid-1900s, moose were uncommon on the Yukon Flats, but during the 1960s and 1970s the moose population increased, becoming the most abundant during the 1970s and 1980s. Following that period of relative abundance, the moose population on the Yukon Flats declined (ADF&G 2002). Declines have been attributed to predation by bears and wolves and increased hunting pressure (Caikoski 2010; ADF&G 2002; Bertram and Vivion 2002).

Following the presentation of harvest survey results for 2008–2009 and 2009–2010, each of the survey topics will be contextualized in a detailed presentation of ethnographic results. Moose harvest regulations for the study years are summarized in Chapter 8.

SURVEY FINDINGS: MOOSE HARVESTS AND USES, APRIL TO MARCH, 2008–2009 AND 2009–2010

Participation in the Subsistence Harvest and Uses of Moose

As shown in Table 5, moose continues to be a staple traditional and customary food resource in all 7 surveyed Yukon Flats communities. In the 2008–2009 study year, 41% of households in the combined study communities had at least 1 member who hunted moose, and 23% harvested moose. An estimated 175 residents of the study communities hunted moose in the 2008–2009 regulatory year. Residents from every study community attempted to harvest a moose. Over one-half of the moose hunters were successful: 57% of the hunters (99 hunters) harvested a moose. There were successful hunters in every community with a wide range in the success rates by community (Table 5). The lowest percentage of successful hunters based on the estimated number of total hunters for each community was 10% in Beaver and the highest percentage was 100% at Venetie.

In 2008–2009, 73% of households used moose; 66% received moose, and 30% gave away moose to other households. Only in Stevens Village did less than one-half the households use moose in the 2008–2009 study year. As reported in Table 5, the estimated harvest of moose by the study communities was 105 animals, providing 63 lb of moose meat per person residing on the Yukon Flats. For the area overall, this represents a harvest of 0.2 moose per household. Birch Creek hunters harvested the most moose in terms of pounds per person of any of the study communities at 92 lb, while Stevens Village hunters obtained the lowest amount of moose meat per person in any of the study communities (12 lb per person). Of the total estimated harvest for all communities, 102 (98%) were bull moose, with 1 cow moose reported (1%), and 1 moose of unknown sex reported (1%) (Table 6).

It is important to note that the percentage of households reporting harvesting moose ranged from 6% in Stevens Village to 32% in Chalkyitsik, while the number of households using moose ranged from 31% in Stevens Village to 100% in Circle. This demonstrates that strong food sharing networks continue to operate as an essential part of the subsistence economies of these villages. However, there are some inconsistencies in the reported participation levels. For example, in Circle, where 100% of the households used moose, only 13% of the households harvested moose, while 95% gave moose, and 10% received moose. Inter-village sharing networks, sharing networks that extend into urban centers, and the re-sharing of food that had already been shared could account for these variances. Thus there is a need to better understand the inter- and intra-village sharing patterns.

In 2009–2010, similar patterns held in levels of use of moose and participation in hunting. As shown in Table 7, 47% of households in the study communities combined hunted moose in the 2009–2010 study year, and 26% harvested moose. An estimated 253 residents of the study communities hunted moose in the 2009–2010 regulatory year. There were moose hunters in every study community. Almost one-half of moose hunters were successful: 46% of hunters (116) harvested a moose. There were successful hunters in every community with a wide range of success rates by community. The lowest percentage of successful hunters, based on the estimated number of total hunters for each community, was 27% in Birch Creek and the highest percentage was 100% at Chalkyitsik.

According to the survey results, 78% of study community households used moose; 71% received moose, and 47% gave away moose to other households, again indicating strong sharing networks. The estimated harvest of moose by study community during 2009–2010 was 124 animals, providing an estimated 100 lb of moose meat per person. For the Yukon Flats area, this represents an average harvest of 0.3 moose per household. Chalkyitisk hunters harvested the most moose in terms of pounds per person in any of the study communities (162 lb), while Stevens Village harvested the least moose of any of the study communities (56 lb). Of the total estimated harvest for all communities, 122 (98%) were bull moose, and 2 cow moose were reported (2%) (Table 8).

Table 5.—Levels of participation in the harvest and uses of moose in Yukon Flats communities, 2008–2009.

Community	Participation of households					Estimated harvest							Estimated hunter information				
	Use	Attempt	Harvest	Receive	Give	Amount		Pounds		95% confidence limits of total harvest			Total		Successful		
						Total	household	Total	person	± percentage	Low	High	Number	percentage of population	Harvest per hunter	Number	Harvest per hunter
Beaver	92.6%	74.1%	7.4%	92.6%	3.7%	2.1	0.1	1,160.0	20.4	37.4%	2.0	3.0	21.4	37.6%	0.1	2.1	1.0
Birch Creek	90.0%	40.0%	25.0%	90.0%	90.0%	5.3	0.3	2,835.0	91.5	18.1%	5.0	6.2	9.5	30.5%	0.6	5.3	1.0
Chalkyitsik	95.5%	36.4%	31.8%	86.4%	95.5%	8.3	0.3	4,467.3	74.5	26.1%	7.0	10.4	8.3	13.8%	1.0	7.1	1.2
Circle	100.0%	75.0%	12.5%	95.0%	10.0%	5.0	0.1	2,700.0	27.6	0.0%	5.0	5.0	30.0	30.6%	0.2	5.0	1.0
Fort Yukon	60.4%	31.3%	24.0%	50.0%	15.6%	60.7	0.2	32,760.2	75.5	29.4%	42.8	78.5	79.2	18.2%	0.8	57.3	1.1
Stevens Village	31.3%	31.3%	6.3%	43.8%	12.5%	1.4	0.1	742.5	11.6	111.3%	1.0	2.9	5.5	8.6%	0.2	1.4	1.0
Venetie	95.2%	50.8%	31.7%	92.1%	68.3%	22.3	0.3	12,060.0	79.9	9.4%	21.0	24.4	21.2	14.0%	1.1	21.2	1.1
All	72.7%	41.1%	22.7%	66.1%	29.6%	105.0	0.2	56,725.0	63.4	69.2%	63.0	177.8	175.0	19.6%	0.6	99.4	1.1

Source ADF&G Division of Subsistence household surveys, 2009.

Table 6.–Estimated harvests of moose by sex and month, Yukon Flats, 2008–2009.

Community	Sex	Estimated harvests by month													Total
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
All															
	All	0.0	0.0	0.0	0.0	8.6	92.5	0.0	1.1	2.2	0.0	0.0	0.0	0.6	105.0
	Male	0.0	0.0	0.0	0.0	8.6	90.4	0.0	1.1	2.2	0.0	0.0	0.0	0.6	102.9
	Female	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
	Unknown	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Beaver															
	All	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1
	Male	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek															
	All	0.0	0.0	0.0	0.0	2.1	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3
	Male	0.0	0.0	0.0	0.0	2.1	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chalkyitsik															
	All	0.0	0.0	0.0	0.0	0.0	7.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	8.3
	Male	0.0	0.0	0.0	0.0	0.0	7.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	8.3
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Circle															
	All	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
	Male	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fort Yukon															
	All	0.0	0.0	0.0	0.0	5.5	54.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	60.7
	Male	0.0	0.0	0.0	0.0	5.5	54.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	60.7
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stevens Village															
	All	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
	Male	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie															
	All	0.0	0.0	0.0	0.0	1.1	19.1	0.0	1.1	1.1	0.0	0.0	0.0	0.0	22.3
	Male	0.0	0.0	0.0	0.0	1.1	17.0	0.0	1.1	1.1	0.0	0.0	0.0	0.0	20.2
	Female	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
	Unknown	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1

Source ADF&G Division of Subsistence household survey, 2009.

Table 7.–Levels of participation in the harvest and uses of moose in Yukon Flats communities, 2009–2010.

Community	Participation of households					Estimated harvest							Estimated hunter information				
	Use	Attempt	Harvest	Receive	Give	Amount		Pounds			95% confidence limits of total harvest		Total		Successful		
						Total	Per household	Total	Per person	± percentage	Low	High	No.	Percentage of population	Harvest per hunter	No.	Harvest per hunter
Beaver	100.0%	67.7%	25.8%	87.1%	41.9%	8.8	0.3	6,141.9	140.0	18.8	8.0	10.4	28.5	65.0	0.3	8.8	1.0
Birch Creek	100.0%	60.0%	33.3%	100.0%	100.0%	5.0	0.3	3,500.0	112.9	0.0	5.0	5.0	18.6	60.1	0.3	5.0	1.0
Chalkyitsik	100.0%	33.3%	33.3%	100.0%	93.3%	7.2	0.4	5,040.0	161.5	35.7	6.0	9.8	7.2	23.1	1.0	7.2	1.0
Circle	53.3%	46.7%	33.3%	26.7%	20.0%	10.0	0.3	7,000.0	102.9	57.3	5.0	15.7	16.0	23.5	0.6	10.0	1.0
Fort Yukon	86.1%	48.5%	29.7%	81.2%	52.5%	64.2	0.3	44,973.3	102.6	23.4	49.2	79.3	128.5	29.3	0.5	63.2	1.0
Stevens																	
Village	63.2%	31.6%	21.1%	52.6%	15.8%	4.6	0.2	3,242.1	56.0	35.4	4.0	6.3	6.9	12.0	0.7	4.6	1.0
Venetie	53.1%	40.6%	12.5%	50.0%	35.9%	23.6	0.3	16,548.4	85.6	63.6	17.0	38.7	47.3	24.5	0.5	16.7	0.7
All	77.7%	47.1%	25.8%	71.0%	47.3%	123.5	0.3	86,445.7	100.1	17.8	101.6	145.4	253.1	47.3	0.5	115.5	0.9

Source CATG and ADF&G Division of Subsistence household survey, 2010.

Table 8.—Estimated harvests of moose by sex and month, Yukon Flats, 2009–2010.

Community	Sex	Estimated harvests by month													Total
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
All															
	All	0.0	0.0	0.0	0.0	6.0	114.4	0.0	0.0	2.0	0.0	0.0	0.0	1.0	123.5
	Male	0.0	0.0	0.0	0.0	6.0	112.4	0.0	0.0	2.0	0.0	0.0	0.0	1.0	121.5
	Female	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beaver															
	All	0.0	0.0	0.0	0.0	0.0	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8
	Male	0.0	0.0	0.0	0.0	0.0	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek															
	All	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
	Male	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chalkyitsik															
	All	0.0	0.0	0.0	0.0	1.2	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2
	Male	0.0	0.0	0.0	0.0	1.2	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Circle															
	All	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
	Male	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fort Yukon															
	All	0.0	0.0	0.0	0.0	2.0	59.1	0.0	0.0	2.0	0.0	0.0	0.0	1.0	64.2
	Male	0.0	0.0	0.0	0.0	2.0	57.1	0.0	0.0	2.0	0.0	0.0	0.0	1.0	62.2
	Female	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stevens Village															
	All	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6
	Male	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie															
	All	0.0	0.0	0.0	0.0	2.8	20.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.6
	Male	0.0	0.0	0.0	0.0	2.8	20.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.6
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source CATG and ADF&G Division of Subsistence household survey, 2010.

Timing and Location of Moose Harvests

The estimated harvest of moose by study community by month in the 2008–2009 regulatory year is included in Table 6. The majority (89%) of moose harvests took place in September when an estimated 93

moose were harvested by residents of all study communities combined. An additional 9 moose were harvested in August, 1 moose in November, and 2 moose in December (Table 6). Of the estimated 105 moose harvested, 103 were bulls, 1 was a cow and 1 was a moose of unknown sex. The largest number of moose was taken by the largest community of Fort Yukon, with a community estimate of 60.7 moose. The lowest harvest was taken by Stevens Village, with a community estimate of 1.4 moose.

The locations of moose harvests were also collected, by community, and are summarized by GMU, subunit, and UCU, which typically follow natural boundaries, such as rivers or valleys. Moose harvest locations are summarized in Table 9. In Figure 2, the individual UCUs where harvests occurred are color-coded to reflect the range or density of harvests that occurred in each UCU of GMU 25.

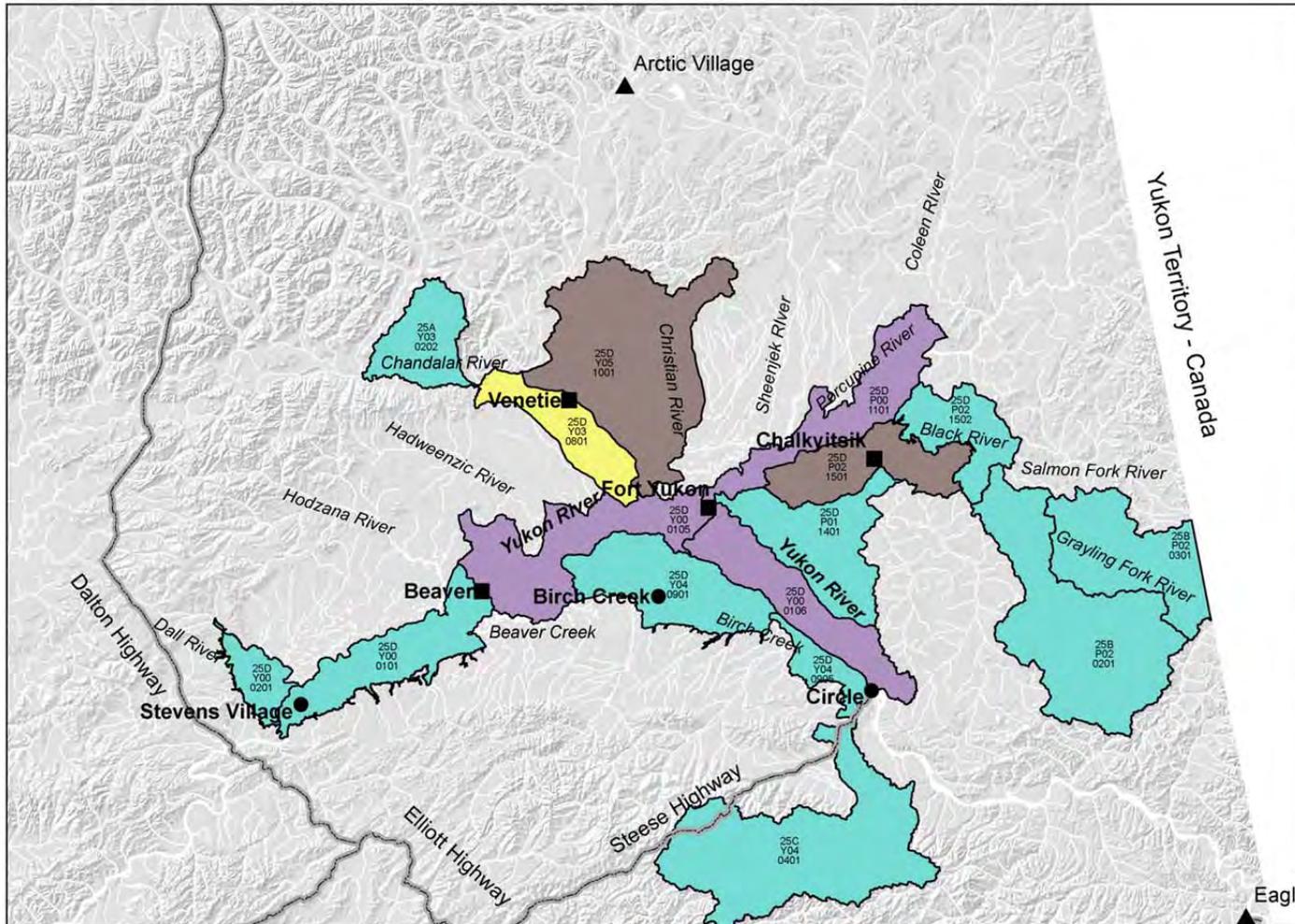
In 2008–2009, the majority of moose harvests by the study communities occurred in GMU subunit 25D (89%). This was followed by 5% of the moose harvest occurring in GMU subunit 25B, 1% of the moose harvest occurring in both GMU subunits 25A and 25C, and 5% of the moose harvest locations reported as unknown. The largest number of moose was harvested within GMU 25D, UCUs Y00-0105 and 0106, with an estimated 33 moose harvested. These UCUs are located along the Yukon River corridor upriver (UCU Y00-0106) and downriver (UCU Y00-0105) from the village of Fort Yukon. An additional 24 moose were harvested in GMU 25D, UCUs P00-1101 and P02-1501, which are located along the Porcupine River and Black River corridors, respectively, indicating that local hunting patterns are based upon primary waterways and access by river boat.

Table 9.–Estimated harvests of moose by GMU, UCU, and community, Yukon Flats, 2008–2009.

Harvest location GMU/UCU	Estimated harvests by location and community							Total	Percentage
	Beaver	Birch Creek	Chalkyitsik	Circle	Fort Yukon	Stevens Village	Venetie		
Subtotal GMU 25A	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.0%
25A Y03-0202	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.0%
Subtotal GMU 25B	0.0	0.0	2.4	0.0	2.7	0.0	0.0	5.1	4.8%
25B P02-0201	0.0	0.0	1.2	0.0	2.7	0.0	0.0	3.9	3.7%
25B P02-0301	0.0	0.0	1.2	0.0	0.0	0.0	0.0	1.2	1.1%
Subtotal GMU 25C	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	1.0%
25C Y04-0401	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	1.0%
Subtotal GMU 25D	2.1	5.3	5.9	4.0	55.2	1.4	19.1	93.0	88.6%
25D P00-1101	0.0	0.0	1.2	0.0	10.9	0.0	0.0	12.1	11.5%
25D P01-1401	0.0	0.0	0.0	0.0	2.7	0.0	0.0	2.7	2.6%
25D P02-1501	0.0	0.0	3.5	0.0	8.2	0.0	0.0	11.7	11.2%
25D P02-1502	0.0	0.0	1.2	0.0	0.0	0.0	0.0	1.2	1.1%
25D Y00-0101	2.1	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.0%
25D Y00-0105	0.0	0.0	0.0	0.0	17.0	0.0	0.0	17.0	16.2%
25D Y00-0106	0.0	0.0	0.0	2.0	13.6	0.0	0.0	15.6	14.9%
25D Y00-0201	0.0	0.0	0.0	0.0	0.0	1.4	0.0	1.4	1.3%
25D Y00-1101	0.0	0.0	0.0	0.0	2.7	0.0	0.0	2.7	2.6%
25D Y03-0501	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.0%
25D Y03-0801	0.0	0.0	0.0	0.0	0.0	0.0	6.4	6.4	6.1%
25D Y04-0901	0.0	5.3	0.0	0.0	0.0	0.0	0.0	5.3	5.0%
25D Y04-0905	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	1.9%
25D Y05-1001	0.0	0.0	0.0	0.0	0.0	0.0	11.7	11.7	11.1%
Unknown	0.0	0.0	0.0	0.0	2.7	0.0	2.1	4.9	4.6%
Total	2.1	5.3	8.3	5.0	60.7	1.4	22.3	105.0	100.0%

Source ADF&G Division of Subsistence household survey, 2009.

YUKON FLATS REGION



Study communities

- Harvest survey only
- ▲ Nonparticipating communities
- Ethnographic interview & harvest survey

2008 Moose harvest by UCU

- 1 - 5
- 6 - 9
- 10 - 13
- 14 - 17

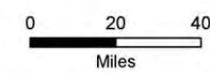


Figure 2.—Moose harvest locations, by UCU, 2008–2009.

The estimated harvest of moose by study community and month for the 2009–2010 regulatory year is included in Table 8. The majority (93%) of moose harvests took place in September when an estimated 114 moose were harvested by residents of the study communities. Six moose were also harvested in August and 2 moose were harvested in December. One moose harvest was reported as unknown date of harvest.

Moose harvests by community and GMU/UCU are summarized in Table 10. In Figure 3, harvest locations are color-coded to reflect the range of harvests by UCU in GMU 25. In 2009–2010, the majority of moose harvests occurred in GMU subunit 25D (86%), UCUs Y04-0901 (15% of the harvest, 18 moose) and P02-1501 (11% of the harvest, 13 moose).

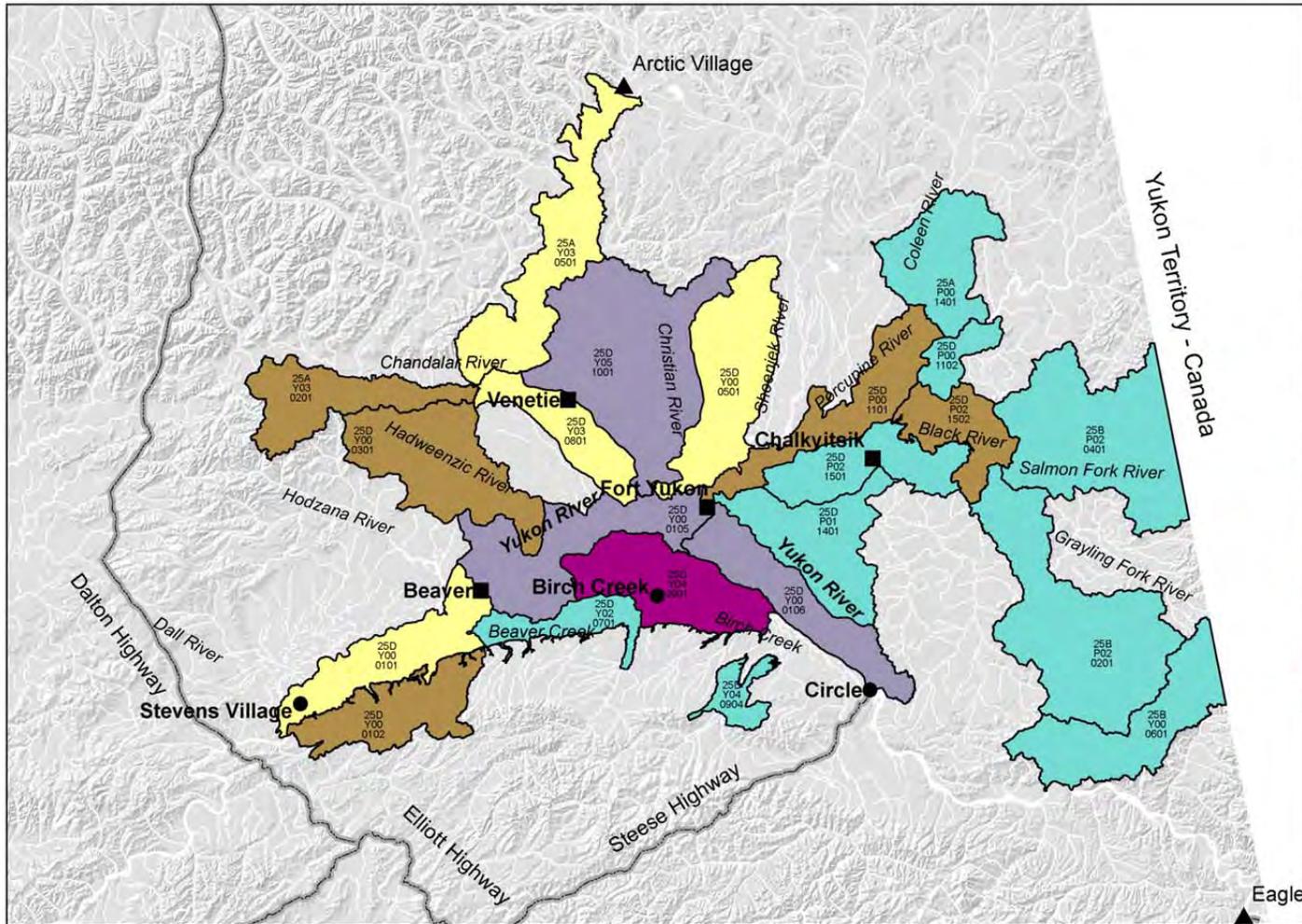
The majority of moose harvests by the study communities occurred in GMU 25D (86%). This was followed by 10% of moose harvests occurring in GMU 25A, 4% in GMU 25B, and 1% reported as unknown.

Table 10.—Estimated harvests of moose by GMU, UCU, and community, Yukon Flats, 2009–2010.

Harvest location GMU/UCU	Estimated harvests by location and community							Total	Percentage
	Beaver	Birch Creek	Chalkyitsik	Circle	Fort Yukon	Stevens Village	Venetie		
Subtotal GMU 25A	0.0	0.0	0.0	0.0	2.0	0.0	9.7	11.8	9.5%
25A P00-1401	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	1.7%
25A Y03-0201	0.0	0.0	0.0	0.0	0.0	0.0	7.0	7.0	5.6%
25A Y03-0501	0.0	0.0	0.0	0.0	0.0	0.0	2.8	2.8	2.3%
Subtotal GMU 25B	0.0	0.0	0.0	2.0	3.1	0.0	0.0	5.1	4.1%
25B P02-0201	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	1.7%
25B P02-0401	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.8%
25B Y00-0601	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	1.6%
Subtotal GMU 25D	8.8	5.0	7.2	8.0	58.1	4.6	13.9	105.6	85.5%
25D P00-1101	0.0	0.0	0.0	0.0	6.1	0.0	0.0	6.1	5.0%
25D P00-1102	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	1.7%
25D P01-1401	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	1.7%
25D P02-1501	0.0	0.0	0.0	0.0	13.3	0.0	0.0	13.3	10.7%
25D P02-1502	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	1.7%
25D Y00-0101	4.4	0.0	0.0	0.0	0.0	0.0	0.0	4.4	3.6%
25D Y00-0102	0.0	0.0	0.0	0.0	0.0	4.6	0.0	4.6	3.8%
25D Y00-0105	2.2	0.0	0.0	0.0	8.2	0.0	0.0	10.4	8.4%
25D Y00-0106	0.0	0.0	0.0	8.0	2.0	0.0	0.0	10.0	8.1%
25D Y00-0301	0.0	0.0	0.0	0.0	0.0	0.0	7.0	7.0	5.6%
25D Y00-0501	0.0	0.0	0.0	0.0	4.1	0.0	0.0	4.1	3.3%
25D Y02-0701	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.9%
25D P02-1501	0.0	0.0	1.2	0.0	0.0	0.0	0.0	1.2	1.0%
25D P02-1502	0.0	0.0	6.0	0.0	0.0	0.0	0.0	6.0	4.9%
25D Y03-0801	0.0	0.0	0.0	0.0	0.0	0.0	2.8	2.8	2.3%
25D Y04-0901	1.1	5.0	0.0	0.0	12.2	0.0	0.0	18.3	14.8%
25D Y04-0904	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	1.7%
25D Y05-1001	0.0	0.0	0.0	0.0	4.1	0.0	4.2	8.3	6.7%
Unknown	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.8%
Total	8.8	5.0	7.2	10.0	64.2	4.6	23.6	123.5	100.0%

Source CATG and ADF&G Division of Subsistence household survey, 2010.

YUKON FLATS REGION



Study communities

- Harvest survey only
- ▲ Nonparticipating communities
- Ethnographic interview & harvest survey

2009 Moose harvest by UCU

- 1 - 2
- 3 - 4
- 5 - 7
- 8 - 10
- 11 - 18

0 20 40
Miles

Figure 3.—Moose harvest locations, by UCU, 2009–2010.

Hunter Effort

The 2008–2009 and 2009–2010 surveys also asked about hunter effort—or the amount of effort, measured in the number of days, that it took successful hunters to harvest a moose, and the number of days unsuccessful hunters spent in search of moose. Participants were asked how many people in their household participated in moose hunting and how many days each of those individuals spent hunting for moose. If hunters spent partial days in the field, they were asked to aggregate them into days (for example, if a hunter spent 2 half days in the field, that would equal 1 day). Each day a hunter spends in the field hunting for moose is defined as 1 hunter day.

The hunter effort metric, in addition to harvest levels, may provide important information about the moose population. For example, if moose densities are low, it may take hunters a longer time to find and harvest a bull moose. Increasing hunter time, or effort, per harvested moose, may also be an index of other factors which affect moose availability, such as access limitations (e.g., low water), a change in moose movement patterns due to local habitat change and availability (e.g., fire, drying lakes, flooding), or a change in hunter behavior (e.g., rising fuel costs, knowledge of area, knowledge of hunting techniques).

In 2008–2009, an estimated 175 individuals spent a total of 1,458 hunter days in pursuit of moose, an estimated 8 days for each hunter (Table 11). To put this total number of hunter days in perspective, the aggregate amount of effort invested by Yukon Flats hunters measured in days is equivalent to approximately 4 years, and is a clear testament to the importance and difficulty of harvesting moose as a traditional and customary food resource in the Yukon Flats. For the same survey year, an estimated 99 successful hunters spent 689 days in order to successfully harvest 105 moose, an average of 7 days per harvested moose. Successful hunters in Chalkyitsik and Stevens Village reported the lowest number of hunter days per moose harvested with 4 days each. Hunters in Beaver had the highest number of hunter days per moose harvested at 18 days.

It should be noted that the number of people per household, and therefore the number of active hunters, was not collected in the same manner in each village surveyed for the 2008–2009 survey year. Surveyors in Stevens Village, Birch Creek, and Chalkyitsik only accounted for the person being interviewed as the hunting party, with no information on any other potential hunters. This inconsistency introduces concerns about whether or not all hunters were documented, thus potentially underestimating the number of hunter days per moose index.

In 2009–2010, an estimated total of 253 hunters spent a total of 1,508 hunter days in pursuit of moose, an estimated 6 days for each hunter (Table 12). An estimated 116 hunters spent 909 days in order to successfully harvest 124 moose, an average of 7 days per harvested moose. Successful hunters in Venetie and Birch Creek reported the lowest number of hunter days per moose harvested with 3 and 5 days, respectively. Hunters in Circle and Beaver had the highest number of hunter days per moose harvested, at 14 and 12 days, respectively.

Table 11.–Estimates of moose hunting effort by hunters in surveyed communities, April 2008–March 2009.

Community	All hunters				Successful (harvesting) households			
	Estimated total harvest	Number of hunters	Estimated days hunted	Hunting days per hunter	Number of hunters ^a	Estimated days hunted	Hunting days per hunter	Hunting days per moose harvested
Beaver	2.1	21.4	273.9	12.8	2.1	37.5	17.5	17.5
Birch Creek	5.3	9.5	140.7	14.9	5.3	63.0	12.0	12.0
Chalkyitsik	8.3	8.3	42.5	5.1	7.1	34.2	4.8	4.1
Circle	5.0	30.0	301.0	10.0	5.0	53.0	10.6	10.6
Fort Yukon	60.7	79.2	461.4	5.8	57.3	357.6	6.2	5.9
Stevens Village	1.4	5.5	13.8	2.5	1.4	5.5	4.0	4.0
Venetie	22.3	21.2	224.7	10.6	21.2	137.8	6.5	6.2
All	105.0	175.0	1,458.0	8.3	99.4	688.6	6.9	6.6

Source ADF&G Division of Subsistence household survey, 2009.

a. A maximum of 1 hunter is counted per moose harvested.

Table 12.–Estimates of moose hunting effort by hunters in surveyed communities, April 2009–March 2010.

Community	All hunters				Successful (harvesting) households			
	Estimated total harvest	Number of hunters	Estimated days hunted	Hunting days per hunter	Number of hunters ^a	Estimated days hunted	Hunting days per hunter	Hunting days per moose harvested
Beaver	8.8	28.5	206.2	7.2	8.8	103.1	11.8	11.8
Birch Creek	5.0	18.6	39.0	2.1	5.0	23.0	4.6	4.6
Chalkyitsik	7.2	7.2	40.8	5.7	7.2	40.8	5.7	5.7
Circle	10.0	16.0	164.0	10.3	10.0	144.0	14.4	14.4
Fort Yukon	64.2	128.5	758.7	5.9	63.2	499.7	7.9	7.8
Stevens Village	4.6	6.9	40.5	5.8	4.6	28.9	6.3	6.3
Venetie	23.6	47.3	258.7	5.5	16.7	69.5	4.2	2.9
All	123.5	253.1	1,507.9	6.0	115.5	909.1	7.9	7.4

Source CATG and ADF&G Division of Subsistence household survey, 2010.

a. A maximum of 1 hunter is counted per moose harvested.

A longer discussion of these data in the context of hunter effort data from other areas of Interior Alaska is below.

DISCUSSION: TRENDS IN MOOSE HARVESTS AND ANALYSIS

As shown in tables 5 and 7, when compared to 2008–2009, moose harvests by households in the 7 participating communities increased by 18% during the 2009–2010 regulatory year (105 animals in 2008–2009 to 124 animals in 2009–2010), providing a 58% increase in per capita harvest for the area as a whole (63.4 lb per capita in 2008–2009 to 100.1 lb per capita in 2009–2010). This change in reported per capita moose harvests was likely influenced by inconsistencies in how households were included in the study sample between the 2 study years, as noted in the methodology section of this report. However, ethnographic respondents interviewed subsequent to the fall 2009 hunt did consistently report observations of more moose and more moose harvest opportunities during fall 2009 in comparison to fall 2008.

When compared to 2008–2009, the number of residents hunting moose in the 7 participating communities increased by 46% during the 2009–2010 regulatory year (175 hunters in 2008–2009 to 253 hunters in 2009–2010). The bulk of this increase can be attributed to a 63% increase in residents of Fort Yukon hunting from 2008–2009 (79 hunters) to 2009–2010 (129 hunters). Despite this large reported increase in Fort Yukon hunters, moose harvests for the community only increased by 5% (61 moose in 2008–2009 to 64 moose in 2009–2010). It is possible that this reported large increase in active participation by Fort Yukon residents over the course of 2 regulatory years represents a survey sampling error as mentioned above, or it could be due to an increased positive response to the household survey by community members. Nonetheless, the comparisons above point to the need for consistent annual harvest survey implementation on the Yukon Flats in order to gain a solid understanding of trends in both moose harvests and hunter participation.

As reported in tables 6 and 8, reported harvests of cow moose by the 7 participating communities remained low (1 cow in 2008–2009 and 2 cows in 2009–2010). However, based on information obtained from the ethnographic results of this study, it is likely that, due to survey respondent fear of being cited for violating the regulation, actual cow harvests are underrepresented in the survey sample.⁸ Underrepresentation of actual cow harvests could occur if some harvested moose reported as bulls in the survey were actually cows or when harvested cows were not reported at all as harvests by a household.

As described above, earlier attempts to document moose harvests in Yukon Flats communities used only reported harvests, but did not expand these reports to community estimates. As a result, they can only be considered minimum levels of harvest and comparing reported harvests to the estimated harvests in this research should only be done with care. However, as a general metric of the potential success of the community estimate approach, it is instructive. In 2008–2009, an estimated 105 moose were harvested and in 2009–2010, 124 moose were harvested. This compares to the average of 91 moose reported annually by the same Yukon Flats communities between 1993 and 2008. This historical data set and annual average of 91 moose, however, represents a wide range of annual harvests, from 22 in 1998 (likely low because only 4 of 7 villages reported that year) to a high of 225 moose in 2006. Other years where all 7 communities reported (for example, 2004: 125 moose; 2007: 94 moose; and 2008: 77 moose) document annual harvests much closer to the estimated annual harvests from this research.

Looking more closely at the historical data by community shows the same wide ranges in reported harvest by year. For example, hunters in Fort Yukon reported a range of 5 moose in 1998 to 122 moose in 2006 (Thomas 2008). Venetie hunters reported between 7 moose in 2007 and 30 moose in 1993. Beaver hunters reported between 4 moose in 1994 and 18 moose in 2002. On average, these communities reported 42 moose (Fort Yukon), 17 moose (Venetie) and 11 moose (Beaver) annually. In comparison, an estimated 61, 22, and 2 moose were harvested in those same villages respectively in 2008–2009. In 2009–2010, 64, 24, and 9 moose were harvested in Fort Yukon, Venetie, and Beaver, respectively. Without any context for the wide variances in the historical data, it is difficult to clearly state what these comparisons show, but on average, the reported and estimated harvests appear to fall within range of one another. In this sense, the community estimate approach appears to provide a viable alternative to the reported harvest approach, especially in years when not all hunters can be contacted, as may have happened in some of the communities with extremely low harvests for particular years.

Other benefits of the community estimate approach include allowing comparison to other regions in Interior Alaska, in terms of harvest estimates on the community and household levels, as well as of harvest effort in communities where this method has also been used. Community and household level estimates of moose harvests and the effort expended to harvest moose in each community can be valuable metrics for evaluating the status of the area moose population. These data—community and household level estimates and hunter effort—were collected in the middle Yukon River–Upper Koyukuk River area

8. Except in cases of ceremonial harvest on State lands, the taking of cow moose is illegal under both state and federal regulations on the Yukon Flats (see “Moose Hunting Seasons by Regulation, 2008–2009 and 2009–2010” below).

for 5 years between 1997–2002, in the GASH (Grayling, Anvik, Shageluk, and Holy Cross) area for 3 years between 2002 and 2004, and in the central Kuskokwim area for 3 years between 2004 and 2006, using identical methods.

Comparing harvest on the household level, or on average, how many moose each household harvested, allows for a comparison of harvest levels across regions that controls for differences in human population. While these estimates represent different year groupings, these comparisons can still describe how difficult (or easy) it is to harvest moose in any given area. For the years where data were collected in each region, per household levels of moose harvest were 0.61, 0.60, and 0.23 moose for the Middle Yukon–Koyukuk, GASH, and central Kuskokwim regions, respectively (Table 13). While the first 2 areas have relatively stable moose densities, the central Kuskokwim has extremely low moose densities such that one-half of the area is in a Tier II/804 moose hunt and there is a moratorium on moose hunting in the other half of the area. In comparison, Yukon Flats villages reported an average of 0.2 moose per household in 2008–2009 and an average of 0.3 moose per household in 2009–2010, suggesting that moose in the Yukon Flats are much more difficult to harvest than in other areas of the interior where household harvest averages are 2 or 3 times higher than those of the Yukon Flats. These data suggest that densities in the Yukon Flats are closer to those of the central Kuskokwim area, which is under severely conservative management, than those densities in the GASH or middle Yukon–Koyukuk areas, where more hunters can hunt for longer periods of time and with greater success.

A final metric in evaluating moose populations in an area is hunter effort, or the average number of days hunters spend hunting for each moose harvested. It is useful to compare hunter effort data across regions to see the difference in success levels and the level of effort needed when hunting different moose populations. Effort data may provide an additional metric for measuring whether current regulations are providing reasonable opportunity.⁹ For example, while some hunters or households may continue to successfully harvest moose every year or most years, they may take longer and longer to do so. Greatly increased hunter effort in areas, or time taken to harvest a moose, may suggest that the Alaska BOG needs to evaluate whether or not the reasonably diligent person has enough time to successfully harvest a moose with such low densities, and as such, whether reasonable opportunity for subsistence is being provided or if regulatory changes need to be made. Table 13 provides hunter effort data for 4 regions of Interior Alaska for comparison.

Using identical data collection methods, hunter effort was first documented in the last 3 years of a 5-year (1997–2002) big game survey project in the middle Yukon River and Koyukuk River region (Andersen et al. 2001; Andersen et al. 2004; Brown et al. 2004b; Brown et al. 2004a). In the 1999–2000 survey year, successful moose hunters took an average of 8 days to harvest each moose and households harvested an average of 0.6 moose (Andersen et al. 2001). Over these 3 years of data being collected, hunter effort increased by approximately 1 day per year for an average of 9 days of hunting effort per moose; this is consistent with locally expressed concerns of a declining moose population and increased competition with other hunters.

9. The Alaska state subsistence statute requires that subsistence regulations provide a “reasonable opportunity” for subsistence uses (5 AAC 16.05.258(b)(1)(B)). Reasonable opportunity is defined as the “opportunity, as determined by the appropriate board, that allows a subsistence user to participate in a subsistence hunt or fishery that provides a normally diligent participant with a reasonable expectation of success of taking of fish or game.” (5 AAC 16.05.258 (f)). There is no such requirement in federal law. Rather, the federal standard is that regulations must have the least adverse impact on traditional uses (Caldwell 1998).

Table 13.—A comparison of moose harvest effort per household in 4 regions of Interior Alaska, 1997–2009.

Year	Middle Yukon/Koyukuk		GASH ^a		Central Kuskokwim		Yukon Flats	
	Number of moose per household	Effort in days per harvested moose	Number of moose per household	Effort in days per harvested moose	Number of moose per household	Effort in days per harvested moose	Number of moose per household	Effort in days per harvested moose
1997	0.7	–	–	–	–	–	–	–
1998	0.6	–	–	–	–	–	–	–
1999	0.6	7.7	–	–	–	–	–	–
2001	0.6	8.9	–	–	–	–	–	–
2002	0.5	10.8	0.7	7.9	–	–	–	–
2003	–	–	0.6	5.6	–	–	–	–
2004	–	–	0.5	8.2	0.3	14.7	–	–
2005	–	–	–	–	0.2	18.4	–	–
2006	–	–	–	–	0.2	21.3	–	–
2008	–	–	–	–	–	–	0.2	6.6
2009	–	–	–	–	–	–	0.3	7.4
Average	0.6	9.1	0.6	7.2	0.2	18.1	0.3	7.0

Sources CSIS; Andersen et al. 1998; Andersen et al. 2000; Andersen et al. 2001; Andersen et al. 2004; Brown et al. 2004b; Brown et al. 2004a; Brown and Koster 2005.

– = no data.

- a. “GASH” refers to an area (consisting of the communities of Grayling, Anvik, Shageluk, and Holy Cross) located on the lower middle Yukon River near the Innoko River.

In the GASH area located on the lower middle Yukon River near the Innoko River, per household harvests averaged 0.6 moose and the average hunter effort was 7 days per harvested moose (Brown et al. 2004a; Brown and Koster 2005; Brown and Koster *In prep*). Both the GASH and middle Yukon River areas are considered to have relatively healthy and stable moose populations, although the moose populations in GMU 21D (middle Yukon) were in decline during the 3 years of the Division of Subsistence household surveys between 1999 and 2002 but have since stabilized (G. Stout, Galena Area Management Biologist, ADF&G Division of Wildlife Conservation, personal communication). Community residents in both areas expressed concern about harvest levels compared to earlier years, but many households were still able to harvest a moose and harvest levels were within the amount reasonably necessary for subsistence (ANS) ranges.¹⁰

In contrast, hunter effort and harvest levels in the central Kuskokwim River area were much higher. Between 2003 and 2006, the average harvest was 0.2 moose per household, and each moose took an average of 18 days to harvest (Brown and Koster *In prep*). It is important to keep in mind that shortly after these data were collected, moose hunting regulations in GMU 19A (central Kuskokwim) became extremely conservative, with the eastern half of GMU 19A under a hunting moratorium and the western half under state Tier II and federal 804 process hunts.¹¹

10. Pursuant to Alaska Statute 16.05.258, the Alaska Board of Fisheries and the Alaska Board of Game are charged with identifying the fish stocks and game populations that are customarily and traditionally taken or used for subsistence, and for determining the amount of the harvestable portion that is reasonably necessary for subsistence uses.

11. Tier I and II subsistence permits are available to Alaska residents only and may be issued when there is not enough game for a general season and the population of animals has been found by the Alaska Board of Game to support only customary and traditional uses. When necessary for the conservation of healthy populations of fish or wildlife or to continue subsistence uses

In comparison, local hunters in the Yukon Flats spent an estimated 6.6 days per each moose harvested in 2008–2009 and 7.4 days per moose harvested in 2009–2010 for a 2-year average of 7 days. Taken together, these data confirm local concerns about the difficulty of harvesting moose in the Yukon Flats, especially in comparison to other regions of Interior Alaska.

Interestingly, the 2 years of harvest data collected in the Yukon Flats as part of this project suggest low harvest levels per household (similar to the central Kuskokwim area) and with effort levels more similar to the middle Yukon and GASH areas where local hunters have also expressed concerns about the increasing difficulty of finding and harvesting moose (Brown et al. 2004b). Despite low moose densities in the Yukon Flats, the Yukon Flats hunter effort estimates are more similar to the GASH and Middle Yukon–Koyukon areas, where moose populations are considered to be relatively healthy, than they are to areas like the central Kuskokwim, where moose populations are at extremely low densities. The Yukon Flats data are also consistent with the ethnographic information provided by residents, indicating that it takes approximately 1 week to find and harvest a moose. One possible explanation is that, over time, Yukon Flats hunters have become extremely efficient at hunting the low density moose population in their area.

ETHNOGRAPHIC FINDINGS: CONTEMPORARY AND HISTORICAL HARVEST AND USES OF MOOSE ON THE YUKON FLATS

Seasonality of Moose Hunting

Yukon Flats residents have traditionally hunted moose year-round, when the need for meat arose; however, most residents focused their efforts from late summer through early fall (Osgood 1936; Nelson 1973; Caulfield 1983; Sumida and Alexander 1985; Sumida 1988; Sumida 1989). At this time, bull moose are in prime condition for harvest.

Nelson (1973) reported that by September 20 active hunting is taking place in the Chalkyitsik area, especially in the Black River drainage. Observations of moose hunting with Chalkyitsik residents for this project corroborate this report. In 2009, many Chalkyitsik hunters were in the field by September 10, and there were multiple hunting parties from the communities of Chalkyitsik and Fort Yukon traveling along rivers by boat searching river banks for moose. A detailed description of harvest timing considerations as they relate to hunting strategies during the late-August to late-September time period is provided in the “Moose Harvest Strategies” section.

Following the rut in the fall, bull moose disperse to uplands and other locations away from river drainages before the onset of winter; returning to the river systems in mid-winter (Nelson 1973; Schneider 1976; Sumida and Alexander 1985; Maclean and Golden 1991). Yukon Flats residents again pursued and harvested moose during the winter months (Nelson 1973; Caulfield 1983; Sumida 1988; Sumida 1989). Historically, hunters most often pursued moose in conjunction with winter trapping activities (Caulfield 1983). Winter harvests occurred if meat supplies from the fall hunt became sparse or if a hunter was unsuccessful during the fall season (Sumida 1988).

Nelson (1973), Schneider 1976), Caulfield (1983), Sumida and Alexander (1985), and Sumida (1988) all provide excellent descriptions of winter hunting by Yukon Flats communities between the 1890s and the 1980s. However, current research suggests that winter hunting has declined since previous decades, likely consistent with a decline in trapping as well as increases in transportation fuel costs. Residents noted that they are spending less time at their trapping cabins in the winter. Most hunters interviewed during the 2009–2010 research expressed little interest in winter moose hunting. These hunters said they do not actively pursue moose during winter but would harvest a moose opportunistically if they encountered one

of such populations, the Federal Subsistence Board is authorized to restrict or close the taking of fish and wildlife by subsistence and non-subsistence users on Federal public lands and waters (ANILCA Sections 804 and 815(3)).

during winter travel. For example, a Fort Yukon hunter stated: “Normally, a winter hunt for me is more of an opportunistic thing, like when I am going out to check a few traps, or set a snare line out or something, and go to the wood yard...if I see, you know, moose tracks, I’ll go look around for them if the season’s open. I don’t make it an effort to hunt them.” The current research found no evidence of contemporary moose hunting during the spring or summer months.

Moose Hunting Locations

Moose hunting locations in the Yukon Flats are centered on waterways. As an elder from Beaver said, “Moose have to be where there’s water, so we go where there’s water.” The primary hunting locations today are the river banks and small islands of the main rivers that a hunter can easily travel by skiff, such as the Yukon, Black, Porcupine, Chandalar, and Sheenjek rivers and Birch Creek. Hunters also access moose in slough systems, smaller rivers, and in meadows and lakes easily reached from camps. Some hunters travel by foot short distances to lakes and meadows easily reached from river corridors to scout for moose sign or attempt to call a moose in to them (Figure 4). Other hunters make day trips from town searching for moose along the few established all-terrain vehicle (ATV) trails accessible from communities. An elder from Beaver expressed a concern that many of the waterways in the region are drying up due to warmer temperatures and a lack of rain. The elder believed such conditions could have a negative effect on moose habitat, as well as accessibility for hunters to access moose.

Schneider (1976), Sumida and Alexander (1985), Sumida (1988), Sumida and Andersen (1990), and Stephen R. Braund & Associates (2007) provide detailed information about moose hunting locations in the Yukon Flats, each describing a pattern of localized hunting areas around each community, with the exception of Fort Yukon (Caulfield 1983). Caulfield (1983:192) reported a scattered pattern in Fort Yukon residents’ moose hunting locations, which he suggested was an anomaly when compared to other Yukon Flats communities, where “relatively discrete use areas exist for each community.” Caulfield (1983) suggested that scattered locations used by Fort Yukon residents for moose hunting, such as Birch Creek and the Black River, are a product of Fort Yukon residents often being originally from other area communities and continuing to follow their former traditional patterns of geographic use. As a result of this phenomenon, an overlap exists where Fort Yukon residents are found moose hunting in locations often used by communities such as Beaver, Birch Creek, Circle, and Chalkyitsik. Caulfield (1983) suggested that another reason for this overlap in use areas may be an adaptation to declining moose abundance in areas close to Fort Yukon due to a centralized concentration of use there. Stephen R. Braund & Associates (2007) provide the most recent detailed information about moose hunting locations in the Yukon Flats and provides maps detailing local overlap in use areas. Hunters interviewed in this study still observe crowded conditions around Fort Yukon during the fall moose hunting season relative to other regions of the Yukon Flats, as well as the presence of Fort Yukon hunters around other Yukon Flats communities. A Fort Yukon hunter described that generally the hunting areas used by Fort Yukon residents have become more crowded in modern times, and when he was young, people did not have the money or equipment to travel as extensively as they do today. The hunter said that when he was younger:

People had to go on much longer and planned out trips, not just a day or 2, 3 days away from town...a lot of times, when people hunt, they would go out and just find a good spot and camp so they don’t bomb around [on motor boats] much but they go out and hunt on the land. Now days people just bomb around everywhere, both local people, Natives and non-Natives, and even outsiders.

In spite of these conditions and overlapping hunt areas, no conflict between Fort Yukon moose hunters and hunters from other communities was reported. The area communities are composed of closely tied kin relations and friends who share hunting locations cordially.

Fort Yukon hunters hunt in the Christian, Porcupine, Black, Chandalar, and Sheenjek rivers, and Birch Creek, among other locations. Local opinions differ in terms of the quantity of moose available in any

given location and likely reflect personal experiences, skills, and family histories of using a particular area.

Moose hunting around the community of Beaver appears to be centered on the Yukon River mainstem, White Eye (a historical seasonal camp location; the larger area is also sometimes referred to as *Orinjik*), Beaver Creek, Government Road, and the Hodzana River. Beaver hunters reported that due to shallow water, the Hodzana River is difficult to access by skiff and is not hunted anymore, but that moose are sought at the Hodzana River mouth and slough. One hunter said that many years ago, the Hodzana River was hunted by canoe. A Beaver hunter said that “moose are scattered all over and that’s how it’s always been,” and thus one must go searching everywhere possible.

Government Road, an old mining transport roadway extending north from Beaver, offers Beaver hunters a viable opportunity for hunting when time or money is tight. More distant locations require time and fuel, but hunting on Government Road by ATV or snowmachine allows hunters access to small lakes, dried up lakes, multiple sloughs, and meadows in search of moose. A Beaver hunter said that when hunting by ATV, she will stop and “look for moose everyplace there might be moose along the road.”

The Black River watershed, including the Salmon Fork River, remains the primary hunting ground for Chalkyitsik residents. Caulfield (1983) reported that long ago moose were snared at a snaring fence located just east of Salmon Village, a traditional camp and village site located near the confluence of the Black and Salmon Fork rivers and predecessor to the modern-day community of Chalkyitsik. This area is still heavily used today.



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Figure 4.—Steven Flitt of Chalkyitsik investigates a Yukon Flats meadow for sign of a bull moose.

A Beaver hunter, who formerly resided in Chalkyitsik, said that he always hunted moose on the Black River, both upriver and downriver from the community, as well as on the Salmon River. During participant observation of the 2009 fall moose hunt on the Black River, the hunting party attempted to travel up the Salmon River but was forced to turn back after a short distance due to shallow water. However, other hunters in the field at this time were observed accessing the Salmon River by motorboat and had successfully harvested a moose.

Every year hunters must balance a variety of circumstances when choosing their hunting locations, including environmental conditions such as temperatures and water levels, and economic variables determining access to resources such as boats, motors, and fuel. During the 2009 hunt, ADF&G researcher Van Lanen observed multiple hunting parties from both Chalkyitsik and Fort Yukon searching for moose along the Black River. A Chalkyitsik hunter claimed that the high level of activity observed during this time was due to higher than normal water levels allowing easier access by skiff, prompting many hunters to choose the Black River as a hunting location that season. The hunter said that “Fort Yukon people only come up here when the water is high.”

Prior to 1969, when a fire destroyed moose habitat from Chalkyitsik to Fort Yukon, Chalkyitsik hunters hunted moose on the Black River downriver from the community. Forty years later, interviewed hunters observed that habitat, and thus moose, may be returning; however, they also emphasize that moose continue to be sparse in that area. A Chalkyitsik hunter noted that he seldom travels the Black River downriver from Chalkyitsik specifically looking for moose, but will harvest a moose opportunistically if he encounters one en route to Fort Yukon or the Porcupine River.

The current research found no evidence of Chalkyitsik hunters traveling to the Porcupine River drainage in search of moose, but Nelson (1973) reported that Chalkyitsik hunters often traveled to the Porcupine River, about 20 miles by snowmachine, to hunt moose during the month of November.

Most fall moose hunting by Venetie residents occurs along the Chandalar River, in the areas downstream of the Middle Fork of the Chandalar and the West Fork. Moose are also hunted up the East Fork drainage near Gold Camp, and downriver from Big Rock Mountain and Brown Grass Lake. Other areas are difficult to access due to low water (Caulfield 1983). Christian Village (a former village site) is also used as a moose hunting camp. The areas between the Christian and Chandalar rivers are used for moose hunting by Venetie residents (Caulfield 1983). A Venetie hunter observed that most moose hunting activity by Venetie residents is on the Chandalar River north the community, but that people also often hunt for moose at Big Lake. The respondent said that his grandfather used to take him to a place called *Nitsee neekwaii van* (meaning a “pair of eyeglasses”) for moose hunting, which he described as a place with 2 lakes that look like eyeglasses from the air.

Moose Harvest Strategies

Traditional and Contemporary Methods

Pre-contact Gwich'in hunters used pre-modern techniques such as driving, snaring, and archery to harvest moose (Osgood 1936; Hadleigh-West 1963; McKennan 1965; Nelson 1973; Ducker 1982; Caulfield 1983; Sumida and Alexander 1985; Sumida 1988; O'Brien 1997). Traditionally, the Gwich'in used snares made from babiche, but later used steel cable. Snares for were set along known trails or at a single opening in a fence constructed with brush, branches, or logs, and the snares were designed to drive moose along a set path. A moose snaring fence near Venetie was reportedly still being used sometime around 1900 (Caulfield 1983). An elder from Fort Yukon, in his nineties, recalled local use of the bow and arrow, called a *k'i'* (or “stick with string”) to kill moose within his lifetime. The elder described the bow string as being made from “moose skin” and arrow points made from bone. Once located, 1 or more hunters would approach a moose and drive it toward 1 or more archers concealed in a location along the anticipated path of the fleeing animal. In deep snow, hunters would stalk and run down a moose and then dispatch it with an arrow (McKennan 1965).

Calling was also used to bring a moose closer into the range of the hunter. Various methods of attracting moose, including cow calls and scapula scrapers, were used to lure bulls within range during the rut (McKennan 1965; Osgood 1936, 1970; Caulfield 1983; Sumida and Alexander 1985). Called *ch'igeechan* (“something's shoulders”) in Gwich'in, the moose shoulder blade call is an ancient tool that continues to be heavily used today (Figure 5) (O'Brien 1997). When scraped on brush, tree branches, shrubs, or grass,

the sound imitates that of a bull scraping its antlers when rutting or feeding. Grunts, which mimic those of a bull moose, are often performed in tandem with scraping (O'Brien 1997).

Although traditional methods of moose calling are still used today by Yukon Flats residents, moose are no longer snared or hunted with bow and arrow and are instead harvested with modern hunting rifles (Figure 6). Nelson (1973) reported that rifles of some type have been used by the Gwich'in since before the establishment of Fort Yukon in 1847. However, Gwich'in hunters without access to firearms likely used traditional methods of moose harvest up until the early 20th century, when rifle introduction became widespread (O'Brien 1997).



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Figure 5.—A dried moose scapula, or ch'igeechan.

A moose scapula is used to call bull moose when scraped on a tree, shrub, or grass.



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Figure 6.—Steven Flitt of Chalkyitsik walks to a Yukon Flats meadow in search of moose.

He carries a dried moose scapula used to “call in” a bull moose in his right hand and a rifle in his left hand.

Nevertheless, the adoption of firearms did not entirely negate pre-contact moose hunting skills and techniques, especially the use of tracking and calling techniques (Sumida and Alexander 1985, Sumida 1988, Sumida and Andersen 1990). For example, an elder from Beaver stated that because of their scavenging behavior, ravens were traditionally known to give away the location of moose. “In fall-time, they tell you where the moose is, you know, because they want to eat, too.” Additionally, as described by Nelson (1973:104–105), a traditional Athabascan tracking, stalking, and harvesting method, called “semicircular tracking” is used by Chalkyitsik hunters to compensate for a moose’s tendency to double back downwind on its own trail to detect predators.

Instead of following directly in the animal’s track, the Indian makes semicircular detours or loops downwind away from the trail, returning to it at intervals. If he circles back and does not find the trail where it should be he knows the moose has doubled back. At this point he makes a series of smaller semicircles back in the direction from which he came until he finds the animal’s doubling-back trail, which he then follows. If there is a good wind the hunter can almost walk right up to the moose. Nelson (1973:104–105)

Although no hunters were observed actively pursuing moose by tracking during the 2009 participant observation period, several hunters did locate and analyze moose tracks to determine the sex and size of the animal.

During the 2009 participant observation of the fall hunt on the Black River, Yukon Flats hunters continued to use various means to “call in” bull moose. Three different types of moose calls were observed, each utilizing different materials and techniques. A cow call manufactured with an aluminum coffee can and a piece of string was used, without success. This call is made by puncturing a hole in the bottom of the coffee can and attaching a long piece of string to it. The hunter wets the string by dipping it in the river. The hunter pinches the string and then slides the fingers along the distance of the string. The vibration created by this action produces a loud, high-pitched sound that mimics the sound of a cow in hopes of attracting a bull moose.

The second type of call observed by Van Lanen was a bull call vocalization that can either be done with the assistance of a cone, usually made of birch bark, or simply with the assistance of cupped hands to amplify the sound. This type of call attempts to mimic the deep grunts made by a bull moose, most often during the rut. The sound consists of a short “Ugh!!” made at 2–3 second intervals.

The third type of call observed is the moose scapula scraper, described above. The hunters used the scraper 3–4 times at intervals of approximately 30 seconds. Between these intervals the hunter paused and listened for the sound of a bull grunting or scraping in the distance (Figure 7).

After each type of call was made, the hunter listened silently and waited. If there was no response the call was repeated. Scraping was the most common calling method used.



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Figure 7.—Steven Flitt of Chalkyitsik attempts to “call in” a bull moose.

Flitt is using a traditional Gwich'in method of scraping a dried moose scapula on willow branches.

Respondents from all of the participating communities discussed contemporary use of the bone (or scapula) call, which Yukon Flats hunters often refer to as “raking,” “scraping,” or “making noise.” A Venetie hunter said that his grandfather taught him how to “rake” and recalled sitting with his grandfather at night calling for bulls. The hunter said that it could take 1–2 days to successfully call a bull moose into their location and patience was important for success. Some hunters set camp and call for several days from 1 location. A Fort Yukon hunter reflected on the importance of the bone call: “You gotta have that...even 10 mile [away] they hear it; at night, dark, they’ll come out.”

To manufacture the scapula call, both Nelson (1973) and O’Brien (1997) reported that cow moose bones are preferred because bull bones make a heavy sound that does not closely mimic the necessary sound. Nelson (1973) reported that if the cartilage on the end of the scapula is removed, the bone will not work to call in a bull moose. A Fort Yukon hunter recalled that he was taught to leave the cartilage on the bone, “Maybe it sounds like a cow, or does not echo enough if you do that [remove the cartilage]. Also the flappy stuff protects the bone from getting beat up, because if it gets cracked the call is no longer good.”

Conversely, O'Brien (1997) reported that the esteemed Chalkyitsik elder Rev. David Salmon had cut the cartilage off the end of the bone.

Yukon Flats hunters have always used waterways to hunt moose—traveling lakes, sloughs, and rivers by boat in search of moose. Historically, hunters used canoes, while the contemporary prominent fall time hunting strategy is to travel up and down productive rivers by skiff until moose are encountered (hunters also travel by ATV and foot, which is discussed in greater detail below) (Stephen R. Braund & Associates 2007). Groups of Yukon Flats hunters, usually related by kinship, often spend several days “out river” hunting (Sumida and Alexander 1985). Hunters out for multiple days may travel by skiff to a specific location where they camp each night during the hunt or they may travel from camp to camp each day. However, sometimes hunts by boat are conducted as day trips from a community.

Hunters can encounter moose anywhere on a river, but willow stands and islands are the most important places to watch along a river because moose often feed in these locations. Nelson (1973) reported observing Chalkyitsik hunters making vocalized moose calls to attract bulls while traveling the river in a slow moving boat. However, hunters also suggest that motor noise can scare away potential prey. One Fort Yukon hunter interviewed described idling or parking his boat inside one bend and then traveling by foot to get a look at the next bend. He also sometimes floats downriver, without the benefit of a motor: “I get up in the morning and just shove out the boat and just paddle for a few hours, see what passes, see what you see.”

Hunting from a moving boat requires highly skilled marksmanship. Nelson's (1973:96) observations were similar, “River hunting requires very difficult shots. Men often hunt in poor light at dawn and dusk when it is hard to see the sights on a rifle, and much shooting is done from a moving boat.” During the 2009 research, telescopic sights were mounted on the rifles being used, though it was unclear if these sights were actually used since the moose were shot so quickly when seen.

Hunters appeared to focus their hunting efforts during dawn and dusk, a strategy also described by Nelson (1973). During the 2009 fall hunt on the Black River, the morning hunt took place from approximately 5:30 a.m. to 9:00 a.m., and the evening hunt took place from approximately 7:00 p.m. to 10:00 p.m. Moose were still sought throughout the day by driving the river, stopping and calling, and hiking short distances to lakes and meadows, but the midday effort was more casual. The hunters made a specific effort to search the river banks from 11:00 a.m. to 2:00 p.m. because moose were said to often get water during that time period. A Chalkyitsik hunter explained that evening can often be the best time to hunt: when there is sunlight on the shoreline the moose will usually not run because it often cannot see the boat on the water.

A Chalkyitsik hunter explained that the river hunting methods described above are the prominent methods used for moose hunting for a couple of reasons. First, searching the rivers by boat is the most efficient means of locating a moose. The second reason is that there is an immense amount of work required to pack an animal out. For example, the upper Black River has steep cut banks extending for over 40 miles. During the 2009 participant observation, it was very difficult for the hunting party to transport moose meat down these cut banks, despite the relatively short distance of foot travel required.

Traveling the shallow tributaries of the Yukon River in a small skiff can be challenging and precarious, especially with the weight of several hunters, their gear, and harvested moose. Hunting by boat requires detailed knowledge of a waterway. During the 2009 fall hunt on the Black River, the hunting party displayed an expert knowledge of river navigation: the character of the river in any given place had been memorized through previous travels. Keeping track of the water levels over the course of a summer plays a role in how to travel the river and knowledge of the waterway is often passed down to younger people by elders who have this experiential accumulation of knowledge. However, the river changes every year, so dedicated observation and knowing the signs of deep and shallow water are important skills. If the hunt is successful, hunters will have to negotiate these waterways with hundreds of pounds of meat weight as well. During the 2009 fall hunt, hunters halted the hunt after 2 moose were harvested due to concerns

about overloading the boat. Upon reaching a shallow section of the river, the hunting party was forced to pole for about 2 hours in order to extract the boat from rocks.

Beaver, Chalkyitsik, Venetie, and Fort Yukon residents also discussed hunting by ATV on trails accessible from those communities (Figure 8). ATV hunting is a tactic often used by hunters who cannot travel overnight due to employment or personal responsibilities; or by hunters who cannot afford the cost of boat fuel required for hunting at locations distant from a community. Several Beaver hunters said that they had successfully harvested moose over the years by ATV travel on the Government Road extending north from the community. A Beaver hunter explained that the road out of Beaver allows them approximately 30 miles of ATV access. The respondent said that her family usually only hunts 6–9 miles out because “the road is in good shape up to that point, then it gets really rugged. And that’s pretty far. If we get a moose way out there then we have to come back and get the guys to go out there and help us, so we don’t go too far.” Fort Yukon hunters said the boreal forest meadows and lakes accessible by Fort Yukon ATV trails are often hunted by Fort Yukon residents.



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Figure 8.—Steven Flitt of Chalkyitsik carries moose meat from a skiff to a trailer attached to an ATV.

The ATV will be used to transport the meat from the river to the hunter’s home.

Prior to the widespread reliance on motorboats, ATVs, and snowmachines for travel, and the dominance of associated hunting tactics described above, hunters on the Yukon Flats depended upon foot, canoe, and dogsled travel for moose hunting. In the recent past, Yukon Flats residents continued to use canoes and foot travel for moose hunting (Nelson 1973, Schneider 1976, Caulfield 1979, Caulfield 1983, Sumida and Alexander 1985, Sumida 1988). Nelson (1973) reported that although wooden skiffs with outboard motors were predominant, approximately 10 hunting canoes were still in use in Chalkyitsik. Hunting by canoe required detailed knowledge of canoe portages and other geographical features in the flat terrain, such as local trail systems (Caulfield 1983). Hunters portaged canoes from lake to lake or to cut across large bends in the rivers. Canoe hunters hauled canoes upstream and then floated downstream back to a community, cabin, or camp, hunting along the way (Nelson 1973).

There remains significant local sentiment in support of non-motorized hunting, despite the efficiency of motorized hunting. An elder from Fort Yukon explained that “there’s no motor long time ago, you gotta

use canoe, it's the only way." Another elder from Fort Yukon, in his nineties, said that modern motorboat hunting had served to erode hunting skills over time, potentially thwarting success:

I tell you something, a lot of the guys don't know how to hunt moose now... I remember when we were growing up, we didn't have gas to run up and there isn't that much moose, you know. So where we was down below, we'd go up to the lakes with a canoe, go way up there, come back down river, and keep doing like that 'till we see fresh track and then try to hunt for it sometimes. That's the way we used to hunt, with canoe. Paddle you know, but you listen and if there's a moose eating you can hear it.

This respondent described using a "rattan" canoe made of canvas; that it weighed less than 20 lb and was easy for 2 people to portage. Packing a moose out required multiple trips.

Despite the general use of motorized hunting throughout the Yukon Flats, the current ethnographic data suggest that not all of the communities in this study use the same strategies, which depend on personal experience and geography. A Venetie hunter noted that moose hunting in his community is not as motor dependent as it is in other Yukon Flats communities. Venetie hunters most often go to camps—places that they know intimately—and stay out there for several days or a few weeks, instead of traveling along rivers. The respondent said that he usually walks to lakes to hunt moose and does not consider himself a river hunter but more of a lake hunter. "In my boat I can go anywhere on the river, but then that moose is always sitting at that lake back there."

Some of the younger respondents from each of the participating communities discussed walking short distances to look for moose in meadows, lakes, and sloughs, but only a minority discussed hunting by canoe or extensively on foot. A youth respondent from Beaver said that he walked a lot in search for moose and that his father had been teaching him to call moose. Another Beaver hunter who occasionally pursues moose on foot expressed a willingness to continue doing so when necessary, but said that when people can afford to purchase fuel for their boats, the preference is always to hunt the river: "It just depends on who you're with. Some people like walking, some people don't want to walk anywhere, but hey, if they got the gas you can't argue with just driving around." When a Fort Yukon hunter was asked "How far would you travel by foot to kill a moose?", the respondent stated that he would make a conscious decision to harvest based upon the size of the moose and the distance required to pack the meat out:

No more than maybe a mile, mile and a half at most. And if I do see something back there I'd be kind of scratching my head to see how big it is, or try to get it to come closer to me. I wouldn't just shoot anything back in the woods. Maybe if it's a small bull. I ain't going to shoot a monster back there, take you a week to pack it out. A big moose is just a lot of work to handle, especially if you don't have, you know, good partners who could help you with it...How you going to handle a 300 pound moose ham without cutting it out?

Harvest Timing Considerations

Harvest timing is a tradeoff among manageable temperatures, quality of the meat, and the ease of encountering or attracting a bull. The results of this research suggest a perspective of careful balance between being late enough in the season that moose are easily called in and the temperatures are cool enough to protect the meat, but not so late that the rutting phase has created unappealing "stink meat."

Although the moose hunting season usually begins during the last week of August, when bulls are fat and in optimal condition, many hunters wait until mid-September when temperatures are cooler. Warmer temperatures interfere with getting meat out of the field before it spoils and it is better to hang the meat later after the flies have dissipated at the end of the season.

Bull moose in rut begin to travel extensively during the first weeks of September, searching for a mate. According to local knowledge, bulls normally begin their rut around September 10, traveling from the hills and deeper bush to congregate along the rivers (Nelson 1973). Their behavior becomes somewhat fearless at this time, providing hunters with the greatest chance of an encounter and an opportunity to call the bulls to them (Nelson 1973, Sumida and Alexander 1985). A Fort Yukon hunter commented that “once moose start rutting you can expect to see them all over, anywhere you travel.” A Chalkyitsik hunter explained that when bull moose are rutting they are extremely active and are easily called in by a hunter. Thus, during this time period a hunter has a greater chance of harvesting a bull moose, potentially increasing the overall harvest.

However, local hunters generally do not prefer the meat of a bull in rut; it is musky smelling, tough, and lean during this time (Schneider 1976, Sumida and Alexander 1985). Bull moose usually begin their rut around mid-September, thus the challenge is to harvest when temperatures have become cold enough to adequately preserve meat but before the condition of bulls becomes unappealing.

The age of the moose also matters. During the 2009 hunt on the Black River with Chalkyitsik residents, the party harvested a large 57-in antlered bull on September 19 (Figure 9). The hunting party elected to discard the kidneys from the bull, which are normally kept for consumption, because they were starting to smell musky. Two days prior, a yearling bull was harvested by the hunting party and, comparing the condition of the older bull with the younger bull, one of the hunters observed the older bull’s “stomach was shrunk compared to the yearling we got.” The hunter stated that older bulls go deep into their rut and stop eating around September 20, and the condition of the meat and organs deteriorates, whereas the meat and organs of younger bulls do not deteriorate to the same extent.



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Figure 9.—Steven Flitt of Chalkyitsik successfully harvests a large bull moose on the Black River.

Additionally, hunters have expressed concerns about possible changes in moose behavior resulting from warmer fall temperatures. An elder from Fort Yukon observed that as temperatures stay warmer longer into the fall, the moose do not move around as much but instead “will stay back in the lakes and in the timber if it’s too warm.” As a result, hunters have to look around more and travel farther in order to

successfully harvest a moose. In the past, hunters relied on intimate knowledge of moose behavior, weather, and seasonal changes, such as the turning of leaves, to gauge the best time for hunting. The respondent believed that a rapidly changing climate has created a situation where such inter-generational knowledge of the seasons may no longer be valid. Other respondents reported observations of seasons shifting, with the cold fall temperatures characteristic of the expected time of the year that moose begin their rut, which is occurring later in September and into October. Additionally, some respondents reported experiencing August temperatures too warm for the proper care of moose meat following a harvest. These observations were accompanied by suggestions for shifting the regulatory moose hunting seasons to coincide with shifts in the onset of the rut.

Moose Selection

The majority of respondents participating in this ethnographic research stated that they target bull moose during hunting. Even historically, respondents recalled a focus on bulls, though if a hunter needed the meat, any moose was killed. “If we have to, they kill cow, but I don’t remember them killing cow, just bull.” According to another respondent, “Years and years ago I remember if we saw a moose we got it, they killed any moose because it was truly survival then.” The preference is for targeting bull moose, but more specifically, several respondents voiced a preference for younger bulls because the meat is more tender than that of older bulls. “All that matters is getting a bull, the size does not matter, but I think the younger ones are better, it’s not so tough, like a 2-year-old or so.” Young bull moose were not only preferred because of the higher quality of meat they are said to provide, but also because of their ease of handling during butchering and transport. Finally, there appears to be a general preference for younger bulls because their meat is less affected by the conditions of the rut than that of larger, older bulls, as mentioned earlier.

See, a big one will ... rut real quick, you know, so he’ll get stink meat, so you watch that, but then a 1-year-old with forked horns, he’ll probably stay good until, you know, October, don’t stink up so much. In August, I’d like to take a big moose you know, nice good, fat moose, but in a month later in September, I wouldn’t take that same moose.

Although most respondents from the participating communities only discussed harvesting bull moose, there is evidence that cow moose continue to be harvested by Yukon Flats residents in contemporary times (Caikoski 2010). Past CATG harvest survey data revealed small numbers of cow moose being harvested annually on the Yukon Flats (Thomas and Fleener 2003; Thomas and Fleener 2005; Stephen R. Braund & Associates 2007). A 2003 CATG survey found that 21% of the total moose harvests from the communities of Beaver, Birch Creek, and Stevens Village consisted of cows (Thomas and Fleener 2003). As noted in tables 6 and 8, for the participating communities combined there was an estimated harvest of 1 cow moose in the first study year and 2 in the second study year, both occurring in the fall. Although it remains illegal to harvest cow moose for the prescribed hunts on the Yukon Flats, Alaska hunting regulations (5 AAC 92.019) permit the harvest of cow moose for mortuary ceremonies (ADF&G 2002). On federal lands in GMU 25D West, federal regulations (50 C.F.R. 100.26 (m)) permit only the harvest of bull moose for food in memorial potlatches and cultural events. It is undetermined if any of the cow moose harvests reported during the 2 study years were taken for ceremonial purposes.

In the past, cow moose were pursued year-round by Yukon Flats hunters, and barren cows were considered prime because they maintain their fat through the seasons (Sumida and Alexander 1985). In contrast, bull moose were said to be considered inferior from late fall through early spring for lack of fat (Caulfield 1983; Sumida and Alexander 1985).

Some respondents from the participating communities discussed the harvesting of cow moose during the current research. Because of the negative relationship between harvesting cow moose and moose population growth in an area with already low moose densities, there is sensitivity in discussing the issue and disagreement over how many cows are actually harvested, who is harvesting cows, and how much it actually affects the ability of the moose population to grow.

Some respondents claim that hunters would only take cows in extenuating circumstances, such as starvation or for a potlatch. For example a Beaver hunter noted that for any potlatch, the community usually attempts to harvest at least 1 moose and emphasized the importance of having moose meat for any potlatch.

That's our tradition, you know. We get moose, it don't matter what kind of moose, and in a way you know, they look for a bull moose but if they can't get a bull moose they'll get a cow. That's the way we grow up you know, to hunt food for our people.

Other hunters expressed concern that younger age groups may sometimes ignore antlerless restrictions, or that some hunters have difficulty telling the difference between bulls and cows in the winter, or simply that some individuals do not believe that harvesting cows has a detrimental effect on the moose population.

Despite the continued harvest of cows, many Yukon Flats residents echoed the sentiments of one Fort Yukon hunter: "I don't think they should be shooting cows at all until we have a population that can support it."

Hunter Effort or Time Spent Hunting

Hunter effort, or the time spent by each hunter in pursuit of moose, can be a useful metric for measuring the relative availability of moose, hunter competition, and the quality of hunting in an area. In the Yukon Flats, where moose populations are lower than in other places in Interior Alaska, hunting effort tends to be higher, as hunters have to spend more time out in the field looking for moose. Several earlier studies provide some insight into how much time Yukon Flats hunters spend hunting. Sumida and Alexander (1985) reported that from 1983 to 1985 Stevens Village hunters spent an average of 7 days hunting moose, whereas Beaver hunters spent an average of 5 days hunting moose. Trips vary in length, from day trips to 2-week long camping trips. In areas where the moose populations are in decline, it can take longer to find a moose. Nelson (1973) reported that in 1969 it took 11 days of hunting for a group of Chalkyitsik hunters to see its first moose. Stephen R. Braund & Associates (2007) reported that Beaver residents had been forced to increase their time and effort spent moose hunting as a result of a decline in the moose population inside their traditional hunting areas.

Respondents from the participating communities reported that moose hunting generally takes place for 1 week. A Venetie hunter said that to be successful, a hunter must spend several days hunting, and that generally 1 week is required to locate and harvest a bull moose. Respondents reported that, if possible, they will camp at a remote location and conduct hunting trips daily in the vicinity of camp.

One hunter from Chalkyitsik noted that it was not uncommon for hunters to "go out for a week or more and see nothing," but hunters were usually more successful by extending their time and effort. The respondent said that successful harvest often requires long-distance motorboat travel and the main challenges for most hunters are having the ability to leave the community for an extended period of time and being able to afford the high price of boat fuel. Similarly, a Beaver hunter said "these days you have to spend more time out looking for moose, keep heading out and using way more gas, just keep trying."

Thus, having adequate time to hunt and financial resources to purchase fuel are critical components to a successful moose hunt for a Yukon Flats hunter (Stephen R. Braund & Associates 2007). In the past, moose hunting was often pursued in conjunction with other activities, such as trapping, cutting wood, or picking berries, for maximum efficiency of time and resources. However, a decline in trapping activity over several decades in the Yukon Flats has led to the majority of the local population taking up year-round residency in the villages, as opposed to spending winter in remote trapping cabins. This phenomenon has likely increased the distance hunters must travel to harvest moose and thus increased the fuel resources required for hunting. Respondents from each of the participating communities reflected on the importance of developing a hunting strategy that incorporates managing fuel use for maximum efficiency. A Fort Yukon hunter said that rather than boating up and down a river daily, camping for an

extended period of time maximizes fuel efficiency. “You’re going to have to [camp out] if you want to really be successful and stay within your budget if you don’t have much money for gas.” As mentioned earlier, hunters often adapt to high fuel prices by utilizing other hunting means, such as ATVs.

Methods of Transporting Meat

Over the course of the second half of the 20th century, the use of motorized transportation has changed the amount of effort and energy required to transport a harvested moose.¹² The relative convenience of water transport has likely been known and used by Yukon Flats hunters for centuries, yet the desire to harvest moose at locations accessible to motorized transport during the fall hunt now characterizes much of the moose hunting in the Yukon Flats.

Nelson (1973) described that during pre-contact times, Gwich’in hunters paddled, portaged, poled, and pulled canoes upriver. When a moose was harvested, the hunters built a moose skin boat in which to float the meat back down the river. The moose skin boat was tied to the hunting canoe and dragged behind in transport. Skin boats were made from 1 or more moose skins. When more than 1 moose was killed, the skins were sewn together, the seams sealed with moose fat, and a large layer of willows added to the bottom to avoid getting the meat wet (Nelson 1973).

Several elders from the participating communities reflected on past canoe hunting practices. An elder from Beaver stated that “to hunt moose long ago they mostly walk, they got canoe, they carry canoe on their head and then they paddle around. No 4-wheeler, no snow-go, they got dog team.” Another elder from Beaver recalled that during her childhood “to hunt moose we used to paddle with canoe, had to go a long ways and paddle, now days it’s so easy you just get in a 4-wheeler or boat.” An elder from Fort Yukon said that when they hunted by canoeing and portaging they harvested the moose they would see along the lakes, shooting 1 and leaving the meat behind. They continued on down the route and possibly killed another moose, then returned later to pack out the meat.

Even with motorized transport, however, useful methods from earlier times have been incorporated into modern practices. Nelson (1973) described hunters caching meat from harvested moose at kill sites on the lower Black River and then moving up river to continue hunting, retrieving the cached meat on the way back down. According to a respondent from Beaver, “Long time ago people used to walk to hunt and have to walk it all the way back. People used to make cache, out where they killed moose, and haul it in with dogs when it snow. We could see a lot of caches out on the road you know, they leave it there until they can haul it in.” During the 2009 fall hunt on the Black River, Chalkyitsik hunters cached meat, covering it with tarps instead of the willow branches described by Nelson (1973) (Figure 10).

Transporting harvested moose by boat requires careful calculation (Figure 11). Meat must be kept clean so the boat is lined with tarps or willow branches. The amount of meat a skiff can carry depends on the number of hunters, the weight of their gear, the weight of the meat, and the depth of the water throughout the travel distance. During the 2009 participant observation of the fall hunt on the Black River, hunting party members were often required to pole their small skiff through shallow sections of river with a load of 2 bull moose and 3 hunters. At one point the hunting party was forced to exit the boat and stand in the river pushing and pulling the boat across low water. After approximately 2 hours the hunting party was able to free the skiff and enter deeper water.

12. Methods of processing a moose prior to transportation and the specifics of meat preservation during transportation are discussed in the following section.



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Figure 10.—Steven Flitt of Chalkyitsik packs 2 front quarters to a boat for transport.



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Figure 11.—A skiff loaded with moose meat headed down Black River to Chalkyitsik.

As mentioned earlier, some elders expressed an opinion that dependence on motorized transport for moose hunting and meat transport has eroded the resilience of Yukon Flats hunters, creating potential vulnerabilities in local food security if fuel prices continue to increase indefinitely into the future. An elder from Fort Yukon relayed a story about a young hunter complaining that his father had harvested a moose in a location that required all day to pack out. The son wondered why his father would kill a moose so far away. The elder expressed the opinion that the son felt this was because he had really never known that in the past Yukon Flats hunters had often killed moose farther away and had to pack them out. The

elder expressed a belief that younger people's dependence on machines had made them lethargic and ill prepared for potential emergency situations that could require heavy hauling without the assistance of motorized transport. The elder said the contemporary motorboat hunting strategy, and a concomitant resistance to packing meat or traveling longer distances by foot, would have meant starvation in earlier times, "Years ago they'd never be able to do that, and then at that time nobody had the gas enough to go back and forth you know. Damn lucky to get up where you are with what gas you've got."

A minority of respondents said that minimizing dependence on motorized transport for packing meat also had implications for healthy lifestyles. For example, a Venetie hunter stated: "Us, we never traveled with 4-wheelers or anything, we always, you know, packed everything. I guess he [his father] wanted me to learn something. It is kind of better, you know, healthier to pack and everything." A Beaver hunter discussed his experiences packing moose meat from meadows: "It's good for me. Most people are not willing to do it but I don't mind it ... what if you don't got gas? That's our problem. The gas prices keeps you in good shape, keeps you walkin."

Processing, Preservation, and Uses of Moose

When a moose is harvested, the hunter and his companions must then process the animal for transport. This process includes skinning and quartering the animal and dividing all of the parts into manageable carrying portions. Participant observation of the 2009 fall hunt on Black River provided 1 example of typical processing. First, the legs of the animal were tied to trees with rope in order to stabilize the animal (Figure 12). Then the head was cut off and placed under a flank of the animal in order to stop it from rolling. The entire underside of the animal was skinned until the hide was only attached at the spine (Figure 13). From this point, the hide of the animal was used as a protective mat for quartering the animal. After the 4 quarters were removed, the animal was gutted and the desirable stomach parts and organ meats were retained (described in more detail below) (Figure 14). Then the carcass was turned on its side in order to facilitate skinning the animal's backside. The rump and neck were removed separately. The rib cage and spine were left intact and transported as 1 piece. This process occurred in a grassy, wooded location, an optimal location for keeping meat clean. Initial butchering that occurs on a sandbar, for example, usually requires extensive trimming later on to remove dirt.

Respondents from the participating communities consistently noted that when a moose is killed far from a community, or when the hunting party plans to continue hunting for a longer period of time, the meat will be hung up to be dried and smoked at camp. Respondents relayed the importance of paying special attention to protecting and preserving the meat during warm weather. Thus, following the initial process of dismantling the carcass, the meat is either hung up or transported to a boat, which is a highly strenuous task, even at short distances. Once the meat is hauled to the boat it must be loaded in a methodical manner that takes into account weight balance and protection from the elements. A Fort Yukon hunter explained his method for protecting moose meat during boat transport: "When we kill moose we layer willows in the boat and then put the quarters down on top, then we layer more willows." The respondent explained that willows help to ensure that air will flow among the separate pieces of meat when the temperature is warm outside. The respondent said that if a moose is harvested in late August, "you really need to take care of the meat and get it home and hung up right away, it's too hot, and you have to keep on throwing more and more layers [of willows] between the meat, you have to stack the willow layers up really high because you need extra airflow. When driving [the boat], 1 moose might look like it's stacked up way too high." The respondent explained that to avoid spoilage during warm weather the basic rule is not to let any of the separate parts of meat touch each other because airflow among the parts is the critical element of preservation. "No meat on meat. No way."



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Figure 12.—Steven Flitt of Chalkyitsik skinning a moose.

The legs have been tied to trees with cords to stabilize the animal for processing.



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Figure 13.—A Chalkyitsik hunter skins a moose.

Note the use of the head to prop up and stabilize the carcass.



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Figure 14.—Steven Flitt of Chalkyitsik begins the process of gutting a moose.

Note the careful use of the animal's hide to protect the meat from the forest floor.

Respondents from the participating communities consistently stated that once a hunting party finally gets the moose meat back to a community the first priority is to hang it in the smokehouse and to start a fire to begin the smoking process (Figure 15). There is a preference to allow the large pieces that are hung to “case,” developing a dried protective outside layer, as a means of initial preservation. Smoking the meat helps further this process. Meat from Black River moose harvested during the fieldwork was smoked for 4–5 days before further processing. A Fort Yukon hunter explained that meat from a large bull moose will be less tough if it is hung for approximately 5 days and bled out before it is cut up for freezing or drying. Another Fort Yukon hunter said that while the meat is hanging it is important to “watch those different layers of meat where the sinews separate it—this is where the mold develops.” Some pieces of fresh meat and fat are usually cut off and cooked, as are organ meats.

Prior to freezers, when moose meat was harvested in warm weather, it was immediately cut into thin strips and then smoked and dried for preservation (Schneider 1976). Caulfield reported that dry meat was often made from moose harvested in the spring, but that fall harvested meat was usually frozen (1983). Although Yukon Flats residents continue to make dry meat, the introduction of freezers has allowed them the ability to store fresh meat in a frozen state (Caulfield 1983, Sumida 1988). Respondents from the participating communities stated that today they choose to freeze some meat and make dry meat as well. If dry meat is to be made, the selected pieces are cut into thin strips and then left in the smokehouse until thoroughly dry, usually for several more days. Frozen meat is consumed over the winter as fry meat or stew meat. Some Yukon Flats residents own meat grinders and prepare moose burger. Moose heads and stomach parts are often saved for special events such as funerals and potlatches. For example, a Chalkyitsik hunter said, “Every time they have a potlatch, everybody cooks [moose] meat and they bring it, bring soup, or fry meat, or boil it up.” The hunter explained that moose organ meats, stomach parts, intestines, and the head are traditionally essential foods at a potlatch on the Yukon Flats.



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Figure 15.—Steven Flitt of Chalkyitsik processes moose meat in a smokehouse.

Meat from moose harvested on the Yukon Flats is usually hung up in a smokehouse for several days prior to processing for the purposes of temporary aging and preservation.

Traditionally, Yukon Flats residents have used most parts of harvested moose for both food and materials, including the organs, head, brains, bones, antlers, and hide. Nelson (1973), Caulfield (1979, 1983), and Sumida (1988, 1989) all provide detailed descriptions of specific use practices by the residents of Yukon Flats communities. For example, Nelson (1973) reported that the brisket, short ribs, heart, tongue, marrow, fat, and some digestive organs were all treated as delicacies by Chalkyitsik residents. These practices continue today, though the use of hides is declining, described in more detail below.

Respondents from each of the participating communities expressed an ongoing commitment to the traditional practice of using most parts of harvested moose for food and materials. For example, a Beaver hunter stated: “Us, we never waste nothing. We use every part of the moose. We eat the guts, we eat the heart, liver, kidneys, the head,” Speaking of the past, an elder from Fort Yukon recalled:

Those days were hard. So every little piece of meat count and every little piece of bone counted. They didn’t throw nothing away. They used it right down to the bones and they saved bones for soup or something. Everything was used on it. The skin was tanned for sewing.

A Venetie hunter expressed resentment that some modern hunters leave the organ meats and the stomach parts of moose in the field following a kill.

Bones can be used for soup and for making grease (Nelson 1973). Respondents from the participating communities, especially those from Fort Yukon, consistently stated that they always use the bones from harvested moose, extracting the marrow for soup. However, a Beaver hunter said that use of bones for marrow extraction is not consistently practiced in contemporary times.

Long time ago we used to cut the bones up and boil them all day and make grease. But now days you don’t see people do that. They don’t make grease like we did long time ago with the marrow.

The head from a harvested moose was traditionally saved by Gwich'in hunters for use in a delicacy referred to as "moose head soup" (Nelson 1973). Several Fort Yukon hunters discussed using the heads of harvested moose for soup. A Chalkyitsik hunter described how moose head soup is produced in modern times: "Moose head—we cut the nose and the chin off and we singe that and we dice that up and we skin the moose head and cut all the meat and the fat off of there and dice that up and we mix it all together and put them in zip lock bags for soup."

An elder from Beaver described the traditional means of preparing a moose head over the campfire, "Fire-roast them, plug up the nose with moss or moose hair, you know, plug up the mouth, it would steam inside, it would take most of the day to cook it, very delicious." Another respondent from Beaver described the process of making "head cheese" from the head of a moose.

We cut up the moose meat on the head, everything you know, the tongue, the nose, we burn the nose and boil it for a few hours. Then after boiling it you grind it in a meat grinder. Then you put it in bread pans. Then, the juice from you boiling it, you pour it in the bread pans and you bake it for an hour. They call it "Indian Spam."

Respondents from the participating communities also expressed the importance of saving and using moose fat for food. Moose fat is considered a healthy and highly nutritious traditional food. It is consistently used by Yukon Flats residents in frying meat and added to soups, or ground and used for all types of cooking.

Another important part of the moose is the fatty tissue from the stomach and intestines (Figure 16). A Beaver hunter said that "the fish-net fat around the guts" was always saved and cooked. A Chalkyitsik hunter stated that "those 3 little parts of the stomach and the poop chute" are saved because of their fat content. Respondents consistently referred to the parts of the stomach that are saved as "the bible" and "the hat." The term "bible" refers to the part of ruminant's stomachs called the omasum, which contains many folds and flaps in its interior that must be individually separated and cleaned during processing, similar to turning the pages of a book. The term "hat" refers to the part of ruminant's stomachs called the reticulum, more commonly known as tripe. "It looks like an old ladies' hat" said a Fort Yukon hunter.

Other organs are also important. Moose kidneys are considered an important traditional food, as is the fat which often encases them. The kidneys from a yearling bull moose that was harvested during the period of participant observation (2009 fall hunt on the Black River) were saved. The heart from each moose was kept and described as important traditional food of high nutritional value (figures 17 and 18). The liver from the harvested moose was not retained and a hunter in the party explained that moose liver is usually only eaten by elders. Other respondents discussed the use of moose hooves for boiling into "jello"; the use of moose blood for creating "blood pudding"; and the use of moose antlers for knife handles, jewelry, and occasionally, mounted displays.



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Figure 16.—Steven Flitt of Chalkyitsik extracts the lower intestine from a moose. The “poop chute” is an important traditional food in Gwich'in culture.



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Figure 17.—Moose organ meats.
Heart below and kidney above.



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Figure 18.—Steven Flitt of Chalkyitsik splits a moose heart.

Moose heart is an important traditional food in Gwich'in culture. The “fish-net fat” from the stomach, also an important traditional food, can be seen hanging from a tree in the background.

A respondent from Chalkyitsik explained that the parts one keeps from a harvested moose depend upon the size and condition of the animal at the time of harvest. If a bull moose is harvested when it is deep in the rut, the organ meats and stomach parts may be considered undesirable.

The guts we take from small bulls, but the big bulls they go bad really quick when they are running.¹³ They shrink up and they got nothing but water in them and the kidneys are the same way. They get bad, they get an odor from how the moose smells.

The respondent explained that this condition occurs because rutting bulls cease eating, having a deteriorating effect on their tissue.

The practice of harvesting and tanning moose hides is in decline. As described by Nelson (1973) and Sumida (1988), commercially tanned hides have largely replaced the traditional tanning of harvested moose, though Stevens Village residents continued to use the rawhide and its product “babiche”¹⁴ from locally harvested moose (Caulfield 1983). Rawhide was said to be made by stretching the moose skin and scraping it clean of fat and hair. Usually the finished product is used to make a moose-skin toboggan. “We take the hide sometimes and we make a skin toboggan with that and birch trees,” said a Chalkyitsik hunter.

Most respondents during the current study reported that hides from harvested moose were no longer saved and that hide tanning by Yukon Flats residents was no longer practiced. A Beaver hunter said that he had

13. Respondents often referred to bull moose behavior during the rut as “running” because bull moose actively move around the landscape at this time. During the rut, bull moose stop eating and direct their energy to the quest for a mate. For this reason they are also apt to be called in by hunters when they are “running.”

14. Babiche is a word originally used by French Canadian trappers to refer to the thin strips of cord made from rawhide traditionally used by Native Americans for lashings, cord, rope, etc.

never kept a moose skin before and did not have a desire to tan a moose hide. “I’ve seen how much work it is,” said the respondent. Still, several respondents recalled elders tanning moose hides in the past. An elder from Beaver stated:

My mom used to tan skin. We didn’t have no fancy shoes like I got on now, we have moose skin boots and we have slippers, moccasins, that’s all we use. All the old people used to tan lots of skins. We never waste moose skin. Now days they kill moose they throw the skin away.

However, tanning hides continues to be done by a few elder women in various communities, such as Venetie and Arctic Village. Some women shave the hide to make it thinner for tanning. Moose brain is used to tan the hide. Brain tanning is accomplished by soaking a raw hide in a solution of moose brains and water or by rubbing the solution into the hide. Following application of the brains the hide must be vigorously pulled, stretched, and twisted until dry. If the brain solution penetrates properly and all the inner fibers of the hide have been stretched the hide will dry soft. Following the brain tanning process, the hide is smoked for several hours. Smoking the hide aids in sealing the fibers so they remain soft. Among scraping, brain tanning, pulling, twisting, working, and smoking the hide, tanning was a labor intensive process that takes many days to complete. Although the hide is not used as much as in the past, moose sinew is still sometimes used for sewing and snowshoe making.

Gender Roles

Traditionally, Gwich’in men were responsible for hunting moose and bringing home meat, where it then became the property of women who were responsible for cutting and preparing the moose for preservation and consumption. A Beaver hunter said that she was taught to cut moose meat during her childhood by her mother and grandmother. An elder from Fort Yukon recalled that she was raised to follow the traditional division of labor and that she and her mother never went moose hunting but instead processed the meat once it was brought back by the men. In contrast, an elder from Beaver said that she learned to hunt moose at an early age and that she and her sister went on to harvest several moose during their lives. However, the respondent stated that packing moose meat was often difficult for her and her sister. “We always got someone to help us, the men, because we couldn’t lift up the heavy parts and stuff, so women always just did the guts and the heart and the liver and stuff, the small pieces.” Several respondents from the participating communities made reference to women actively participating in all facets of moose hunting today—from processing meat to harvesting moose themselves.

Sharing and Distribution of Moose

When a hunter brings moose meat to a Yukon Flats community, portions of it are often first distributed to the hunter’s extended family, elders, and friends. Sharing moose meat is not only a long-standing traditional custom on the Yukon Flats, it also provides needed food resources to families and individuals who did not hunt or did not successfully harvest a moose. Sharing moose meat also serves a social function because giving, receiving, and consuming moose meat is an important facet of Athabascan cultural identity. In fact, in Alaska a minority of hunters from a community are often responsible for providing the majority of the harvested land mammal meat each year (Wolfe and Walker 1987; Wolfe et al. 2010).

Reciprocal sharing of subsistence resources is a Gwich’in and Koyukon cultural practice reaching back to pre-contact times (Osgood 1936; Caulfield 1983; Nelson 1983; Fast 1998). Food scarcity due to resource fluctuation cycles was likely a continuing occurrence for pre-contact hunter-gatherers occupying the harsh sub-arctic environs (Caulfield 1983). Thus, as an adaptive measure during times of scarcity, “the [sharing] custom saved many people of the [Gwich’in] tribe who would otherwise starve because of some incapacity to kill game for themselves” (Osgood 1936:28). With an economy founded on principles of sharing subsistence foods, the sharing custom continues to be a core component of cultural life on the Yukon Flats (Caulfield 1983; Fast 1998). Fast reported that “each traditional [Gwich’in] hunter learns to

distribute his or her harvest to specific individuals and always includes at least one related elder. Close kin receive most of the meat, fish, and other resources” (1998:57). Moreover, reciprocal sharing serves a function beyond the fulfillment of material necessities and can sometimes serve as a social mechanism for conflict resolution. According to Fast (1998:57), sharing is a “cultural tool” used by contemporary Gwich’in society to “ameliorate social injuries successfully.” As such, “sharing game meat and reciprocity are the best mechanisms in this region for soothing damaged relationships” (Fast 1998:57). Not only is moose meat shared between friends and family members within a specific community, it is also frequently shared among Yukon Flats communities (Caulfield 1983).

One important time for sharing is during a potlatch. Hunters from Beaver explained that if they are unable to procure fresh moose meat for a potlatch, people who have moose meat will donate some to the event. For example, a Beaver hunter stated “Usually for potlatch, everybody have a little meat and everybody put in a little and that’ll be enough, so don’t have to kill a whole [moose] for that.” The hunter said that her mother always used to put some moose meat aside and save it for a potlatch. The hunter said that residents of other Yukon Flats communities will also donate meat to another village’s potlatch if needed.

There was a funeral this last winter and they went out [hunting] for 4 or 5 days and they never got 1 [moose], and so here’s people donating from around the village plus up there in Venetie. I guess they donated caribou meat and they sent down like 8 caribou for us.

Respondents from each of the participating communities expressed an ongoing commitment to the traditional Yukon Flats practice of sharing moose meat with elders, family, and friends. A Fort Yukon hunter said that moose meat from a successful hunt was always given to his grandmothers and others who are too old to go hunting. The respondent said that when other residents successfully harvest a moose they always give elders some meat as well. Moose meat is also widely distributed outside the area. One Fort Yukon resident observed that moose meat is frequently taken to relatives and elders residing in Fairbanks. During the 2009 fall hunt on Black River, successful hunters were observed distributing portions of moose meat to hunters camping out on the river who had yet to harvest a moose. A Chalkyitsik hunter stated, “Everyone shares, so if I don’t get a moose it’s no problem.” After successfully harvesting 2 moose, a Chalkyitsik hunter informed the researcher that approximately half of the meat would be distributed within the village, especially to elders, a point of pride for the hunter (Figure 19).

Due to the fact that some residents are more able to hunt than others, because of their skill, their youth, and their available time and resources, there is a local desire for certain hunters to be able to harvest more than their bag limit of 1 moose per year. In March 2000, the Alaska Board of Game (BOG) established a community subsistence hunt for the village of Chalkyitsik to allow individuals in the community to pool their individual harvest tickets so that 1 hunter may harvest more than 1 moose every year for distribution around the community (ADF&G 2002). The program requires a community member to act as a hunt coordinator. The hunt coordinator is responsible for signing up participants and reporting harvests to ADF&G. On federal lands, federally qualified subsistence users are allowed to designate another federally qualified subsistence user to harvest moose on their behalf, providing that the designator is not a member of a community operating under a state community subsistence hunt program. The designated hunter must obtain a designated hunter permit and must return a completed harvest report.



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Figure 19.—Steven Flitt of Chalkyitsik displays the rack and head of a bull moose.

The moose was harvested on the Black River. Its rack measured 57 in. The head of a yearling bull moose is in the foreground. Meat from moose is hung inside the smokehouse before being shared among the community.

The objectives of the community subsistence hunt program are to “better accommodate traditional subsistence hunting and sharing practices and improve harvest reporting” (ADF&G 2002). However, even with the establishment of the community subsistence hunt, Chalkyitsik hunters were not taking full advantage of this legal framework to supply the community with moose meat. Reasons mentioned included the paperwork requirement and lack of engagement by ADF&G in promoting the program. Additionally, hunters interviewed during this study seemed to be generally unaware of the federal opportunity for a subsistence user to designate a hunter. A Chalkyitsik respondent said that, to his knowledge, the formal community subsistence hunt was not actually being pursued by residents and that instead Chalkyitsik hunters were simply following a traditional practice of attempting to harvest whatever bull moose are encountered during the hunting season. The respondent said that if a hunter harvests more than 1 moose, the extra meat is distributed in the community and, if necessary, the registration of harvests tickets according to the regulation of one-bull-moose-per-person is sorted out later.

Local Observations of the Moose Population Status on the Yukon Flats

In general, respondents from the participating communities expressed a belief that the moose population in the Yukon Flats area had experienced severe decline since the early 1990s. However, several respondents displayed more detailed knowledge of variation in the moose populations over differing spatial and temporal scales. Some residents of Beaver, Birch Creek, and Fort Yukon interviewed by Stephen R. Braund & Associates (2007) also reported long-term observations of temporal variance in local moose population numbers. This corroborates Caulfield’s (1983) earlier report that Yukon Flats hunters were aware of, and had witnessed, long-term population fluctuations in moose (and caribou) in the region. An elder Fort Yukon hunter observed that over his lifetime, the moose populations in the region cycle up and down. “I’ve seen it when it was lots, and I’ve seen it when, oh 2 or 3 times, when they’re damn hard to get a moose in the fall.” The elder said that snowfall amounts are one of the greatest factors in moose mortality.

A lot of it depends on the severity of winter. In 1937, there was 3 to 5 feet of settled snow by springtime. During the winter, the snow was much deeper than normal and the moose were dragging their bellies through the snow. That winter, the moose population was decimated. They went right to the river for survival and people could just shoot them, and the wolves had a field day.

Another elder from Fort Yukon observed that during the 1960s moose were abundant in the Porcupine River drainage and relatively easier to harvest when compared to recent decades. The elder explained that encountering a moose was an expected part of day-to-day life during those times and thus her family never had any trouble obtaining the moose meat they needed for winter.

It just come those days, but now days you got to hunt like heck for them. Those days it just standing right there, you know, fall time. There was quite a few compared to now days. Nowadays it's just like hardly any when we go hunting. But at that time we don't have to "hunt." When we pick our berries then ... there'll be a moose coming out of that one lake over there or we go back to the other lake, there's always moose there, so we always kill our moose for the winter.

Respondents most often attributed declines in the moose population over the years to wolf and bear predation in the Yukon Flats. For example, a Beaver hunter stated,

Years ago we used to go out and get moose just like that, you know, cause there was quite a few around and they're constantly moving from here to there and you catch them in the right spot. But nowadays it seems like there's less [moose], and less [moose] tracks. There's a lot of bears though, lot of bear tracks, bear sign, wolf, wolf sign.

A Fort Yukon hunter said that a recent local effort to harvest black bears for the purposes of controlling predation had a positive effect on moose populations and that if this predator control effort were to continue for a few more years, the hunters expected moose populations in the area to greatly increase.

Local observations are supported by ADF&G research, which shows that moose densities on the Yukon Flats are particularly low when compared to most other areas of Interior Alaska and "are among the lowest population densities found among low density moose-bear-wolf systems" (Caikoski 2008; Caikoski 2010:623). Estimated moose densities in GMU 25D over a recent 10-year period (1999–2009) were considered "extremely low," ranging from 0.18 to 0.41 moose per square mile (Caikoski 2008:619; Caikoski 2010). Despite being comprised of high quality moose habitat, GMU 25D contains moose densities "well below carrying capacity" (Caikoski 2010:622). In 2010, the ADF&G management objective to "increase the size of the moose population by 2%–5% annually in key hunting areas near local communities" was likely not met. It is unclear whether the ADF&G management objective to "reduce illegal and potlatch harvest of cow moose to less than 5% of total annual harvest" for the 1 July 2007–30 June 2009 reporting period as laid out in a 2010 ADF&G report (Caikoski 2010:624) was met. Prior to 2007, CATG harvest records report that the proportion of moose harvest consisting of cows ranged from 13 to 21% (Thomas and Fleener 2003; Thomas and Fleener 2005; Thomas and Fleener 2007). Harvest reporting by local residents has been historically poor using the State harvest ticket system; however, of the 19 moose reported taken in GMU 25D East in 2008, 1 was a cow (or, 5% of the harvest). The 2008–2009 and 2009–2010 data collected by CATG and ADF&G and reviewed in this report show no cow harvests. Given aforementioned concerns about the complete accuracy of these more recent estimates, it is not clear that cow harvest levels have dropped below 5% of the annual harvest. However, educational efforts by CATG, USFWS, and ADF&G appear to have greatly reduced cow harvest levels (J. Caikoski, Wildlife Biologist, ADF&G, Fairbanks, personal communication, 2012). The ADF&G management objective to "maintain a minimum of 40 bulls per 100 cows" was met in 2009 (Caikoski 2010:624).

Research attributes moose population declines to wolf and bear predation and overhunting, especially predation on moose calves and the illegal harvest of cow moose (ADF&G 2002; Bertram and Vivion 2002; Stephen R. Braund & Associates 2007; Caikoski 2008; Caikoski 2010). Reduced hunter harvest due to travel limitations during seasons when river water levels are low and possible moose migrations are reported as potential reasons for both population increases and decreases in the region (Caikoski 2010; Stephenson and Thomas 2005).

Aerial surveys conducted by the USFWS in 2004 (GMU 25D West) found an estimated 41% fewer moose than were found in a 1999 aerial survey, representing an 8% annual decline over the course of 5 years. The yearling bull:cow ratio in GMU 25D West was estimated to be 5:100, with declines reported to likely be due to poor overwinter survival and/or predation (Bertram 2005). However, in GMU 25D East Stephenson and Thomas (Stephenson and Thomas 2005) reported a 16.8% annual increase in the moose population in the eastern Yukon Flats over the period of 2001–2004, despite the fact that it had been established that the moose population in GMU 25D East was experiencing a decline since the early 1990s. This population increase was reported to have occurred because of decreasing summer calf mortality, an increase in bear harvests, and “a reduction in the harvest of cow moose as a result of increased local concern about the scarcity of moose, and the development and implementation of the Yukon Flats Cooperative Moose Management Plan, which emphasized the importance of protecting cow moose” (Stephenson and Thomas 2005:8). Stephenson and Thomas (2005:8) ascertained that “the moose population on the eastern Yukon Flats is highly productive and has the potential to increase rapidly.”

Many Yukon Flats respondents reported that a belief that overhunting—both by non-local hunters during late summer-early fall and by local hunters during the winter—is responsible for some of the declines in the moose population. “Mostly it’s just wolves and bears that affect the population and the hunters that come in from the outside, from Fairbanks.” A Beaver hunter expressed his opinion that non-local hunters should not be allowed to hunt in the Yukon Flats because they are not hunting moose for food but only for antlers. “They’re just taking the food away from our mouths. They come in with the planes and they just take what they want from it [antlers] and that’s it and they leave the rest...they land in planes and they come up with boats.” Another hunter expressed concern about some local hunters harvesting more than they need. A Fort Yukon hunter stated that both local and non-local hunting activity had increased to unsustainable levels: “Hunters all over the place, they’re just all over, too many boats on the river.”

Respondents’ concerns about relatively high levels of nonlocal moose harvests in some areas of GMU 25 are consistent with ADF&G harvest ticket reports and permit data. Over the 3 regulatory years (2008–2010) for GMU 25 as a whole, local residents reported a harvest of 105 moose, an average of 35 per year (Table 14). This was about 17% of the total reported harvest. Nonlocal Alaska residents harvested 63% of the moose from GMU 25 (Table 15). Nonlocal residents (including nonresidents) harvested the majority of moose in every subunit but 25D.

GMU 25C had the largest moose harvest by nonlocal residents, with 236 moose harvested over the 3 regulatory years, or about 59% of the total nonlocal harvest (236 of 397 moose) (tables 14 and 15). The study community of Circle is located within GMU 25C. However, portions of the Alaska road system are located within GMU 25C, including the Steese and Elliot highways, thus providing ease of access to Fairbanks residents and the public in general. This explains the high level of nonlocal harvests reported for 25C.

The average annual local harvest in GMU 25C over the 3 regulatory years reported in Table 14 is 5 moose. Household surveys conducted over study years (2008–2009 and 2009–2010) yielded only 1 reported moose harvest by residents of the study communities in GMU 25C. The effects of these nonlocal moose harvests on Circle residents who live and hunt in GMU 25C are unknown and should be explored in future research.

In GMU 25D, where, over the 3 regulatory years reported in Table 14, unit resident moose harvests (54) were twice as high as nonlocal harvests (27), an annual average of 18 moose were harvested by unit

residents and 9 moose were harvested by nonlocal hunters. Household survey results for the 2 study years of this research (2008–2009 and 2009–2010) yielded an annual average of 101 unit resident moose harvests in GMU 25D.

These findings point to several important research and management implications. First, substantial nonlocal harvests do occur in GMU 25, verifying community respondent observations. Second, household harvest surveys conducted by TRNTs recorded moose harvests not recorded by the harvest ticket reporting system, especially in GMU 25D. This emphasizes the importance of continuing the annual locally-conducted household harvest surveys in the Yukon Flats.

Respondents from the participating communities also consistently attributed declines in the moose population, and declines in successful moose harvests, to a changing climate on the Yukon Flats. Several respondents had observed a drop in the water level of rivers, lakes, and sloughs. Similarly, residents of Beaver, Birch Creek, and Fort Yukon interviewed by Stephen R. Braund & Associates (2007) consistently reported observations of declining water levels in the region. Respondents during this research said that many lakes that were once viable moose habitat were beginning to dry up, or already had dried up and turned into meadows over the course of their lifetimes. A Fort Yukon hunter said that warmer weather and increasingly arid habitat had driven moose to migrate away from the Yukon Flats to cooler and wetter areas downriver, such as the deltas and coastal hills. The hunter said that this migration is obvious because of a documented increase and unprecedented abundance of moose in western Alaska.

Low water not only potentially affects moose habitat, but also limits hunters' ability to travel waterways that were once productive moose hunting areas (Stephen R. Braund & Associates 2007). A Beaver hunter stated, "One problem is the water is low now, we can't get back to where we used to, where we know there's a lot of moose, can't get back in there, even with a canoe, yeah the water is so low." These concerns are echoed by recent research on Interior Alaska that argues that "climate warming has, in general, reduced hunter access to subsistence resources [because] hunters customarily use rivers as their primary access routes" (Kofinas et al. 2010:1348).

Another factor related to climate change that many respondents believe may be affecting moose populations is wildfire. Some respondents expressed a belief that wildfires may be benefiting moose populations in the long-term. An elder from Fort Yukon said, "When an area is burned completely, the moose are not around there for a long time," but that moose normally survive wildfires. The elder said that during a wildfire, moose find refuge on willow bars near the water and that whatever burns grows back quickly after a fire, providing high-quality forage for moose. The elder said that that moose feed on willow, small birch, and quaking aspen, which grow back quickly after a fire. The elder's observations are in tune with recent scientific research. Recent warming trends in Interior Alaska are reported to have led to an increase in wildfire in the region (Kofinas et al. 2010). Because a wildfire's aftermath will produce a prolific sprouting of highly nutritious forage vegetation, "moose populations can rebound quickly after fire, if relieved from predation" (Kofinas et al. 2010:1350). For these reasons, a warming climate does have some potential to benefit moose populations, but at the expense to other local subsistence resources. According to Kofinas et al. (2010:1350): "Species differences in habitat preference suggest that moose will become more abundant but caribou less abundant in interior Alaska in response to warming-induced increases in wildfire."

Table 14.–Hunters and harvests of moose in GMU 25, 2008–2010.

Subunit	Successful					Unsuccessful					Total hunters
	Unit residents	Non-unit residents	Non-residents	Unknown	Total harvest	Unit residents	Non-unit residents	Non-residents	Unknown	Unsuccessful hunters	
25A	10	64	60	2	136	7	94	93	2	196	334
25B	18	73	8	1	100	14	130	20	3	167	267
25C	15	236	33	6	290	43	603	76	15	737	1,033
25D	54	20	7	7	88	88	104	17	16	225	328
25Z	8	4	1	0	13	2	11	4	0	17	31
Total	105	397	109	16	627	154	942	210	36	1,342	1,993

Source ADF&G Division of Wildlife Conservation, WinfoNet data extract, August 2, 2012. WinfoNet is the ADF&G Division of Wildlife Conservation’s intranet web site. The site provides a wide variety of tools to allow users to access, update, and download different kinds of data, including moose permit data.

Note The number of harvested moose per successful hunter is equal to 1.

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Table 15.–Hunters by residency and subunit as a percentage of the success category.

Subunit	Successful					Unsuccessful					Total hunters
	Unit residents	Non-unit residents	Non-residents	Unknown	Total harvest	Unit residents	Non-unit residents	Non-residents	Unknown	Unsuccessful hunters	
25A	7.4%	47.1%	44.1%	1.5%	100.0%	3.6%	48.0%	47.4%	1.0%	100.0%	100.0%
25B	18.0%	73.0%	8.0%	1.0%	100.0%	8.4%	77.8%	12.0%	1.8%	100.0%	100.0%
25C	5.2%	81.4%	11.4%	2.1%	100.0%	5.8%	81.8%	10.3%	2.0%	100.0%	100.0%
25D	61.4%	22.7%	8.0%	8.0%	100.0%	39.1%	46.2%	7.6%	7.1%	100.0%	100.0%
25Z	61.5%	30.8%	7.7%	0.0%	100.0%	11.8%	64.7%	23.5%	0.0%	100.0%	100.0%
Total	16.7%	63.3%	17.4%	2.6%	100.0%	11.5%	70.2%	15.6%	2.7%	100.0%	100.0%

Source ADF&G Division of Wildlife Conservation, WinfoNet data extract, August 2, 2012. WinfoNet is the ADF&G Division of Wildlife Conservation’s intranet web site. The site provides a wide variety of tools to allow users to access, update, and download different kinds of data, including moose permit data.

Note The number of harvested moose per successful hunter is equal to 1.

Other respondents from the participating communities expressed a belief that the moose population itself has not changed but rather the distribution of moose across the landscape has changed. This research, as well as research conducted by Stephen R. Braund & Associates (2007), discovered a concern that an excessive concentration of moose hunting in certain areas easily accessible from the communities has driven moose into more remote locations. Respondents suggested that this may be 1 reason why fewer hunters harvest moose today. For example, a Fort Yukon hunter stated: “I think there’s animals out there but I think that a lot of it has to do with just Fort Yukon being more centralized ... there’s a lot more people living here in town, whereas there used to be a camp every 20 miles up the river where somebody actually lived, you know, maybe 6 months out of the year.” Another Fort Yukon resident stated: “It used to be you could go 12 mile up the Yukon, downriver, anywhere, and get yourself a moose here [near Fort Yukon]. Well, you can’t anymore because too many fast boats and people are weekend hunters. They scare more game than anything else.” A Beaver hunter stated: “We used to go out 2 days, but now a whole week and don’t see nothing.” A Fort Yukon hunter said that moose hunting for Fort Yukon residents had become individualistic, competitive, and that hunters had become increasingly territorial about hunting locations. “There’s a lot more hunters and they’re all gunning for their own moose.”

Despite a general belief that the moose population is in decline, there remains significant local sentiment that a hard-working hunter will likely be successful. Several hunters expressed a belief that when a hunter puts forth considerable time and effort, he or she will have a solid chance of successfully harvesting a moose. Another hunter argued that an idle hunting strategy often thwarts local hunters: “A lot people said there are not too many moose around, but there is, you just got to go find them. If you’re willing to walk you’ll find one.” Similarly, a Chalkyitsik hunter stated: “It’s [the local moose population] always been about the same since I been hunting. I always see a lot of moose around, but you got to come way up here to find them, you just got to hunt them, look for them.”

Several respondents expressed a belief that moose numbers in the Yukon Flats region had improved over recent years. Hunters from both Fort Yukon and Beaver noted that the 2009 hunting season was uncommonly productive (see “Trends in Moose Harvests and Ethnographic Analysis,” below). Hunters also reported observations of consistently abundant moose populations in specific areas of the region. Political boundaries might also play a role. Hunters from Venetie argued that their area contains the healthiest moose population in the entire Yukon Flats. A Venetie hunter stated the land ownership resulting from reservation status obtained from the decline by certain communities to participate in the Alaska Native Claims Settlement Act (ANCSA) resulted in a situation where outside hunters are denied access.¹⁵ “The moose population on the reservation is good and has always been good. We take care of our lands and our moose.” Hunters also reported the Black River area to be very productive moose habitat. A Venetie hunter said that the Black River contains more moose than anywhere else in the region and speculated that this may be because Chalkyitisk residents trap more wolves than the residents of other communities. A Beaver hunter, who grew up in Chalkyitsik, recalled that because Black River had maintained a very healthy moose population over the course of the 20th century, the Chalkyitsik elder Rev. David Salmon had always suggested that the area around Black River should be set aside and protected for moose habitat. The hunter said that when he was growing up, Chalkyitsik elders referred to Black River as a “moose breeding area, there are always moose there, you know. I think the Natives should do that themselves so they could have something for the future.”

15. “In 1943 the Venetie Indian Reservation was established, due to the combined efforts of the residents of Venetie, Arctic Village, Christian Village, and Robert’s Fish Camp, who worked together to protect their land for subsistence use. When ANCSA was passed in 1971, Venetie and Arctic Village opted for title to the 1.8 million acres of land in the former reservation, which they own as tenants in common through the Native Village of Venetie Tribal Government.” Alaska Community Database Community Information Summaries. Venetie. <http://commerce.alaska.gov/dca/commdb/CIS.cfm> (Accessed 2011).

MOOSE HUNTING SEASONS BY REGULATION, 2008–2009 AND 2009–2010

During the 2008–2009 regulatory year, a variety of local moose hunting opportunities were available to residents of the study communities. In GMUs 25B, 25C, and the eastern portion of 25D, the state general season hunt required a harvest ticket that could be obtained statewide from licensed vendors and ADF&G offices. In GMUs 25B and 25D East, a state community harvest permit was also available Alaska residents. Hunters who obtained a community harvest permit were not allowed to hunt moose under any other regulations during the 2008–2009 regulatory year. In the western portion of GMU 25D, a state Tier II subsistence permit was available to Alaska residents who submitted an application and were selected in a scoring process which is based on long-term dependence on the resource and the availability of alternate resources. Additionally, residents of Beaver, Birch Creek, and Stevens Village were provided a limited number of federal registration permits for moose hunting on federal lands in the western portion of GMU 25D. Moose hunting on federal public land in GMU 25D West is closed except to residents of GMU 25D West.

In the portion of GMU 25B within the Porcupine River drainage upstream from but excluding the Coleen River drainage, harvest tickets were only valid for the September 10–25 season; and the federal season was August 25–September 25 and December 1–10. For Alaska residents, the bag limit was 1 bull moose. In the portion of GMU 25B within Yukon–Charley Rivers National Preserve, federally qualified subsistence users were allowed to harvest 1 bull moose during the August 20–September 30 season. In the portion of GMU 25B other than Yukon–Charley Rivers National Preserve, draining into the north bank of the Yukon River, upstream from (and including) the Kandik River drainage, including the islands in the Yukon River, federally qualified subsistence users had a December 1–15 season with a 1 antlered bull moose harvest limit. In the remainder of GMU 25B, federally qualified subsistence users were allowed to harvest 1 antlered bull moose during the August 25–September 25 season and Alaska residents possessing a harvest ticket or a community harvest permit were allowed to harvest 1 bull moose during the September 5–25 season or 1 bull moose during the December 1–15 season (however, the community harvest permit allowed a group bag limit, rather than an individual bag limit).

In GMU 25C, Alaska residents possessing a harvest ticket were allowed to harvest 1 bull moose during the September 1–15 season.

The western portion of GMU 25D was only open to moose hunting for federally qualified subsistence users who were rural residents of GMU 25D West with a valid federal permit or to residents of GMU 25D West that received a state Tier II subsistence permit. For Alaska residents possessing either of these permits, the bag limit was 1 bull moose during the August 25–February 28 season. In the remainder of GMU 25D Alaska residents possessing a state harvest ticket or a community harvest permit were allowed to harvest 1 bull moose during the September 10–20 season or 1 bull moose during the February 18–28 season (however, the community harvest permit allowed a group bag limit, rather than an individual bag limit). Federally qualified subsistence users who were rural residents of the remainder of GMU 25 who hunted on federal lands within the remainder of GMU 25 were allowed to harvest 1 antlered moose during the August 25–September 25 season or 1 antlered moose during the December 1–20 season.

On federal lands in GMU 25, federally qualified subsistence users were allowed to designate another federally qualified subsistence user to harvest moose on their behalf. Designated hunters were allowed to take the other federally qualified hunter's moose harvest limit of 1 bull moose. Designated hunters were allowed to hunt for any number of recipients but could have no more than 2 harvest limits in possession at any 1 time. Designated hunters who harvested a moose on behalf of another rural Alaska resident were required to deliver the wildlife promptly to that rural Alaska resident. To participate in this opportunity designated hunters were required to obtain a designated hunter permit and submit a completed harvest report.

On state lands in GMU 25, moose could also be harvested outside of normal seasons and bag limits under Alaska Administrative Code 5 AAC 92.019, "Taking of big game for religious ceremonies." A permit for

this opportunity was not required but ADF&G had to be notified before and after the hunt within 15 days of the harvest.

On federal lands in GMU 25, moose could also be taken outside of normal seasons and bag limits by federally qualified subsistence users for food in traditional religious ceremonies that were part of a funerary or mortuary cycle, including memorial potlatches (50 C.F.R. 100.26 (m)). Under federal provisions, tribal representatives needed to notify the applicable federal land manager of the harvest, location, species, sex, and number of animals taken within 15 days of the harvest. A list of successful hunters also needed to be provided to the federal land manager. On federal lands in GMU 25D West the taking of cow moose was not authorized and prior to harvest the organizer of the religious ceremony or cultural event needed to contact the Yukon Flats National Wildlife Refuge and provide the name of the decedent, the nature of the ceremony or cultural event, number of moose to be taken, and the general area in which the taking would occur. Any hunter who harvested a moose under these provisions was required to submit a written report of the harvest to the refuge manager within 15 days of the harvest. Any moose taken under these provisions counted against the annual federal quota of 60 bulls.

During the 2009–2010 regulatory year the moose hunting opportunities available to Yukon Flats residents were the same as those described above for the 2008–2009 regulatory year.

ETHNOGRAPHIC FINDINGS—LOCAL PERCEPTIONS OF MOOSE MANAGEMENT IN THE YUKON FLATS REGION

Resource management of the Yukon Flats area by state and federal agencies is a concern of respondents interviewed during the course of this study. The following section of this report provides an overview of current moose management on the Yukon Flats, and an analysis of related respondent comments. Respondent concerns regarding state and federal regulated moose hunt permitting and harvest reporting are presented.

Harvest Tickets, Community Hunts, and Federal Subsistence Permitting

When asked about opinions of current moose hunting regulations on the Yukon Flats, a consistent theme for respondents was a feeling that the general season harvest ticket hunt and bag limit of 1 bull moose per person per regulatory year is not consistent with customary and traditional hunting practices. Respondents did not relate that 1 moose per person is an inadequate quantity to provide for subsistence needs; they simply stated that hunters should be able to harvest more than 1 moose and distribute the animals to community members who possess a harvest ticket but who, for various reasons, did not successfully harvest a moose. For example, elders and single mothers often cannot hunt for themselves, thus necessitating the need for younger hunters to hunt for them. Several respondents expressed concern that by following the regulations, certain community members and households must relinquish the ability to obtain the moose meat they need for the year. For example, an elder from Beaver stated: “Like me, you think I could go and kill my own moose? Boy, you better start thinking again.” Another elder from Beaver stated: “My nephew said ‘Auntie, if you don’t get a moose permit, I’ll go hunting for you,’ because right now I can’t even skin a moose.”

As previously discussed above, opportunities are provided under both state and federal regulations for individual Yukon Flats hunters to pool their individual harvest tickets so that (in certain portions of GMUs 25B and 25D) 1 hunter may harvest more than 1 moose every year for distribution within the community. On federal lands, federally qualified subsistence users are allowed to designate another federally qualified subsistence user to harvest moose on their behalf. Additionally, in a first attempt by the State of Alaska to address requests by Yukon Flats hunters for legal cooperative hunting opportunities, the BOG established a community subsistence hunt for the Chalkyitsik area in 2000. The objectives of the community harvest program are to “better accommodate traditional subsistence hunting and sharing practices and improve harvest reporting” (ADF&G 2002). Despite this, the Chalkyitsik community harvest permit has not been used by any hunters since 2004 (Caikoski 2010). Hunters interviewed during this

study expressed little or no acknowledgment of these state and federal opportunities. In fact, none of the hunters interviewed in this study discussed use of the federal designated hunter system. Instead of taking advantage of these opportunities hunters seemed to be mostly using the general season harvest ticket hunt system, suggesting a greater need for education about these opportunities. Participation levels in these opportunities may improve if they are more actively promoted by state and federal agencies and tribal governments. Additionally, resident hunters explain that local initiative to enroll in these hunts is often unenthusiastic because of the more complex enrollment process, paperwork, and reporting process required.

While some respondents from the participating communities acknowledged that the establishment of the Chalkyitsik community hunt represents a step towards a more feasible harvest system for Yukon Flats moose hunters, there was not only widespread sentiment that similar community hunt opportunities need to be broadened, but also strong indications that cooperative hunting is a common harvest method. Yukon Flats moose hunters interviewed in this study often hunt for elders, children, and non-hunting households, harvesting moose on other people's harvest tickets. Respondents explained that some hunters are known to be consistently more successful than others, some have more resources, such as boat fuel and time to hunt, and others just happen to have more luck. A Beaver hunter stated, "Good hunters should be allowed to hunt for people who can't hunt, because my mom, she can't really hunt, you know." Another Beaver hunter wondered, regarding the current regulations, "Grandma has a ticket, but how does she an elder and handicap, get her food?" The respondent, a talented hunter, explained that he was feeding his extended family by sometimes harvesting more than 1 moose himself, using other family member's harvest tickets, "Hunting for an 80-year-old woman with a couple of daughters." The hunter explained that one season, he harvested 4 moose himself but that the meat from them was distributed to 8 total households whose members had not harvested.

It is a longstanding practice for hunter-gatherer groups to hunt in a cooperative manner (Herbert 1982; Winterhalder and Smith 1981; Leacock and Lee 1982; Ingold 1988; Coffing 2001). Cooperative hunting practices maximize net energy returns and increase the efficiency of resource harvests (Winterhalder and Smith 1981). In fact, for communities highly dependent upon wild resources, survival is likely dependent upon cooperation among hunters and the distribution of yields among the group. As Ingold (2012:145) points out, "were each hunter to produce only for his own domestic needs, everyone would eventually perish from hunger... ." Moreover, it is probable that in band societies dependent upon large game hunting, the most knowledgeable and skilled hunters provided leadership and direction to the group (Coffing 2001). Hunting skill provided status and positions of leadership in many traditional Athabaskan societies, including the Gwich'in (VanStone 1974). In modern Cree society in the Canadian subarctic "high-status hunters are expected to be generous and to share the products of [the] land" (Folke et al. 1998:427). Among Chalkyitsik hunters, Nelson (1973:88) observed: "It is usually a man who owns a boat and motor who decides that he would like to go after moose..." and that when participating in a group hunt "the boat owner is 'boss.'" When the group is successful and "... returns home, the meat is usually divided among its members according to need, not on an equal basis ... everyone benefits according to the size of his family..." (Nelson 1973:99-100). For the Gwich'in, Fast (2002:92) notes,

Bringing in large wildlife pleases so many people that most men look forward to such opportunities for social praise. They are always rewarded in that way. Athabaskan men are rarely rewarded for jobs well done in the office or other mainstream employment, and they are therefore encouraged to go hunting by their social networks... .

A similar attribute was observed during the participant observation phase of this study, when upon returning to his home community with 2 harvested moose, a Chalkyitsik hunter spoke of distributing the meat around the community, and, with pride remarked: "They'll write songs about me." All of the above being the case, it is likely that prior to governmental regulation the majority of moose meat used in Yukon Flats communities was more often than not obtained through distributive practices via the success of

select hunters with the knowledge, skills, and resources needed for a successful hunt (Wolfe and Walker 1987; Wolfe et al. 2010).

It appears that a deeply rooted cooperative mode of hunting and distribution continues to be a common practice on the Yukon Flats. Harvest tickets are not necessarily validated by the hunter who actually harvested the moose. For these reasons, respondents expressed a high level of support for community subsistence hunts in the region. For example, a Beaver hunter stated that, when a community subsistence hunt was adopted on the Yukon Flats, “I thought ‘Great, they are finally legalizing me!’”

Drawing Hunts and Tier II

Moose hunting opportunities available to residents of the Yukon Flats are additionally complicated by dual state and federal management. Lands easily accessible to residents of Stevens Village and Beaver are in the western portion of GMU 25D and are open to moose hunting only for federally qualified subsistence users with a valid federal permit, or to recipients of the state’s Tier II subsistence moose hunting permit.

In the early 1980s, GMU 25D was divided by the state into GMU 25D West and in the remainder of 25D East to allow the use of differing regulatory schemes to address the status of the respective moose populations. Low moose density in the western portion of the subunit, combined with the relatively high demand for moose by local residents, resulted in the use of the permit systems that have limited hunting primarily to residents of the area. In 1990, the BOG established a Tier II permit hunt in GMU 25D West because the harvestable surplus was deemed insufficient to support all subsistence uses. During most of the 1990s, 125 permits and 3 hunting seasons were available. Also, beginning in 1990, the Federal Subsistence Board began promulgating regulations for subsistence use on federal lands and initially provided an unlimited number of permits to residents of Beaver, Stevens Village, and Birch Creek to harvest bull moose on federal lands. The state Tier II system remained in effect and applied to private, state, and federal lands. However, from 1993 to 1999, state Tier II permits were not recognized on federal land. During this period, a maximum of 30 federal permits and 125 state Tier II permits were issued annually. In 1999, discussions with local residents helped identify a number of steps that could improve moose management on the western Yukon Flats, including revising the harvest quota for moose, reducing the number of Tier II permits, and aligning state and federal hunting seasons (Caikoski 2008). In 2000, the BOG lengthened the state season in GMU 25D West to August 25–February 28 to match the federal season, increased the harvest quota from 35 to 60 bull moose, and reduced the number of Tier II permits from 125 to 75. State Tier II permits issued to residents of GMU 25D West were again recognized as valid on federal lands beginning in 2000, when 60 federal and 75 Tier II permits were available, with a combined state and federal harvest quota of up to 60 bull moose. Unless the federal lands are closed to non-federally qualified subsistence hunters, Tier II permits can be used on federal lands to harvest moose; however, federal moose permits may not be used on private or state lands. Residents of Stevens Village and Beaver who do not receive a federal subsistence permit or do not receive a state Tier II permit are required to hunt moose outside of GMU 25D West. If they applied for and received a state Tier II permit only, their hunt would be limited to village and regional Native corporation lands surrounding their community, as well as any accessible state lands.

Harvest Reporting, Regulatory Violations, and Wildlife Enforcement

Harvest reporting continues to be a problem in the Yukon Flats (Caikoski 2010). For example, according to Andersen and Alexander (1992), only 21% of Fort Yukon residents reported their harvests for the 1987–1988 moose hunting season. More recent harvest ticket data show that from 2000 through 2010, an average of only 43% of Fort Yukon hunters who obtained harvest tickets returned them (Figure 20) (Henry Kenton, Wildlife Conservation Analyst/Programmer, ADF&G, data from Wildlife Conservation database, personal communication, August 4, 2011).

Yukon Flats hunters perceive a lack of local participation in moose harvest reporting. Respondents observed that many hunters from the area fail to turn in their harvest tickets. However, federal harvest reporting data suggest that for residents of the GMU 25D West communities of Beaver, Birch Creek, and Stevens Village, harvest reporting rates were actually quite high (Vince Matthews, YFNWR Subsistence Coordinator, USFWS, Fairbanks, personal communication). For example, between 2000 and 2011, reporting rates averaged 81% of 369 permit holders reporting, ranging from a low of 39% (18 returned permits of 46) in 2008 to a high of 100% in 2003–2005 and 2007 (23, 10, 39, and 44 permits respectively). Nonetheless, some respondents expressed concern that the local moose harvest is severely underreported. Hunters provided various reasons for failing to report, including losing harvest tickets, forgetting to mail them in, or not realizing that hunters have an obligation to report their harvest or their effort if they are unsuccessful. Interestingly, even hunters who admitted failing to report over recent years did not appear to have a problem with the idea of reporting, and several expressed a desire to see better reporting. One hunter suggested that the harvest ticket reporting program should include a lottery reward so that people will have an incentive to continuously participate.

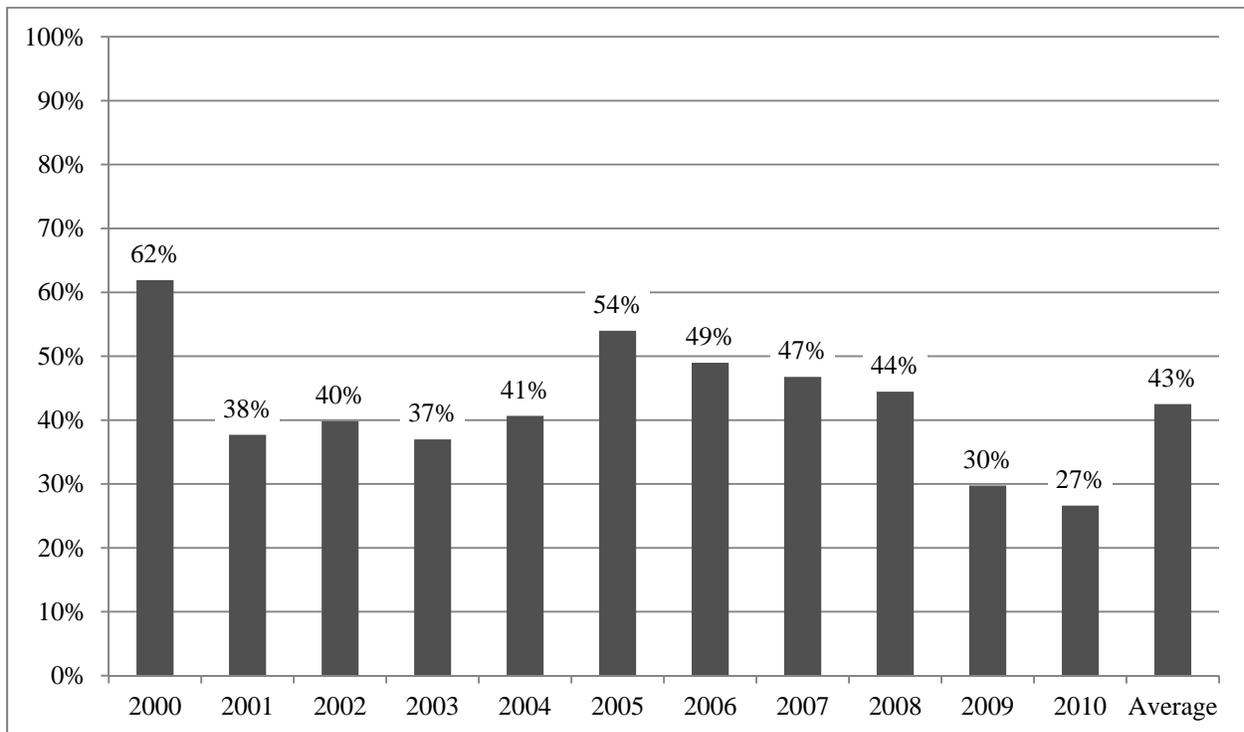


Figure 20.—Percentage of returned moose harvest tickets issued to Fort Yukon hunters, 2000–2010.

USFWS law enforcement is active on refuge lands. Some hunters expressed a significant amount of resentment toward USFWS law enforcement practices. These hunters complained of continual harassment by wildlife officers in both the Fort Yukon and Beaver areas. For example, a Beaver hunter stated:

They are over-regulating. If there is wanton waste I don't have a problem with [law enforcement]. If someone goes out first day of the season and drops a calf I got a problem with that! But when people need to eat, they need to eat. Punishing people for wasting animals and food is the Native way, but punishing people for eating when they are

hungry is not the management needed out here. The bottom line on all of this is it doesn't go to waste by villages! The feds need to refocus on what they are doing. You get this feeling that they don't want us on this land, that they don't want us living our lifestyle out here. They need to refocus. It would be a major plus. We do not have enough money to follow regulations, we have kids to feed.

Respondents expressed a desire that both state and federal resource management agencies allocate resources toward developing relationships within Yukon Flats communities and communicating regulatory proposals and changes. A Beaver hunter stated, "If you can't get to the local people successfully then you can't really manage land. It's all about the people, and government managers forget that." Aside from disagreement with regulations requiring 1 moose harvest per hunter, several hunters from the participating communities expressed positive opinions of governmental management. For example, a Fort Yukon hunter stated: "The moose season is fine, it works well. Subsistence hunt, fall hunt, winter hunt. A man with a big family will kill 2 moose but they are accounted for with tags, even if he does all the killing." Another Fort Yukon hunter expressed the opinion that local people need to give more recognition of the roles of management and wildlife enforcement. The hunter said that the work of governmental managers and enforcement officers is very important to the health of the local ecosystem and that local people often seem not to respect this, or recognize the importance of deliberate management. The hunter expressed a desire for government agencies to work more closely with local people to develop relationships and increase local understanding of the role wildlife management plays in the conservation of subsistence resources. At the same time, the hunter commented, local people also "need to get involved with the process of regulating and stop blaming people who work for the agencies." Other hunters from Fort Yukon and Beaver had similar comments.

Several hunters from the participating communities expressed an observation that maintaining a hunting ban on cow moose was important to the health of local moose populations. Some hunters expressed concern about heavy local hunting pressure on moose and particular concern about continuing harvests of cow moose. These hunters suggested that management and enforcement needs to be intensified and attributed blame for declines in the local moose population to illegal cow harvests, hunting out of season, and over-hunting in general. For example, an elder from Fort Yukon stated:

When people say that the moose population is down they also don't take into consideration that the [human] population has grown ... I grew up in town when there wasn't a hundred people. Sure, there was a lot of moose around but every decade there's more and more population increase in the human population and more hunters come in and people are moving in. Sure, they're going to eliminate the moose. I'm surprised there's moose around at all ... That's why it's low moose when the legal season comes. Yeah, they've already shot moose, got their freezer full. See they got freezers today. Long time ago nobody had freezers here, so now they're shooting and storing. The wolves got them all? ... Humans got them all and what is left the grizzlies got in the calving area. I am giving my own opinion and what I've seen.

The elder went on to express an observation that during the World War II era many of the local residents left the region to join the war effort. During that time, when there were fewer people in the Yukon Flats region, the moose population increased, but when people began returning to the area, the moose population decreased. The elder cited this example as a reason for intensive management of wildlife, including managing the activities of people. Another Fort Yukon elder expressed the opinion that critical steps must be taken if the moose population in the Yukon Flats is to rebound. The elder believes that people should first become educated to hunt with a conservation ethic, but that if the local people cannot change their ways he would support a regulation that would allow only 1 bull harvest per household as opposed to 1 bull per person. The elder said that if such measures did not work he would support a temporary ban on moose hunting altogether. Another elder from Fort Yukon expressed concern that younger hunters are not taking care of meat properly:

If I could change regulations the first priority would be to make a law that does not allow boning moose out in the field. I've seen people coming down river spoiling meat because they had packed it all together. You've got to keep it on the bone and always hang it up at night and keep some smoke on it and get it cased up so there is no moisture, then it can keep well, but not when you pile it into a sack.

While results of the ethnographic research conducted during this study suggest that some illegal moose harvests do occur on the Yukon Flats, past research and numerous hunter comments from this study reveal that conservation-minded hunting practices are an important part of Yukon Flats culture. Caulfield (1983) observed the existence of customary Gwich'in law regarding the harvest of resources. Similarly, Nelson argues that Koyukon Athabascan people maintain sustained yield hunting and trapping practices based upon their own "practical understanding of ecological dynamics" (Nelson 1983:221). Koyukon moose hunters generally practice self-restraint and harvest moose based on the food needs of the community. In this way, Nelson reasons Koyukon hunters maintain a conservation ethic, but also points out there are always violators or those who do not strictly follow traditional Koyukon protocol (Nelson 2001).

All hunting systems must develop procedures for addressing violations of both traditional and governmental hunting rules. Northern hunting peoples have often used ridicule or even removal from the group to reprimand violators (Caulfield 1983; Nadasdy 2003). Observing Tutchone hunters in the Yukon Territory Canada, Nadasdy (2003) notes that some hunters do not generally abide by traditional beliefs or follow the conservation efforts that other community members promote. Nadasdy (2003) suggests that, due to feelings of disempowerment associated with colonization, Native hunters often tend to emphasize the "right" to harvest over traditional ideals of respect and conservation. According to Nadasdy (2003:246) this perspective "leads to a tension within the community as some people seek to substitute a morality based on hunting rights for one based on relations of mutual respect and reciprocity between humans and animals." Empowering Yukon Flats hunters with a participatory role in management may help lessen ill feelings toward governmental regulations and encourage a community enforced conservation ethic.

Management at the Community Level

In 2002, as a result of growing concern about the low moose population on the Yukon Flats, ADF&G developed the Yukon Flats Cooperative Moose Management Plan (YFCMMP), in cooperation with the Yukon Flats National Wildlife Refuge, CATG, the Yukon Flats Fish and Game Advisory Committee, and tribal governments on the Yukon Flats. The YFCMMP was endorsed by the BOG on March 15, 2002, and endorsed by the Federal Subsistence Board on May 15, 2002. In 2010, ADF&G affirmed its support for increased local involvement in moose management and its efforts to develop cooperative management programs on the Yukon Flats (Caikoski 2010).

The purpose of the YFCMMP is to "protect, maintain, and enhance the Yukon Flats moose population and habitat, maintain traditional lifestyles, and provide opportunities for use of the moose resource" in GMUs 25D, 25B, eastern 25A, and the portion of 25C near Circle (ADF&G 2002). The geographic scope of the plan includes the federally managed Yukon Flats National Wildlife and Arctic National Wildlife refuges. The goals of the plan are to 1) improve moose harvest reporting to better document subsistence needs; 2) to increase harvest of bears and wolves to reduce predation on moose; 3) to minimize illegal cow harvest; and 4) to obtain traditional knowledge to better inform management (ADF&G 2002). Information obtained from annual household harvest surveys and the need to "integrate scientific and traditional ecological knowledge" and "conduct a workshop on traditional ecological knowledge on the Yukon Flats" were identified as vital management information needs for attaining the plan's goals (ADF&G 2002). Additionally, allowing local users the opportunity to become more involved in the moose management process was identified as a primary issue in the management plan.

Two strategies of generating enhanced local involvement were formulated. The first strategy explored the possibility of creating “local harvest monitoring and enforcement programs” and suggested the allocation of funding to CATG for conducting locally administered harvest monitoring, reporting, and household surveys. The second strategy explored the possibility of “cooperative management” with an action to “explore opportunities to alter hunting seasons to match traditional use patterns” and “community harvest programs” (ADF&G 2002).

Additionally, an ADF&G and USFWS priority was to “actively support funding proposals from CATG or others to continue household harvest surveys,” and a CATG priority was to administer and conduct annual household harvest surveys (ADF&G 2002).

Regardless of the YFCMMP, which was adopted by both state and federal agencies, some respondents expressed frustration that local views and needs continue to be neglected by state and federal managers. In response to what some residents view as flawed state and federal governmental management systems, several hunters advocated for increasing local involvement in management. Some hunters portray the need for more of a local role in actual management in the YFCMMP process, leading to a more autonomous and localized system of management where resource users share responsibility in regulatory decision making. For example, a Beaver hunter stated:

There are good things that come from the federal regs, but people out on the land have more knowledge than office people. The people that are actually really doing the harvesting out here know what’s going on in the country. We need to set up our own committee for all the animals, a committee of hunters.

The hunter also expressed an opinion that wildlife law enforcement should be conducted by local people through traditional Gwich’in methods. “The village should have a VPSO [Village Public Safety Officer] to monitor the hunting and fishing activities of the people, not the feds. We need a law enforcement system that is more adaptive to the needs of the people.” Other respondents from the participating communities voiced similar opinions. An elder from Beaver pointed out that prior to the colonization of Alaska by Euroamericans, Gwich’in and Koyukon methods of resource stewardship were successful. “It worked when there were no Fish and Game around here, worked for us for thousands of years, we don’t waste our meat and we always have lots. We have our own rules, you know. We never kill animal for nothing.” Another elder from Beaver stated: “You can’t manage the Yukon Flats from Fairbanks, 1300 College Road, or over 12th Avenue Federal Building. You can’t do that. It’s not feasible. It doesn’t make sense.” Similarly, a Venetie hunter stated:

When we speak of “subsistence,” we don’t just mean using the resource, but using tribal methods and acting out the culture and complying with those values, and we do those things because they are a measure of protection for the land and its resources. Traditional methods are very important to Venetie people. We don’t take animals just for their head. We take animals for our children to survive on. We don’t have a supermarket or a big Fred Meyer in this country, or McDonald’s, OK?

Despite these comments, respondents also expressed recognition that Yukon Flats communities lack the finances, organizational capacity, or jurisdictional reach to sufficiently monitor and manage moose locally. For example, a Beaver hunter stated, “We can self-manage, but how do you control outside hunters coming down Beaver Creek hunting for [moose] racks, or from the Yukon River Bridge? We can’t do enough on our own.” Some respondents expressed that attempts by local tribal governments to gain an increasing foothold in management responsibility were failing due to a lack of coordination and initiative on their own behalf. The respondents expressed disappointment with the activities and participation levels of regional tribal governance entities in the local wildlife management process. On the other hand, CATG staff emphasized that representatives of regional tribal organizations believe that both the ADF&G and USFWS have failed to follow through with implementation of YFCMMP, which allows for greater local involvement in the management process.

In a larger sense, many elders linked the lack of viable solutions for what they see as a deteriorating and unsustainable situation to large-scale dependence upon entitlement programs, technology, and money—a consistently occurring theme emerging from these interviews. This critique of modernity and its socio-economic costs includes nostalgia for traditional Gwich'in and Koyukon relationships to land—a relationship based on hard work that fosters a strong conservation ethic in young people. As such, according to an elder from Fort Yukon, “management” at the local level should be made up of programs that serve to educate younger people and instill within them a sense of the traditional Gwich'in values of respect and awareness that every action has its consequences.

You shouldn't be shooting cows because you're going to have no food for the future—that's the stuff they need to be telling their younger people and that needs to come from the elders, and not only elders, maybe also from the village leadership. These rules of respect, it used to be probably a big part of how local people were able to, you know, survive. I think now, one of the things really helped probably maintain a healthy population, whether it's moose, bear, or anything, you know, even salmon, was that they [older generations] never had the big snowmachines and the big motors and stuff they have today. They never had those Super Cubs [airplanes]. So when people went hunting there was a particular area they always go to, and they get there, then they hunt, you know, they're not bombing up and down the river because they have a little 25 [horsepower motor] or maybe even smaller boat. They have to plan everything them days.

The elder expressed an opinion that management actions at the local level must begin with organized leadership from knowledgeable elders within the communities, and by teaching youth traditional skills, awareness of place, and a sense of responsibility for wildlife. The elder said that such leadership is precisely what is lacking in Yukon Flats communities and is desperately needed to build a future of local stewardship and sustainable use of local subsistence resources. For Yukon Flats elders interviewed in this study, it is these values which constitute traditional management and it is the desire of these elders that the definition of management be expanded to take into consideration these values. Several respondents were adamant that both traditional knowledge and Western concepts of resource management be taught to Yukon Flats youth. Respondents requested that this transmission of ecological knowledge be passed on to youth through multiple channels, including formal educational curricula, state and federal agency programs, tribal government programs, and community events.

CHAPTER 5: CARIBOU

Yukon Flats hunters have access to the Fortymile and Porcupine caribou herds. During the study period the population of the Fortymile caribou herd was approximately 42,000 caribou and the population of the Porcupine caribou herd was approximately 100,000 caribou (Caikoski 2009, Gross 2009). Caribou harvest survey findings for the 2008–2009 and 2009–2010 regulatory years are first presented here. A detailed presentation of ethnographic results for caribou is presented in the following section.

SURVEY FINDINGS: CARIBOU HARVESTS AND USES, APRIL TO MARCH, 2008–2009 AND 2009–2010

Participation in the Subsistence Harvest and Uses of Caribou

As reported in Table 16, only residents of Beaver, Circle, Fort Yukon, and Venetie hunted caribou in the 2008–2009 regulatory year. Of the communities with households that hunted caribou, Venetie reported the largest percentage of households that successfully harvested caribou (18%). Only 3% of Circle households reported harvesting caribou, followed by 1% of households reporting caribou harvest in Fort Yukon, and no households in Beaver. For the 7 surveyed communities combined, only 3% of households reported harvesting caribou, with 6% of households attempting to harvest caribou.

Table 16 also reports that the estimated harvest of caribou by the participating communities was 20 animals. For the area overall, this represents a harvest of 0.04 caribou per household. Of the communities that harvested caribou, Venetie was the most successful. Venetie hunters harvested 16 caribou (or 0.25 caribou per household), providing an average of 14 lb of caribou meat to each person in the community. Fort Yukon residents harvested 3 caribou (an average of 0.8 lb per person) and Circle residents harvested 1 caribou (an average of 1.3 lb per person).

Despite the low rate of reported attempts to harvest caribou, 30% of participating community households used caribou. Venetie reported the highest level of use, with 98% of households reporting the use of caribou. Of the participating communities reporting the use of caribou, the lowest level of use occurred in Fort Yukon, with 12% of households reporting the use of caribou. For both Chalkyitsik and Stevens Village, no households reported using caribou.

Of the communities that used caribou, 30% of households received caribou and 13% gave away caribou to other households. At Venetie, 65% of households gave away caribou; at Birch Creek, 25% gave away caribou; at Circle, 5% gave away caribou; and at Fort Yukon, 3% gave away caribou. In most of the communities reporting receipt of caribou meat the number of households reporting receipt of caribou meat was proportionately high when compared to the number of households that reported distributing caribou meat (Circle 83%, Beaver 22%, and Fort Yukon 12.5%). Among Venetie households, caribou was widely shared, with 92% of Venetie households receiving caribou (for further analysis of this sharing and receiving see “Distribution of the Caribou Harvest,” below).

As shown in Table 17, only residents of Beaver, Birch Creek, Circle, Fort Yukon, and Venetie hunted caribou in the 2009–2010 regulatory year. Of the communities with households that hunted caribou, Fort Yukon reported the largest percentage of households that successfully harvested caribou (9%), followed by 7% of Circle households. Only 5% of Venetie households reported harvesting caribou, and no Beaver and Birch Creek households reported harvesting caribou. For the 7 surveyed communities combined, only 6% of households reported harvesting caribou, with 9% of households attempting to harvest caribou.

Table 17 also reports that the estimated harvest of caribou by the participating communities was 45 animals in 2009–2010. For the area overall, this represents a harvest of 0.11 caribou per household. For communities that harvested caribou, Fort Yukon was the most successful. Fort Yukon hunters harvested 35 caribou (or 0.17 caribou per household), providing an average of 8 lb of caribou meat to each person in the community. Venetie residents harvested 6 caribou (an average of 2.9 lb per person) and Circle residents harvested 4 caribou (an average of 5.9 lb per person).

Along with the low rate of reported attempts to harvest caribou, only 22% of participating community households used caribou. Birch Creek reported the highest level of use, with 40% of households reporting the use of caribou, followed by Venetie with 39% of households reporting the use of caribou, Beaver with 23% of households reporting the use of caribou, Fort Yukon with 20% of households reporting the use of caribou, Circle with 7% of households reporting the use of caribou, and Stevens Village with 5% of households reporting the use of caribou. In Chalkyitsik, no households reported using caribou.

For the study communities combined, 21% of households received caribou and 12% gave away caribou to other households (for further analysis of this sharing and receiving see “Distribution of the Caribou Harvest,” below).

Table 16.–Levels of participation in the harvest and uses of caribou in Yukon Flats communities, 2008–2009.

Community	Participation of households					Estimated harvest						
	Use	Attempt	Harvest	Receive	Give	Amount		Pounds		95% confidence limits of total harvest		
						Total	Per household	Total	Per person	± percentage	Low	High
Beaver	18.5%	3.7%	0.0%	22.2%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Birch Creek	25.0%	0.0%	0.0%	25.0%	25.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Chalkyitsik	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Circle	85.0%	22.5%	2.5%	82.5%	5.0%	1.0	0.03	130.0	1.3	0.0%	1.0	1.0
Fort Yukon	11.5%	2.1%	1.0%	12.5%	3.1%	2.7	0.01	354.8	0.8	158.0%	1.0	7.0
Stevens Village	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Venetie	98.4%	17.5%	17.5%	92.1%	65.1%	16.4	0.25	2,135.3	14.1	17.7%	14.0	19.3
All	30.1%	5.8%	3.3%	29.8%	12.6%	20.2	0.04	2,620.0	2.9	72.1%	16.0	34.7

Source ADF&G Division of Subsistence household surveys, 2009.

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Table 17.–Levels of participation in the harvest and uses of caribou in Yukon Flats communities, 2009–2010.

Community	Participation of households					Estimated harvest						
	Use	Attempt	Harvest	Receive	Give	Amount		Pounds		95% confidence limits of total harvest		
						Total	Per household	Total	Per person	± percentage	Low	High
Beaver	22.6%	3.2%	0.0%	19.4%	9.7%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Birch Creek	40.0%	6.7%	0.0%	40.0%	33.3%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Chalkyitsik	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Circle	6.7%	6.7%	6.7%	6.7%	0.0%	4.0	0.13	400.0	5.9	151.7%	2.0	10.1
Fort Yukon	19.8%	9.9%	8.9%	17.8%	7.9%	35.2	0.17	3,518.3	8.0	84.2%	17.3	64.8
Stevens Village	5.3%	0.0%	0.0%	5.3%	5.3%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Venetie	39.1%	12.5%	4.7%	39.1%	25.0%	5.6	0.06	556.3	2.9	64.0%	4.0	9.1
All	22.3%	8.6%	5.9%	21.1%	11.6%	44.7	0.11	4,474.6	5.2	67.3%	23.3	74.9

Source CATG and ADF&G Division of Subsistence household survey, 2010.

Timing and Location of Caribou Harvests

The estimated harvest of caribou by the participating communities by month in the 2008–2009 regulatory year is included in Table 18. The majority (38%) of caribou harvests took place in March when an estimated 8 caribou were taken by residents of all participating communities combined. This was followed by 6 caribou harvested in February, 3 caribou harvested in September, 1 caribou harvested in April, and 1 caribou harvested in October (Table 18). Of the total estimated harvest for all communities, 15 (73%) were bull caribou, 4 cow caribou harvests were reported (20%), and 1 caribou harvest of unknown sex was reported (Table 18).

Caribou harvest quantities by residents of the participating communities, organized by GMU and UCUs are summarized in Table 19. In Figure 21, harvest locations are color coded to reflect the range of harvests which occurred in each UCU of GMU 25.

The majority of caribou harvests by the participating communities occurred in GMU 25D (61%). This was followed by 24% of the caribou harvest occurring in GMU 25A, 11% of the caribou harvest locations being reported as unknown, and 5% of the caribou harvest occurring in GMU 25C.

Table 18.—Estimated harvests of caribou by sex and month, Yukon Flats, 2008–2009.

Community	Sex	Estimated harvests by month													Total
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
All	All	1.1	0.0	0.0	0.0	0.0	2.7	1.0	0.0	0.2	0.0	6.4	7.7	1.1	20.2
	Male	1.1	0.0	0.0	0.0	0.0	2.7	1.0	0.0	0.2	0.0	5.3	4.4	0.0	14.7
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.1	3.3	0.0	4.4
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1
Beaver	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chalkyitsik	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Circle	All	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
	Male	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fort Yukon	All	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7
	Male	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stevens Village	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie	All	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	6.4	7.7	1.1	16.4
	Male	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	5.3	4.4	0.0	11.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.1	3.3	0.0	4.4
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1

Source ADF&G Division of Subsistence household surveys, 2009.

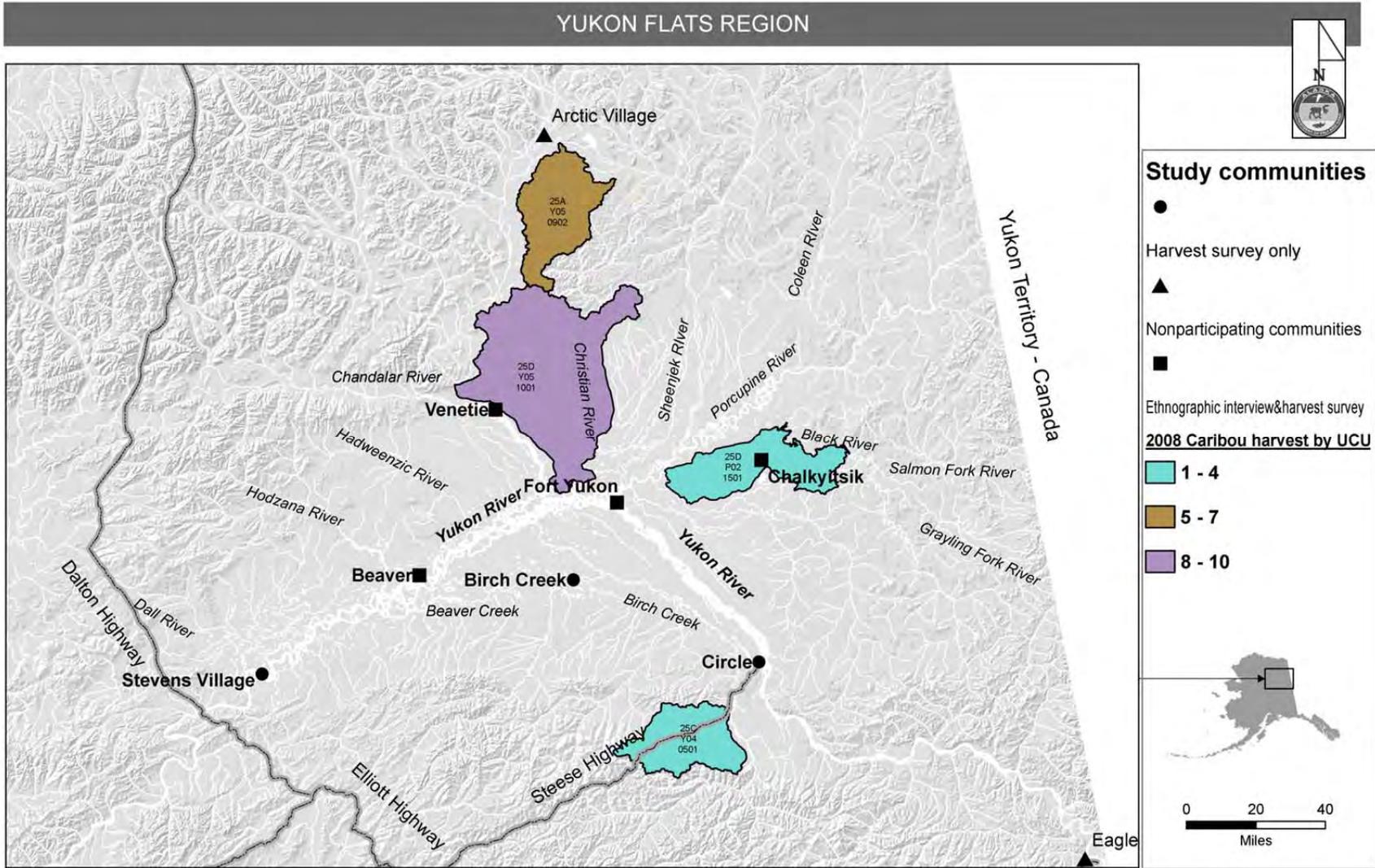


Figure 21.—Caribou harvest locations, by UCU, 2008–2009.

Table 19.—Estimated harvests of caribou by GMU, UCU, and community, Yukon Flats, 2008–2009.

Harvest location GMU/UCU	Estimated harvest by location and community							Total	Percentage	
	Beaver	Birch Creek	Chalkyitsik	Circle	Fort Yukon	Stevens Village	Venetie			
Subtotal GMU 25A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	4.7	23.5%
25A Y05-0902	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	4.7	23.5%
Subtotal GMU 25C	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	1.0	5.0%
25C Y04-0501	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	1.0	5.0%
Subtotal GMU 25D	0.0	0.0	0.0	0.0	2.7	0.0	9.6	12.3	12.3	61.0%
25D P02-1501	0.0	0.0	0.0	0.0	2.7	0.0	0.0	2.7	2.7	13.5%
25D Y05-1001	0.0	0.0	0.0	0.0	0.0	0.0	9.6	9.6	9.6	47.5%
Unknown	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.1	2.1	10.6%
Total	0.0	0.0	0.0	1.0	2.7	0.0	16.4	20.2	20.2	100.0%

Source ADF&G Division of Subsistence, household surveys, 2009.

The estimated harvest of caribou by the participating communities by month in the 2009–2010 regulatory year is included in Table 20. The majority (73%) of caribou harvests took place in September when 33 caribou were taken by residents of the participating communities. This was followed by 4 caribou in August, 3 caribou in February, and 4 caribou in March. Of the total estimated harvest for all communities, 100% were reported as sex “unknown” (Table 20). This likely represents a failure by TNRTs to record the sex of the caribou reportedly harvested by households during the 2009–2010 study year.

Caribou harvest quantities in 2009–2010 by residents of the participating communities, organized by GMU and UCUs, are summarized in Table 21. In Figure 22, harvest locations are color coded to reflect the range of harvests which occurred in each UCU of GMU 25.

In 2009–2010, the majority of caribou harvests by the participating communities occurred in GMU 25D (56%). This was followed by 31% of the caribou harvest occurring in GMU 25A, and 14% of the caribou harvest occurring in GMU 25B.

Table 20.—Estimated harvests of caribou by sex and month, Yukon Flats, 2009–2010.

Community	Sex	Estimated harvest by month													Total
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
All															
All		0.0	0.0	0.0	0.0	4.0	32.6	0.0	0.0	0.0	0.0	3.4	4.2	0.5	44.7
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	4.0	32.6	0.0	0.0	0.0	0.0	3.4	4.2	0.5	44.7
Beaver															
All		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek															
All		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chalkyitsik															
All		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Circle															
All		0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
Fort Yukon															
All		0.0	0.0	0.0	0.0	2.0	30.6	0.0	0.0	0.0	0.0	2.0	0.0	0.5	35.2
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	2.0	30.6	0.0	0.0	0.0	0.0	2.0	0.0	0.5	35.2
Stevens Village															
All		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie															
All		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	4.2	0.0	5.6
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	4.2	0.0	5.6

Source CATG and ADF&G Division of Subsistence household survey, 2009.

YUKON FLATS REGION

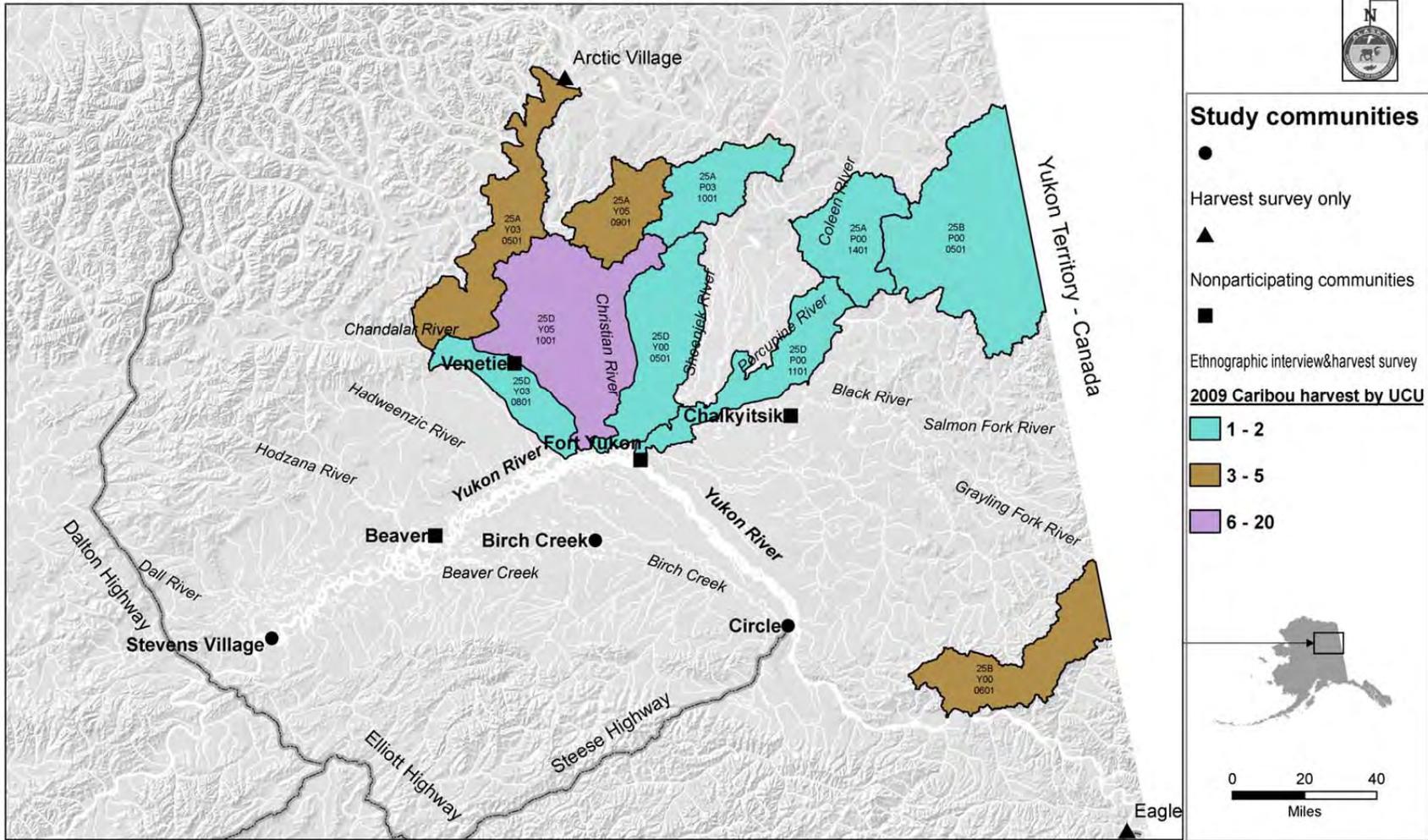


Figure 22.—Caribou harvest locations by, UCU, 2009–2010.

Table 21.—Estimated harvests of caribou by GMU, UCU, and community, Yukon Flats, 2009–2010.

Harvest location GMU/UCU	Estimated harvest by location and community								Percentage
	Beaver	Birch Creek	Chalkyitsik	Circle	Fort Yukon	Stevens Village	Venetie	Total	
Subtotal GMU 25A	0.0	0.0	0.0	0.0	8.2	0.0	5.6	13.7	30.7%
25A P00-1401	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	4.6%
25A P03-1001	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	4.6%
25A Y03-0501	0.0	0.0	0.0	0.0	2.0	0.0	2.8	4.8	10.8%
25A Y05-0901	0.0	0.0	0.0	0.0	2.0	0.0	2.8	4.8	10.8%
Subtotal GMU 25B	0.0	0.0	0.0	4.0	2.0	0.0	0.0	6.0	13.5%
25B P00-0501	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	4.6%
25B Y00-0601	0.0	0.0	0.0	4.0	0.0	0.0	0.0	4.0	8.9%
Subtotal GMU 25D	0.0	0.0	0.0	0.0	25.0	0.0	0.0	25.0	55.8%
25D P00-1101	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	4.6%
25D Y00-0501	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	4.6%
25D Y03-0801	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5	1.1%
25D Y05-1001	0.0	0.0	0.0	0.0	20.4	0.0	0.0	20.4	45.6%
Total	0.0	0.0	0.0	4.0	35.2	0.0	5.6	44.7	100.0%

Source CATG and ADF&G Division of Subsistence household survey, 2010.

CARIBOU HUNTING SEASONS BY REGULATION

During the 2008–2009 regulatory year, a variety of local caribou hunting opportunities were available to residents of the participating communities. In GMUs 25B, 25C, and 25D, the state general season hunt required a harvest ticket that could be obtained statewide from license vendors and ADF&G offices.

In GMUs 25A and 25B, Alaska residents possessing a harvest ticket were allowed to harvest 10 caribou during the July 1–April 30 season. Alaska residents living north of the Yukon River who hunted in that area did not need a harvest ticket to participate in the state general hunt, but hunters were required to register with ADF&G or an authorized representative prior to participation. During the July 1–April 30 season available to rural residents of GMUs 20F, 25D, and Manley, hunters were allowed to harvest 10 caribou on federal lands in the remainder of GMU 25A and GMU 25B; and for the remainder of GMU 25D, all rural residents were allowed the same season and bag limit.

In the portion of GMU 25C located west of the east bank of the mainstem of Preacher Creek to its confluence with American Creek to west of the east bank of American Creek, a state general season hunt with a bag limit of 1 bull caribou was available for Alaska residents from August 10–September 20. For this same area there was a parallel federal season and bag limit. For the December 1–March 1 season, a state registration permit for this area of GMU 25C was available to Alaska residents (bag limit of 1 caribou). Federally qualified rural residents hunting during the November 1–March 31 federal season were allowed to harvest 1 caribou on federal lands in this area of GMU 25C. During the winter, hunt a state registration permit was required. In the remaining portion of GMU 25C, registration permits were available for 2 distinct seasons: the August 10–September 30 season (bag limit of 1 caribou), and the December 1–February 28 season (bag limit of 1 caribou).

In the area of GMU 25D, the drainage by the west fork of the Dall River, west of 150° longitude, Alaska residents possessing a harvest ticket were allowed to harvest 1 caribou during the August 10–March 31 season. In this same portion of GMU 25D, federally qualified rural residents were allowed to harvest 1 bull caribou during the August 10–September 30 season or 1 bull caribou during the December 1–December 31 season. In the remainder of GMU 25D Alaska residents possessing a harvest ticket were allowed to harvest 10 caribou during the July 1–April 30 season. Alaska residents living north of the Yukon River who hunted in that area did not need a harvest ticket to participate in this hunt but were required to register with ADF&G or an authorized representative prior to participation. Federally

qualified rural residents hunting on federal lands in the remainder of GMU 25D were allowed to harvest 10 caribou during the July 1–April 30 season.

During the 2009–2010 regulatory year, the caribou hunting opportunities available to residents of the participating communities were the same as those described above for the 2008–2009 regulatory year.

ETHNOGRAPHIC FINDINGS: CONTEMPORARY AND HISTORICAL HARVESTS AND USES OF CARIBOU ON THE YUKON FLATS

Introduction

It is probable that Gwich'in hunters have harvested caribou from the Porcupine and Fortymile herds for several centuries (Caulfield 1983). Pre-contact Gwich'in had a profound reliance on caribou for survival. For both food and clothing, caribou was likely the most important large mammal resource for the pre-contact Gwich'in (Osgood 1936; Hadleigh-West 1963; McKennan 1965, Slobodin 1981). Upper Yukon Koykuon bands were known to travel north to the Koyukuk River area to hunt caribou with relatives during the month of October (Clark 1981).

Being nomadic, pre-contact Gwich'in traveled seasonally to caribou migration areas and harvested caribou by driving them into strategically constructed surrounds where they were snared, speared, or shot by bow and arrow (Osgood 1936; Hadleigh-West 1963; McKennan 1965; Schneider 1976; Acheson 1977; Slobodin 1981; Ducker 1982; Caulfield 1983; Sumida and Andersen 1990; O'Brien 1997). Caribou surrounds provided an efficient way to procure large amounts of meat in a short time. By driving the animals into fences encased with snares, up to 500 caribou could be taken in a day (McKennan 1965; Caulfield 1979). Remnant caribou surround-like structures have been discovered in the northeastern areas of the region, likely constructed between 1789 and 1860 (USFWS 2008). Additionally, Gwich'in hunters were known to have possessed the ability to call caribou toward them by mimicking the sound of clicking caribou hooves, either by rubbing together 2 carefully carved antlers, or by using a rattle made from a dried caribou hoof (McKennan 1965; Sumida and Alexander 1985; O'Brien 1997).

Following contact with Euroamericans, the history of Gwich'in caribou interaction in the region is one of declining accessibility and use, with the exception being for those hunters residing in Arctic Village, Old Crow, Venetie, and, to a lesser extent, Fort Yukon. Settlement into villages meant that hunters from Stevens Village, Birch Creek, Beaver, and eventually hunters from Fort Yukon and Chalkyitsik, often needed to travel considerable distances to access migrating caribou. Circle residents occasionally benefitted during times when caribou herds migrated close to the community. After settlement into villages, inhabitants of Fort Yukon, Beaver, and the Black River area continued to travel long distances to hunt caribou. However, hunters from Beaver, Birch Creek, Chalkyitsik, Circle, and Stevens Village became more opportunistic, hunting only sporadically during the times when caribou were locally available (Caulfield 1983).

During the latter half of the 20th century, caribou were known to be “the centre of economic life” for the Arctic Village Neets'aai and the same can be said for the Vunta Gwich'in people inhabiting the community of Old Crow, Yukon Territory (McKennan 1965:31; Acheson 1977). Caribou were often harvested by Fort Yukon residents when trapping and hunting on the Porcupine River (Hadleigh-West 1963; Schneider 1976; Caulfield 1983). Caribou meat was also consistently given to Fort Yukon households by Venetie and Arctic Village households (Nelson 1973; Pedersen and Caulfield 1980; Caulfield 1983; Sumida 1989). For residents of communities established in locations proximate to the contemporary migratory range of the Porcupine caribou herd, such as Arctic Village and Venetie, caribou use remains primary in importance.

Using ethnographic data from the current research and accounts from past research, the following section attempts to outline the complex and constantly shifting patterns of accessibility to caribou for Yukon Flats residents from historical to contemporary times. This is followed by an analysis of contemporary harvest strategies, processing, and distribution of caribou meat. It should be qualified that the ethnographic results

presented here are limited to interviews with Beaver, Chalkyitsik, Fort Yukon, and Venetie hunters. The communities of Venetie and Arctic Village have the greatest access to caribou in the region. Only 2 Venetie hunters were interviewed and ethnographic information about caribou from that community is likely underrepresented here. Arctic Village was not a participating community and is not represented here.

Historical Caribou Migration Patterns, Hunting Locations and Community Access

Shifting seasonal caribou migration patterns determine caribou accessibility for Yukon Flats hunters. Consequently, an overview of historical and contemporary caribou herd migration patterns is essential to understanding caribou subsistence use patterns in Yukon Flats communities.

It is difficult to speculate on the migration patterns of caribou and their availability to people inhabiting the Yukon Flats prehistorically, but the results of this research indicate that caribou once traveled the region more extensively than they do today and that caribou were more heavily used by western Yukon Flats residents during the first half of the 20th century than they are in contemporary times.

Yukon Flats hunters have traditionally hunted caribou from both the Fortymile and Porcupine herds. Many of the descriptions of caribou use and access provided by respondents in this study leave unclear specific identification of the herd being discussed. The same can be said for many of the reports of past researchers. Also historical accounts are complicated by the fact that the wintering ranges of the Fortymile and Porcupine herds once overlapped (Skoog 1968). Nevertheless information specific to each herd was sometimes provided by respondents and in past reports (Nelson 1973; USDOI 1974; Schneider 1976; Acheson 1977; Caulfield 1983; Sumida 1988; Sumida 1989; Sumida and Andersen 1990). An attempt is made here to separate the analysis of herd migration patterns, hunting areas, and community access by specific caribou herd.

Historical Fortymile Caribou Herd Migration Patterns, Hunting Locations, and Community Access

Respondent comments and past reports suggest that Fortymile caribou once migrated through locations spanning the entire distance of the Yukon River corridor within the Yukon Flats (Skoog 1956; Nelson 1973; USDOI 1974; Acheson 1977; Schneider 1976; Caulfield 1983; Sumida 1988; Sumida 1989; Sumida and Andersen 1990). Skoog (1956) reported that during the 1920s the Fortymile herd's range extended into parts of the Yukon Flats as far north as the northern edge of the Flats, northeast to the headwaters of the Little Black and Porcupine rivers, and as far west as Rampart on the Yukon River. An elder from Beaver reported that during the 1940s caribou could be observed and hunted in places along the Yukon River in the direct vicinity of Beaver: "In the '40s we used to see [caribou] all day long; they would be crossing, downriver, 'cause they used to let us out of school to watch the caribou." The elder recalled that his father suspected that most of the caribou that traveled through the Beaver area at this time were from the Fortymile herd. Caribou also migrated near Stevens Village, and Birch Creek (Skoog 1956; Sumida and Alexander 1985). During the 1930s–1940s, large numbers of caribou migrated through the area around Stevens Village, crossing the Yukon River downriver near Waldron Creek and then moving farther south into the White Mountains (Schneider 1976; Sumida 1988). Elders from Stevens Village told of following the caribou migrations and traveling long distances to hunt them (Sumida 1988). Similarly, Birch Creek residents occasionally had the opportunity to harvest caribou from the Fortymile herd when they migrated toward the White Mountains to calving grounds near the southern boundary of the Yukon Flats National Wildlife Refuge (USDOI 1974, Caulfield 1983).¹⁶ Caulfield 1983) reported that caribou frequently migrated close to Fort Yukon during the 1930s, giving residents easy access and an elder from Fort Yukon told of times when caribou migrated as far downriver as Fort Yukon itself and remembered that many years ago caribou could even be harvested "right in town." These observations are contrasted with Osgood's (1936:35) comment regarding Fort Yukon residents circa 1932 that

16. We must also consider the possibility that caribou hunted by Birch Creek residents were from the White Mountains herd.

“caribou...do not come into the Flats proper, and consequently are killed only after extensive trips are made.”

During periods when caribou were not accessible to downriver communities such as Fort Yukon and Beaver, residents often traveled upriver to hunt. For example, a Beaver hunter recalled that his father had hunted Fortymile caribou in the vicinity of Charley River and Eagle. Pre-contact Gwich'in hunters inhabiting the vicinity of present-day Circle likely hunted and used caribou from the Fortymile herd during prehistoric times. Following settlement, residents of Circle, Chalkyitsik, Beaver, and Fort Yukon hunted caribou from the Fortymile herd along the Yukon River near Circle (Schneider 1976; Caulfield 1983). Schneider (1976) relayed an account of people from Circle taking a steamship to Eagle to hunt Fortymile caribou and Beaver residents formerly traveled the Yukon River between Circle and Eagle to hunt caribou when the Fortymile herd migrated through the area (Caulfield 1983; Sumida 1989). During these hunts, Beaver residents floated their caribou meat back downriver on makeshift rafts (Schneider 1976).

During the mid-20th century, Yukon Flats residents began to witness shifts away from familiar Fortymile herd migration patterns. Skoog (1956) reported that at this time the Fortymile herd declined in both size and range. However, some caribou continued to migrate through the Yukon Flats area during July and August (Shimkin 1951; McKennan 1965). In the 1950s, the Fortymile herd was known to cross the Yukon River near Circle (Skoog 1956). According to Schneider (1976:19), “Caribou were abundant in the area around Eagle and Circle–Central as late as the 1960s” and during that time continued to be harvested by residents of Circle and Fort Yukon. However, Caulfield reported that the migration pattern of the Fortymile caribou herd had generally shifted away from these portions of the Yukon River, limiting the access local hunters had formerly enjoyed:

Until the mid-1960s, the Fortymile caribou herd crossed the flats surrounding Medicine Lake and were taken along the Steese Highway near Central. Local residents have taken no significant numbers of caribou in the area since 1969. Only five caribou have been reported taken in the Circle/Central/Circle Hot Springs area since 1973. (Caulfield 1979:38)

Similarly, a 1974 report stated that the Fortymile herd was beginning to calve farther south and thus away from areas accessible to Birch Creek residents (USDOI 1974). In 1976, Schneider reported that Beaver residents no longer traveled upriver to hunt caribou and suggested that this may have been because the presence of caribou had become inconsistent and moose had become increasingly available in areas more easily accessible to Beaver.

Shifts in Fortymile caribou herd seasonal migration patterns can be attributed to large-scale herd declines occurring between the mid-1960s and mid-1970s (Valkenburg et al. 1994). Beginning in the early 1970s, the Fortymile caribou herd's range was reduced by more than 75% of its former range recognized in the 1920s (Gross 2009). Since the mid-1970s, the Fortymile caribou herd has generally continued to calve and rut far south of areas accessible to most residents of the Yukon Flats (Gross 2009).

Although the accounts summarized above suggest that Fortymile caribou herd migrations became increasingly unpredictable and sporadic beginning around the 1970s, caribou continued to be harvested by Yukon Flats residents when available. For example, Caulfield (1983) later reported that during the winter of 1981–1982, when caribou from the Fortymile herd migrated across the Yukon River, they were harvested extensively by Chalkyitsik, Fort Yukon, and Circle residents. In 1982, Fort Yukon residents also reported harvesting several caribou during spring and summer on the Yukon River between Fort Yukon and Circle (Caulfield 1983). Although Birch Creek residents occasionally harvested caribou from scattered groups of the Fortymile herd, residents informed Caulfield that large harvests of caribou had not occurred near the community since 1939–1940 (Caulfield 1983).

Historical Porcupine Caribou Herd Migration Patterns, Hunting Locations, and Community Access

Arctic Village and Venetie residents and their ancestors have long used caribou from the Porcupine herd, which inhabits northeastern Alaska and northwestern Yukon Territory, Canada. Historically, residents of the more southern and westerly communities, such as Chalkyitsik, Fort Yukon, Stevens Village, and Beaver have had access to Porcupine caribou during the herd's routine late summer migration away from northeasterly alpine tundra habitats and into wintering grounds in forested areas on the Yukon Flats (Sumida 1989; Caulfield 1983). The upper Porcupine River country is a Porcupine caribou herd migration corridor traditionally frequented by both Chalkyitsik and Fort Yukon residents as an important fall hunting location (Caulfield 1983). The Porcupine herd's main calving area is on the north slope of the Brooks Range; the herd's traditional wintering grounds are the upper drainages of the Porcupine and Pell rivers and south to the Ogilvie Mountains, Yukon Territory, Canada (Skoog 1968). Some Porcupine herd caribou are also known to winter in a broad expanse southwest and northeast of Arctic Village (PCMB 1989).

The southwestern portion of the Porcupine caribou herd's range once extended to the Chandalar and upper Hodzana river drainages, to within 40 miles of Beaver (Sumida 1989). Sumida (1989) reported that during the late 1950s and early 1960s, the Porcupine caribou herd often migrated through areas north of Beaver. At various times during the 1970s and 1980s, Beaver residents mentioned the presence of caribou, likely from the Porcupine herd, in the vicinity of the Government Road extending north from Beaver (Sumida 1989, Stephen R. Braund & Associates 2007). Stevens Village residents hunted caribou, possibly from the Porcupine, Central Arctic, or Western Arctic herds, which occasionally migrated near the Upper Hodzana River within travelling distance from the community (Sumida 1988).¹⁷

Nelson (1973) reported that caribou were sometimes pursued by Chalkyitsik residents in the spring and winter. An elder from Fort Yukon recalled that in the past, caribou crossed Salmon Fork and Black River near the location of Salmon Village, approximately 35 miles upriver from Chalkyitsik. The elder speculated that these caribou were of the Porcupine herd. Another elder from Fort Yukon, formerly a long-time resident of the upper Black River area, reported that on a couple of occasions during his life, caribou had migrated near his cabin on the confluence of the Black and Grayling Fork rivers. The elder recalled that in the 1950s he had harvested several caribou near "Birch Hill" and said that Chalkyitsik hunters and other inhabitants of the Black River watershed also harvested caribou occasionally in this location.

An elder from Fort Yukon reported that decades ago, the Porcupine herd annually crossed the upper Porcupine River near Canyon Village as well as locations on the Porcupine River near John Herbert Village and Old Village. Nelson (1973) reported a history of Chalkyitsik residents attempting to hunt caribou in the fall when the Porcupine herd crossed the Porcupine River. When word of the caribou crossing spread to Chalkyitsik, hunters traveled by motorboat down the Black River to its confluence with Porcupine River. From there, Chalkyitsik residents headed up the Porcupine River searching the river corridor for caribou (Nelson 1973).

Due to this earlier herd migration pattern, most caribou hunting conducted by Fort Yukon residents occurred near Canyon Village or Old Rampart when the Porcupine herd was crossing the Porcupine River (Caulfield 1983; Sumida and Andersen 1990). An elder from Fort Yukon who formerly lived in Canyon Village recalled that his home was "right in the heart" of the Porcupine caribou migration pattern. Another elder from Fort Yukon recalled that in 1962, caribou "were everywhere around Canyon

17. Stevens Village residents also hunted an isolated herd of caribou that was sometimes found in the Ray Mountains and that traveled up the Dall River, around Dall Mountain, and into the Kanuti Flats (Sumida 1988). Sumida (1988) suggested that these caribou were possibly from the Western Arctic herd.

Village—they came right into the village—the area was covered with caribou.” The elder said that people “shot many and made a big cache ... we had no food problems that year.” Following the harvest, word was sent to Fort Yukon and many hunters then traveled up Porcupine River and harvested caribou as well. The elder said that when her family used to live on upper Porcupine River at Canyon Village, they relied almost completely on caribou for meat.

From as early as the 1960s, Porcupine caribou became less consistently accessible to Fort Yukon and Chalkyitsik hunters near their traditional caribou hunting areas along the Porcupine River (Caulfield 1983). In the 1970s, it was reported that the Porcupine herd seldom entered the Yukon Flats and rarely migrated far enough south to cross the northern boundary of the Yukon Flats National Wildlife Refuge (Nelson 1973, USDOI 1974). A Fort Yukon elder explained that today, most caribou in the region are found “way up Chandalar [River] and by Arctic Village,” areas much more inaccessible to Fort Yukon residents than the upper Porcupine drainage.

Similarly, Beaver residents no longer witness caribou migrations from either the Fortymile or Porcupine herds near their community.

Caribou don't come around here no more, used to when I was a little kid. We used to watch caribou eat around our camp. Twenty miles that way, way down river, I grow up in that camp ... winter I watch the caribou eat way out there, just eat away. Dig snow and eat the grass. No caribou for many years.

The declining accessibility to Porcupine herd caribou for Yukon Flats residents over the second half of the 20th century resulted from northeasterly shifts in Porcupine herd migration patterns. Acheson (1977) reported the bulk of the Porcupine caribou herd was concentrated near the Porcupine River headwaters, Yukon Territory. The Porcupine herd reportedly remained in this location during winter and then migrated around the river basin during the spring, making them readily accessible to residents of Old Crow (Acheson 1977). A 1989 Porcupine caribou herd range map limited the presence of Porcupine herd caribou in the Porcupine River drainage to areas within the Yukon Territory, Canada, east of the international boundary (PCMB 1989).

One possible cause for migration shifts is the increasing growth in woody shrub vegetation around the Yukon Flats region; caribou often prefer open tundra and forest. Several hunters from the participating communities observed the Yukon Flats area becoming increasingly “more brushy” over the course of their lifetimes. Caulfield (1983) reported Yukon Flats residents observed caribou migrations decline in tandem with a large-scale growth in dense vegetation. Venetie residents observed that areas south and west of the community had become “too brushy” for caribou feeding habitat (Caulfield 1983:195).

Changes to caribou habitat as a result of wildfires in the region might also be a cause of shifting migration patterns. For example, an elder from Fort Yukon, who lived most of his life on the Black River, said that wildfires in the area had destroyed caribou browse and had caused caribou to shift their migration patterns out of the area. The elder said that in the upper Porcupine and Black rivers regions there used to be “caribou moss” all over but that wildfires had destroyed it, thus forcing the caribou to move farther upriver, above Old Crow. Corroborating these observations, Nelson (1973:113) reported that even though caribou seldom entered the low-lying forested areas of the region in the first place, changes to their habitat due to wildfires had made their occurrence increasingly rare:

... Within the last few decades, forest fires have burned much of the territory north of the Black River, and the resultant lack of food plants has ended these uncommon appearances. In fact, caribou are so rare in this area that few of today's active adults have ever hunted them.

More recent scientific evidence supports the above reports of negative impacts on caribou habitat due to fire-caused terrestrial lichen reduction, reduction of forest cover leading to deeper snow conditions, and increasing deadfall debris obstructing caribou movement (Joly et al. 2003).

Contemporary Caribou Migration Patterns, Hunting Locations, and Community Access

The decline in use of caribou for most Yukon Flats communities can be attributed to the shifts in the migration patterns of the Porcupine and Fortymile caribou herds described above. However, Porcupine caribou continue to be consistently accessible to Arctic Village and Venetie residents, primarily during winter migrations to the upper Chandalar river drainage and other southern Brooks Range foothills locations (Caikoski 2009).

For Venetie residents, caribou continue to be an important subsistence resource. Due to its location on the northern fringes of the Yukon Flats, inside the transitional ecotone between boreal forest and the arctic tundra, Venetie is within proximity to excellent caribou habitat. A Venetie hunter said that caribou migrated as far south as Marten and Brown Grass lakes, approximately 35 miles north of Venetie. The hunter said that caribou hunting usually always takes place during the winter by snowmachine. Caulfield (1983) reported that Venetie hunters would sometimes travel to Arctic Village to hunt when caribou are not available locally. Venetie hunters noted that this remains a common practice today.

Despite a history of intermittent use, Beaver, Stevens Village, and Birch Creek residents reported that they no longer hunt caribou outside of occasionally opportunistic harvests. As late as 1989, Sumida (1989) reported that Stevens Village residents searched the hills northwest of the community for caribou, but the current research found no other evidence of contemporary caribou hunting effort or use by Stevens Village residents (Stevens Village residents reported no attempts to harvest caribou in 2008–2009 or 2009–2010, and no ethnographic interviews were conducted in Stevens Village).

Some Chalkyitsik hunters reported a continuing occurrence of sporadic caribou migrations into the upper Black River drainage. A Fort Yukon hunter reported that, during the fall of 2008, caribou were found on the Salmon Fork River and 2 or 3 were killed. The Fort Yukon hunter believed that caribou harvested in 2008 had migrated in a southerly direction from the Porcupine River area. Similarly, Caulfield (1983) reported that caribou were harvested by Chalkyitsik residents near the headwaters of the Salmon Fork River and Grayling Fork River in fall and winter during his research. A Chalkyitsik hunter reported that Chalkyitsik residents “used to hunt caribou when they used to come around here, but they don’t come anymore.” Caulfield (1983) reported that, in the spring of 1982, caribou migrated to a location directly beside the community of Chalkyitsik. Several caribou were harvested during that time, but such a migration is a rare occurrence (Nelson 1973; Caulfield 1983).

A Fort Yukon hunter explained that residents of his community have never relied extensively on caribou as a subsistence resource because of their inaccessibility. Nevertheless, Fort Yukon hunters historically pursued Porcupine caribou when they crossed the Porcupine River in late August–September during their migration to southern wintering areas (Caulfield 1983; Sumida and Andersen 1990). As late as 1990, Sumida and Andersen reported that Fort Yukon hunters could expect to encounter caribou “along a 70-mile stretch of the middle Porcupine River from Graphite Lake to an area near the United States border with Canada” (1990:31). Stephen R. Braund & Associates (2007) provides recent maps of Fort Yukon residents’ contemporary caribou hunting locations.

Whereas caribou seem to have always inhabited the Porcupine River corridor above Old Crow and consistently migrated through the lower portions of the corridor on the United States’ side of the international boundary, hunters described a recently occurring northeasterly upriver shift in the migration pattern of the Porcupine caribou herd. Local observations of this pattern were also reported by Stephen R. Braund & Associates (2007). Several hunters said that during the last decade or so Porcupine caribou can be found above the community of Old Crow and near the headwaters of the Porcupine River. A Fort Yukon hunter observed that each year the herd was “crossing farther and farther up river.” Similarly, other Fort Yukon hunters reported that the Porcupine caribou herd had shifted its migration to the headwaters area in the Yukon Territory, Canada, making a hunt by Yukon Flats residents time- and fuel-intensive. Yukon Flats Gwich’in of United States citizenship are legally allowed to hunt caribou in

Canada provided they are also registered in Old Crow, Yukon Territory as a Vuntut Gwich'in tribal member. Some hunters stated that this was an option that they had pursued or considered pursuing, but hunters found the idea of hunting caribou in such distant locations unappealing. These hunters spoke of times when the Porcupine caribou herd consistently migrated toward southwest portions of the river drainage:

I've seen the hills just so full [of caribou] it would be about 3 days that they'd cross [the Porcupine River], just masses, I mean. Not just a few. I mean masses ...in the last fifteen or so years there has not been that mass of caribou.

Despite these observed declines in caribou migrations, several Fort Yukon hunters said that they, or people that they know, continue to travel the Porcupine River in search of caribou. A Fort Yukon hunter said that "every year people [from Fort Yukon] go up Porcupine for caribou." The hunter explained that caribou hunting usually occurs after moose hunting season "when they get word that caribou are crossing the river." A Fort Yukon hunter who occasionally pursues caribou on the Porcupine River estimated that approximately 20 people from Fort Yukon still hunt caribou on the Porcupine River each year. These hunters will usually harvest 6–10 caribou and sometimes a moose.

Regardless of these efforts, caribou hunting by Fort Yukon hunters has declined over recent years because of increased fuel costs and inconsistencies in the caribou migration patterns. One Fort Yukon hunter said that shifting migration patterns have created a situation where the return on the investment in resources needed to participate in a caribou hunt on the upper Porcupine River is too low. The hunter said that the presence of caribou has become too sporadic and unpredictable to make a hunt worth the costs, and that, in the past, the return on effort and resources invested was much greater:

I haven't gone up there [to hunt caribou] in at least 5 years Just because most of the time you go and sit there for 2 weeks and you might not get a whole bunch, where before it was almost like going grocery shopping.

The hunter said that in years past, Fort Yukon hunters could stay in cabins on the upper Porcupine River or camps near the Canadian border where they could "hunt caribou right from ... camp farther up and just pick them off as they crossed," but "lately I haven't hunted caribou because they've been crossing so far up into Canada and that's like a 3-barrel-of-gas trip." The hunter said that "nowadays, the caribou are running way above Old Crow" and that they only occasionally migrate farther downriver and when they do, the numbers are much fewer than in the past:

At the border, where we normally hunt, there's just little ragtag groups, you know, 5, 10 of them running here and there, where before you could sit by the riverbank all day and just watch 'em by the thousands cross the river there, and now you don't even see that anymore.

As an adaption to these circumstances, the hunter reported that rather than hunt caribou on the Porcupine River, he had recently made a practice of traveling to Venetie to hunt caribou, especially if he did not harvest a moose locally. Similarly, other Fort Yukon hunters also reported occasionally traveling to Venetie and Arctic Village as an alternative to caribou hunting on the upper Porcupine River.

Contemporary Caribou Hunting Effort and Harvest Strategies

Most contemporary caribou hunting by residents is pursued by snowmachine during the winter months or by motorboat when hunters search the Porcupine River for a crossing herd (Stephen R. Braund & Associates 2007). Fort Yukon residents primarily use motorboats for caribou hunting (Stephen R. Braund & Associates 2007). Snowmachine hunting is practiced by residents of Venetie and Arctic Village, and by residents of other Yukon Flats communities who travel to those communities for caribou hunting activities. A Venetie hunter said that Venetie people usually prefer to hunt caribou in winter due to the ease of movement provided by snowmachines.

Whereas once it was necessary for hunters to set out across the land in search of caribou herds, modern communication technology now allows knowledge of caribou presence to be announced by telephone or the Internet across regional communities. For example, a Fort Yukon hunter said his family has traditionally relied upon Old Crow relatives for information about caribou migrations. Similarly, a Venetie hunter explained that even though caribou do become available near Venetie, most caribou harvests by Venetie residents usually occur when relatives from Arctic Village inform Venetie hunters that caribou are present. In these instances, Venetie hunters are invited by Arctic Village residents to travel to the community for caribou hunting. The hunter said Venetie residents sometimes harvest caribou that migrate to a location about halfway between the 2 communities. However, the hunter explained that he preferred to travel farther north to Arctic Village for hunting because caribou are much more abundant there:

I like to go to Arctic [Village] because, you know, you got good pickings up there. You can go and you can get the one that you want, you know, the one that shakes like that when it walks, 'cause you know, that's...nice good fat rump on that one. Then you can take your time, you know, cause when you're out halfway between Venetie and Arctic you wanna be in and out, you know, cause it's gonna get dark and get cold.

The hunter briefly described some aspects of caribou harvest strategies in Arctic Village:

...a lot of people in Arctic [Village], when they go up and get caribou they, they'll go up to Old John Lake and get caribou, but they won't bring it back, you know, 'cause they'll put it way up in their cache...and it dries out and after that when it get winter they just get their snowmachines and go over there and pick up their ... caribou ...

Some respondents recalled a traditional Gwich'in taboo against killing the first pulse of caribou passing through an area during a migration. An elder from Beaver reported a traditional practice of letting the first group of caribou pass and stated: "They don't kill the first bunch [of caribou], they kill the second bunch." Caulfield (1983) reported that in 1981 the Venetie Tribal Council held a community meeting in which a consensus was reached to abstain from caribou hunting until a larger number of caribou had passed through the area; this was reportedly done because of a traditional law that asked for the first pulse of caribou to always be allowed to pass before hunting began in order to ensure that greater numbers of caribou would follow the lead pulse along the same path.

Although interview respondents did not make any distinctions between the sex of caribou targeted for harvest, sex selection has been reported to be a factor in regional caribou hunting strategies. McKennan (1965) reported that Yukon Flats hunters preferred to harvest bull caribou during July and August because they had better meat and fat than cows at this time. Caulfield (1983) reported that in fall bull caribou are desired by Yukon Flats hunters because they have higher fat than cows and their hides are in prime condition. Caulfield (1983) reported that from October to February, Yukon Flats hunters preferred to harvest cows because they become fatter than bulls and because bull caribou become undesirable with the onset of the October rut.

Processing, Preservation, and Uses of Caribou

The use of caribou and its various parts by Yukon Flats residents is very similar to that of moose (McKennan 1965). All of the meat and bones are used. Caribou meat is frozen or dried for preservation and bones are boiled for soup. Caribou heads are used as moose heads: roasted over the fire or boiled for soup (Caulfield 1983). Caulfield (1983) reported that caribou intestines are considered delicacies because of their fat, and that parts of the stomach are used as a container for holding fat and/or blood to be used in soups. Bones are also reported to be used for marrow soup and hooves are said to be boiled for soup occasionally (Caulfield 1983). It is likely that the organ meats of caribou are also saved, as they are for moose. A Beaver hunter said that people in Arctic Village are known to boil caribou hooves in order to make "jello" from them.

A Fort Yukon hunter reported that he prefers to smoke and dry caribou meat rather than freeze it, but that he often cooks the ribs. The hunter said that his normal practice is to dry caribou meat for winter consumption. He cuts the meat into thin strips and then hangs it indoors and lets it sit for about a week. The hunter said that when he makes caribou dry meat, many people want some and that he ends up giving half of it away. The hunter said that caribou dry meat is popular and well-liked in Fort Yukon.

Caribou skin was traditionally used in the past for clothing, shelter, and as a component of various tools and hunting implements. Caulfield (1983) reported that caribou hides were tanned and used for clothing, crafts, and sleeping pads. Caribou leg skins were also said to be tanned for winter boots (Caulfield 1983). Regarding the practices of Chalkyitsik residents, Nelson (1973:114) reported that “caribou parkas remained in use along the Black River until the 1940s, but now caribou-hide clothing has disappeared entirely.” An elder from Fort Yukon recalled that her mother used to tan caribou skin but said that this was no longer done. Another hunter from Fort Yukon said that he preferred caribou skin over moose skin as a camp mattress: “Caribou, I’m more prone to keep the hides on ‘em [over moose]...’cause they’re smaller, they’re warmer and that’s just traditionally what we used for mattress.” The hunter said that a caribou skin mattress was made by thoroughly scraping the underside of the skin, drying out the skin, and then using it in simple rawhide form. The hunter said that he only keeps hides from caribou harvested in fall because during that time they are in prime condition.

Sharing and Distribution of the Caribou Harvest

It is probable that a caribou meat trading network between the southerly established and more northerly established Gwich’in bands has been active since pre-contact. According to USFWS (2008:I-4), “In 1863, Archdeacon McDonald of Fort Yukon observed that the Chandalar Gwich’in were important providers of caribou meat for the residents of Fort Yukon.”

Research conducted during the second half of the 20th century confirmed a continuing practice of Yukon Flats residents obtaining caribou meat from Arctic Village and Venetie hunters through barter and gift giving (Nelson 1973; Pedersen and Caulfield 1980; Caulfield 1983; Sumida 1989). Nelson (1973) reported that most of the caribou meat Chalkyitsik hunters used came from Venetie or Arctic Village. Pedersen and Caulfield (1980) reported that it was considered customary by Arctic Village residents to barter caribou with relatives in other communities, especially Fort Yukon and Venetie, in trade for Chinook salmon and moose meat. Beaver residents were also known to customarily exchange Chinook salmon for caribou meat with Arctic Village residents (Sumida 1989). Additionally, Caulfield (1983) reported that residents of southerly located Yukon Flats communities sometimes paid the expenses (e.g., fuel, oil, ammunition) of an Arctic Village caribou hunter in exchange for meat being sent to the other community.

Sumida and Andersen (1990) reported that 64% of surveyed Fort Yukon residents received caribou meat from others and only 10% shared caribou meat, implying that most of the caribou used in Fort Yukon was obtained as gifts from other communities. The 2008–2009 survey data also imply sharing of caribou among Yukon Flats communities. As seen in Table 16, in 2008–2009, 65% of Venetie households gave away caribou, while only 18% of Venetie households attempted to harvest caribou. This survey finding, alongside ethnographic information discussed below, implies that Venetie households have often provided much of the caribou used by residents of the participating communities with rates of caribou harvest lower than Venetie’s.

The information from past research presented above reveal an active network of caribou barter and gift giving in several of the participating communities. This also was corroborated by the ethnographic research, which further clarified that the exchange of caribou meat among the various Yukon Flats communities is an important customary and traditional practice.

Several respondents from Beaver and Fort Yukon said they received caribou meat from Arctic Village or Venetie. Additionally, Venetie hunters said they received caribou meat from Arctic Village. A Venetie

hunter reported that most of the caribou meat used by Venetie residents is often given to them by residents of Arctic Village. A Fort Yukon hunter said that Venetie residents often bartered caribou meat for other items coming from Fort Yukon, like fish or geese. Another Fort Yukon resident said that caribou meat from Arctic Village is often exchanged from family to family among relatives in both Fort Yukon and Venetie. The respondent said that “a lot of caribou meat goes around, especially dry meat.”

Porcupine Herd Caribou in the Future

Although Porcupine caribou remain regularly accessible to Venetie and Arctic Village hunters, there is concern from respondents about the future of the herd. For example, a Venetie hunter reported that caribou populations in the Venetie area are doing well today but expressed concern that the health of the Porcupine caribou herd now depends upon maintaining their protection in ANWR. The hunter expressed concern that “the oil companies will get into to ANWR at some point.” The hunter said that the oil companies continue their attempts to obtain development approval which concerns the people of Venetie and Arctic Village who rely on caribou. The hunter was greatly concerned about potential oil spills, negative effects from well drilling, and water contamination. For similar reasons, the hunter also expressed concern about proposals to develop natural gas on the Yukon Flats. The hunter said that Venetie and Arctic Village residents are very worried about the negative effects oil and gas development may have on the health of caribou populations.

DISCUSSION: TRENDS IN CARIBOU HARVESTS AND ETHNOGRAPHIC ANALYSIS

As can be viewed in tables 16 and 17, when compared to 2008–2009, caribou harvests by households in the 7 participating communities increased by 125% during the 2009–2010 regulatory year (20 animals in 2008–2009 to 45 animals in 2009–2010), providing a 79% increase in pounds of caribou meat per person for the area as a whole (2.9 lb per person in 2008–2009 to 5.2 lb per person in 2009–2010). The bulk of this increase can be attributed to a large increase in caribou harvests by Fort Yukon hunters from 2008–2009 (3 animals) to 2009–2010 (35 animals). In contrast, reported caribou harvests by Venetie hunters dropped significantly (63%) in 2009–2010 (6 animals) compared to 2008–2009 (16 animals). This represents a 79% decrease in pounds of caribou meat harvested per person by Venetie hunters in 2009–2010 (14.1 lb per person in 2008–2009 to 2.9 lb per person in 2009–2010).

Because no ethnographic research with Venetie or Fort Yukon residents was conducted subsequent to the 2009–2010 regulatory year, this report lacks information on the circumstances which contributed to these changes in caribou harvests between the 2 study years. The available ethnographic results from the area inform us that, aside from Arctic Village and Venetie, Yukon Flats communities no longer view caribou as a reliable subsistence resource. Shifting caribou herd migration patterns seem to trend toward limited accessibility for most Yukon Flats hunters. Thus, we can speculate that the increase in harvests by Fort Yukon households resulted from caribou migration patterns during 2009–2010 which provided accessibility. Nevertheless, harvest location data for 2009–2010 show most of the caribou harvests occurred in segments of GMUs 25A and 25D, which are in the direct vicinity of the community of Venetie (see Figure 22). Thus, it is possible that the comparatively low caribou harvests reported by Venetie households for 2009–2010 are the result of underreporting harvests on the survey form or possibly the result of a sampling error.

Climate change may or may not have had an effect on caribou accessibility, but concern was expressed by some respondents that future colonization of tundra habitat by woody shrubs could lead to a complete absence of caribou in the area. Based on the concerns expressed, it is recommended that monitoring of tundra conditions occur on a consistent annual basis in order to gain a more complete understanding of the effects climate change has on caribou abundance and movements in northeast Alaska.

The results above provide limited information for assessing long-term trends in the subsistence harvest and use of caribou by Yukon Flats communities. Annual harvest survey research remains necessary in order to develop a more accurate understanding of caribou harvest and use by Yukon Flats communities.

CHAPTER 6: BLACK AND BROWN BEARS

Since the pre-contact era, both black bears and brown bears have been important subsistence resources for Yukon Flats communities (McKenna 1965; Nelson 1973; Caulfield 1983; Sumida 1988). When compared to the information available from the past, the harvest survey findings for the 2008–2009 and 2010 regulatory years depict many changes in the harvest and use of bears on the Yukon Flats. Many of the changes that have occurred have been explored and explained through the ethnographic research conducted during this study. Following the presentation of harvest survey results, the survey topics will be contextualized in a detailed presentation of ethnographic results.

Estimated black and brown bear harvests and usable pounds of black bear meat per community and per household are reported below. It is important to note, however, that the harvest survey did not make an effort to differentiate between harvested bears that were used for food and harvested bears disposed of only for predator control purposes and not used for food (see “Ethnographic Findings: Contemporary and Historical Harvest and Uses of Bears on the Yukon Flats” and Chapter 7 for further discussion).

SURVEY FINDINGS: BEAR HARVEST AND USES, APRIL TO MARCH, 2008–2009 AND 2009–2010

Participation in the Subsistence Harvest and Uses of Black Bears

As shown in Table 22, residents of all 7 participating communities hunted, harvested, and used black bears during the 2008–2009 regulatory year. In 2008–2009, 13% of households reported using black bears, 11% attempted to harvest black bears, 4% reported harvesting black bears, 9% received black bears, and 2% gave away black bears to other households.

The estimated harvest of black bears in 2008–2009 by the participating communities was 26 animals (Table 22). Fort Yukon was the most successful community in harvesting black bears, with hunters harvesting an estimated 546 lb of black bear meat. Fort Yukon hunters harvested 6 black bears, or 1 lb of black bear meat per person in the community. In contrast to Fort Yukon, as a result of relatively small population size, at both Birch Creek and Circle slightly lower levels of harvest (5 black bears total for Circle and 4 black bears total for Birch Creek) translated to significantly larger amounts of black bear meat per person (14 lb per person in Birch Creek and 5 lb per person in Circle households).

Circle reported the largest percentage of households that attempted to harvest black bears (70%), with 10% of households successfully harvesting black bears, and 95% of households reporting use of black bears, which is the largest percentage of households reporting use. The level of hunt participation and use of black bears by Circle households is relatively high when compared to the other 6 communities. For the remaining 6 communities, 11% (Venetie) to 4% (Fort Yukon) of households attempted to harvest black bears, 10% (Birch Creek) to 2% (Fort Yukon) harvested black bears, and 14% (Venetie) to 2% (Fort Yukon) reported use of black bears. Overall, Fort Yukon had the lowest level of household participation in the attempted harvest, harvest, and use of black bears. As shown in Table 23, residents of Beaver, Birch Creek, Chalkyitsik, Fort Yukon, and Venetie hunted, harvested, and used black bears during the 2009–2010 regulatory year. For the participating communities combined, 11% of households reported using black bears, 10% attempted to harvest black bears, 10% reported harvesting black bears, 5% received black bears, and 6% gave away black bears to other households.

The estimated harvest of black bears by the participating communities was 49 animals (Table 23). Fort Yukon hunters harvested 31 black bears, providing an average of 7 lb of black bear meat to each person in the community. In contrast to Fort Yukon, as a result of relatively small population size, at Beaver, Birch Creek, and Chalkyitsik, slightly lower levels of harvest (4 black bears for Beaver, 5 black bears for Birch Creek, and 5 black bears for Chalkyitsik) translated to significantly larger amounts of black bear meat per person (10 lb per person in Beaver, 16 lb per person in Birch Creek, and 15 lb per person in Chalkyitsik).

Birch Creek reported the largest percentage of households that attempted to harvest black bear (33%), the largest percentage of households that successfully harvested black bears (33%), and the highest level of use, with 33% of households reporting the use of black bears. Approximately 13% of Beaver, Chalkyitsik, and Fort Yukon households used, attempted to harvest, and successfully harvested black bears (although Fort Yukon reported 12% of households successfully harvesting black bears, slightly less than Beaver and Chalkyitsik). Other than Circle and Stevens Village, which reported no harvest and use of black bears in 2009–2010, Venetie households reported the lowest level of participation, harvest, and use with only 8% using black bears, 5% reporting attempting to harvest black bears, and 5% successfully harvesting.

Participation in the Subsistence Harvests and Uses of Brown Bears

As shown in Table 24, 3% of households in the combined participating communities had at least 1 member who hunted brown bears in the 2008–2009 study year. In 2008–2009, 1% of households used brown bears. Of the communities that used brown bears, only Venetie households reported receiving brown bears (2%) and none reported giving brown bears away.

The estimated harvest of brown bears by the participating communities was 2 animals (Table 24). Both Circle and Venetie reported harvesting 1 brown bear each, providing an average of 1.4 lb of brown bear meat to each person in Circle and an average of 1 pound of brown bear meat to each person in Venetie.

Of the study communities, only residents of Circle, Fort Yukon, and Venetie hunted brown bears in the 2008–2009 regulatory year. Venetie reported the largest percentage of households attempting to harvest brown bears (8%). Of the communities with households that hunted brown bears, Circle reported the largest percentage of households that successfully harvested brown bears (3%). While 2% of Fort Yukon households attempted to harvest brown bears, 0% of households reported successfully harvesting.

As shown in Table 25, 3% of households in the combined participating communities had at least 1 member who hunted brown bears in the 2009–2010 study year and 3% had successful hunters. In 2009–2010, 4% of households used brown bears. Of the communities that used brown bears, all of them had households which reported receiving brown bears and giving brown bears away. Distribution of brown bears was most prevalent in Birch Creek with 13% of households receiving brown bears and 13% of households giving brown bears away.

In 2009–2010, the estimated harvest of brown bears by the participating communities was 16 animals (Table 25). Fort Yukon households reported harvesting 12 brown bears, providing an average of 3.9 lb of brown bear meat per person in the community. Birch Creek households reported harvesting 2 brown bears, providing an average of 9.1 lb of brown bear meat per person. Venetie households reported harvesting 1 brown bear, providing an average of 1 lb of brown bear meat to each person in Venetie.

Of the study communities, only residents of Birch Creek, Fort Yukon, and Venetie hunted brown bears in the 2009–2010 regulatory year. Birch Creek reported the largest percentage of households attempting to harvest brown bears (13%). Of the communities with households that hunted brown bears, Birch Creek also reported the largest percentage of households that successfully harvested brown bears (13%). At Fort Yukon 5% of households attempted to harvest brown bears and those 5% of households also reported successfully harvesting. Similarly, 2% of Venetie households attempted to harvest brown bears and 2% of households also reported successfully harvesting.

Table 22.—Levels of participation in the harvest and uses of black bears in Yukon Flats communities, 2008–2009.

Community	Participation of households					Estimated harvest						
	Use	Attempt	Harvest	Receive	Give	Amount		Pounds		95% confidence limits of total harvest		
						Total	Per household	Total	Per person	± percentage	Low	High
Beaver	11.1%	7.4%	7.4%	7.4%	7.4%	2.1	0.07	214.8	3.8	37.4%	1.3	3.0
Birch Creek	10.0%	10.0%	10.0%	10.0%	10.0%	4.2	0.20	420.0	13.5	35.5%	2.7	5.7
Chalkyitsik	4.5%	4.5%	4.5%	0.0%	0.0%	1.2	0.05	118.2	2.0	81.6%	0.2	2.1
Circle	95.0%	70.0%	10.0%	82.5%	10.0%	5.0	0.13	500.0	5.1	0.0%	5.0	5.0
Fort Yukon	2.1%	4.2%	2.1%	0.0%	0.0%	5.5	0.02	545.8	1.3	111.1%	0.0	11.5
Stevens Village	6.3%	6.3%	6.3%	0.0%	0.0%	2.8	0.13	275.0	4.3	111.3%	0.0	5.8
Venetie	14.3%	11.1%	6.3%	6.3%	3.2%	5.3	0.08	531.7	3.5	25.3%	4.0	6.7
All	13.0%	11.4%	4.4%	8.9%	2.2%	26.1	0.06	2,605.6	2.9	17.5%	21.5	30.6

Source ADF&G Division of Subsistence household survey, 2009.

Table 23.—Levels of participation in the harvest and uses of black bears in Yukon Flats communities, 2009–2010.

Community	Participation of households					Estimated harvest						
	Use	Attempt	Harvest	Receive	Give	Amount		Pounds		95% confidence limits of total harvest		
						Total	Per household	Total	Per person	± percentage	Low	High
Beaver	12.9%	12.9%	12.9%	3.2%	12.9%	4.4	0.13	438.7	10.0	28.8%	4.0	5.6
Birch Creek	33.3%	33.3%	33.3%	26.7%	33.3%	5.0	0.33	500.0	16.1	0.0%	5.0	5.0
Chalkyitsik	13.3%	13.3%	13.3%	6.7%	6.7%	4.8	0.27	480.0	15.4	67.7%	4.0	8.1
Circle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Fort Yukon	12.9%	12.9%	11.9%	5.0%	5.9%	30.6	0.15	3,059.4	7.0	41.1%	18.0	43.2
Stevens Village	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Venetie	7.8%	4.7%	4.7%	4.7%	1.6%	4.2	0.05	417.2	2.2	60.2%	3.0	6.7
All	10.9%	10.3%	9.8%	5.0%	5.8%	49.0	0.12	4,895.3	5.7	26.8%	35.8	62.1

Source CATG and ADF&G Division of Subsistence household survey, 2010.

Table 24.–Levels of participation in the harvest and uses of brown bears in Yukon Flats communities, 2008–2009.

Community	Participation of households					Estimated harvest						
	Use	Attempt	Harvest	Receive	Give	Amount		Pounds		95% confidence limits of total harvest		
						Total	Per household	Total	Per person	± percentage	Low	High
Beaver	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Birch Creek	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Chalkyitsik	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Circle	2.5%	2.5%	2.5%	0.0%	0.0%	1.0	0.03	141.0	1.4	0.0%	1.0	1.0
Fort Yukon	0.0%	2.1%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Stevens Village	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Venetie	4.8%	7.9%	1.6%	1.6%	0.0%	1.1	0.02	150.0	1.0	48.8%	1.0	1.6
All	0.9%	2.5%	0.4%	0.2%	0.0%	2.1	0.00	291.0	0.3	57.0%	2.0	3.2

Source ADF&G Division of Subsistence household survey, 2009.

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Table 25.–Levels of participation in the harvest and uses of brown bears in Yukon Flats communities, 2009–2010.

Community	Participation of households					Estimated harvest						
	Use	Attempt	Harvest	Receive	Give	Amount		Pounds		95% confidence limits of total harvest		
						Total	Per household	Total	Per person	± percentage	Low	High
Beaver	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Birch Creek	13.3%	13.3%	13.3%	13.3%	13.3%	2.0	0.13	282.0	9.1	0.0%	2.0	2.0
Chalkyitsik	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Circle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Fort Yukon	5.9%	5.0%	5.0%	1.0%	1.0%	12.2	0.06	1,725.5	3.9	65.6%	6.0	20.3
Stevens Village	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0	0.0	0.0%	0.0	0.0
Venetie	3.1%	1.6%	1.6%	1.6%	1.6%	1.4	0.02	196.1	1.0	105.9%	1.0	2.9
All	4.1%	3.3%	3.3%	1.3%	1.3%	15.6	0.04	2,203.6	2.6	51.8%	9.0	23.7

Source CATG and ADF&G Division of Subsistence household survey, 2010.

Timing and Location of Black Bear Harvests

The estimated harvest of black bears by the participating community by month in the 2008–2009 regulatory year is included in Table 26. The majority (51%) of black bear harvests (13 total) took place in summer, during the months of July and August, 9 black bears were harvested in the fall during the month of September, and 4 black bears were harvested in the spring during the month of May.

Table 26.—Estimated harvests of black bears by sex and month, Yukon Flats, 2008–2009.

Community	Estimated harvest by month													Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
Beaver	0.0	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1
Birch Creek	0.0	2.1	0.0	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2
Chalkyitsik	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Circle	0.0	0.0	0.0	1.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
Fort Yukon	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5
Stevens Village	0.0	0.0	0.0	1.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8
Venetie	0.0	1.1	0.0	0.0	1.1	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3
All	0.0	4.2	0.0	4.6	8.6	8.6	0.0	26.1						

Source ADF&G Division of Subsistence household survey, 2009.

Black bear harvest quantities by residents of the participating communities during the 2008–2009 regulatory year, organized by GMU and UCU, are summarized in Table 27. In Figure 23, harvest locations are color coded to reflect the range of harvests which occurred in each UCU of GMU 25. The majority of black bear harvests by the participating communities occurred in GMU 25D (76%). This was followed by 12% of the black bear harvest occurring in GMU 25C, and 12% of the black bear harvest locations being reported as unknown.

Table 27.—Estimated harvests of black bears by GMU, UCU, and community, Yukon Flats, 2008–2009.

Harvest location GMU/UCU	Estimated harvest by location and community								Total	Percentage
	Beaver	Birch Creek	Chalkyitsik	Circle	Fort Yukon	Stevens Village	Venetie			
Subtotal GMU 25C	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	11.5%
25C Y00-0601	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	7.7%
25C Y04-0401	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	3.8%
Subtotal GMU 25D	2.1	4.2	0.0	0.0	5.5	2.8	5.3	19.9	76.3%	
25D P01-1401	0.0	0.0	0.0	0.0	2.7	0.0	0.0	2.7	10.5%	
25D Y00-0101	1.1	0.0	0.0	0.0	0.0	2.8	0.0	3.8	14.7%	
25D Y00-0105	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	4.1%	
25D Y00-0106	0.0	0.0	0.0	0.0	2.7	0.0	0.0	2.7	10.5%	
25D Y03-0801	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.1	8.2%	
25D Y04-0901	0.0	4.2	0.0	0.0	0.0	0.0	0.0	4.2	16.1%	
25D Y05-1001	0.0	0.0	0.0	0.0	0.0	0.0	3.2	3.2	12.2%	
Unknown	0.0	0.0	1.2	2.0	0.0	0.0	0.0	3.2	12.2%	
Total	2.1	4.2	1.2	5.0	5.5	2.8	5.3	26.1	100.0%	

Source ADF&G Division of Subsistence household survey, 2009.

The estimated harvest of black bears by the participating community by month in the 2009–2010 regulatory year is included in Table 28. The majority (57%) of black bear harvests (28 total) took place in summer (June, July, and August), 14 black bears were harvested in the fall (September), and 7 black bears were harvested in the spring (April and May).

Table 28.—Estimated harvests of black bears by month, Yukon Flats, 2009–2010.

Community	Estimated harvest by month													Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
Beaver	0.0	0.0	0.0	1.1	1.1	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4
Birch Creek	1.0	3.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
Chalkyitsik	0.0	1.2	1.2	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8
Circle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fort Yukon	0.0	2.0	4.1	6.1	8.2	10.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.6
Stevens Village	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie	0.0	0.0	1.4	1.4	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2
All	1.0	6.2	7.7	11.0	9.3	13.8	0.0	49.0						

Source CATG and ADF&G Division of Subsistence household survey, 2010.

Black bear harvest quantities by residents of the participating communities, organized by GMU and UCU are summarized in Table 29. In Figure 24 harvest locations are color coded to reflect the range of harvests which occurred in each UCU of GMU 25.

The majority of black bear harvests by the participating communities occurred in GMU 25D (97%). This was followed by 3% of the black bear harvest occurring in GMU 25A.

Table 29.—Estimated harvests of black bears by GMU, UCU, and community, Yukon Flats, 2009–2010.

Harvest location GMU/UCU	Estimated harvest by location and community								Total	Percentage
	Beaver	Birch Creek	Chalkyitsik	Circle	Fort Yukon	Stevens Village	Venetie			
Subtotal GMU 25A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	2.8%
25A Y03-0501	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	2.8%
Subtotal GMU 25D	4.4	5.0	4.8	0.0	30.6	0.0	2.8	47.6	97.2%	
25D P00-1101	0.0	0.0	0.0	0.0	10.2	0.0	0.0	10.2	10.2	20.8%
25D P01-1401	0.0	0.0	0.0	0.0	6.1	0.0	0.0	6.1	6.1	12.5%
25D P02-1501	0.0	0.0	0.0	0.0	4.1	0.0	0.0	4.1	4.1	8.3%
25D Y00-0101	4.4	0.0	0.0	0.0	0.0	0.0	0.0	4.4	4.4	9.0%
25D Y00-0105	0.0	0.0	0.0	0.0	6.1	0.0	0.0	6.1	6.1	12.5%
25D Y00-0106	0.0	0.0	0.0	0.0	4.1	0.0	0.0	4.1	4.1	8.3%
25D P02-1501	0.0	0.0	1.2	0.0	0.0	0.0	0.0	1.2	1.2	2.5%
25D P02-1502	0.0	0.0	3.6	0.0	0.0	0.0	0.0	3.6	3.6	7.4%
25D Y03-0801	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	2.8%
25D Y04-0901	0.0	5.0	0.0	0.0	0.0	0.0	0.0	5.0	5.0	10.2%
25D Y05-1001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	2.8%
Total	4.4	5.0	4.8	0.0	30.6	0.0	4.2	49.0	100.0%	

Source CATG and ADF&G Division of Subsistence household survey, 2010.

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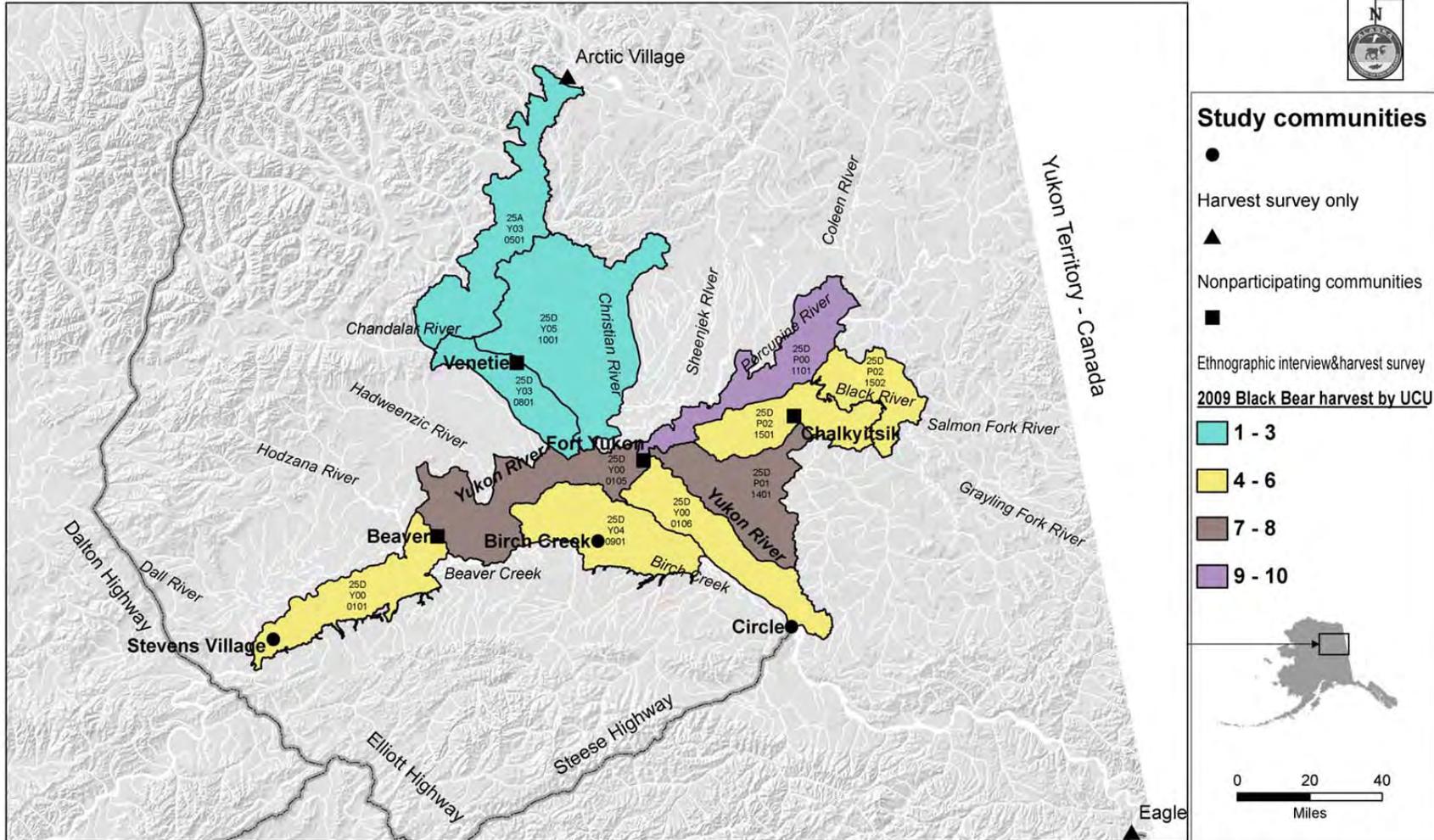


Figure 24.—Black bear harvest locations, by UCU, 2009–2010.

Timing and Location of Brown Bear Harvests

The estimated harvest of brown bears by the participating communities by month in the 2008–2009 regulatory year is included in Table 30. The brown bear harvested by a Venetie household was taken during the month of April. The brown bear harvested by a Circle household was taken during the month of August.

Table 30.—Estimated harvests of brown bears by month, Yukon Flats, 2008–2009.

Community	Estimated harvest by month													Total	
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk		
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chalkyitsik	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Circle	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Fort Yukon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stevens Village	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
All	1.1	0.0	0.0	0.0	1.0	0.0	2.1								

Source ADF&G Division of Subsistence household survey, 2009.

The majority of brown bear harvests by the participating communities occurred in GMU 25D (52%), as reported in Table 31. The remaining 49% of brown bear harvest locations were reported as unknown. In Figure 25 harvest locations are color coded to reflect the range of harvests which occurred in each UCU of GMU 25.

Table 31.—Estimated harvests of brown bears by GMU, UCU, and community, Yukon Flats, 2008–2009.

Harvest location GMU/UCU	Estimated harvest by location and community							Total	Percentage	
	Beaver	Birch Creek	Chalkyitsik	Circle	Fort Yukon	Stevens Village	Venetie			
Subtotal GMU 25D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	51.5%
25D Y03-0801	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	51.5%
Unknown	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	48.5%
Total	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.1	2.1	100.0%

Source ADF&G Division of Subsistence household survey, 2009.

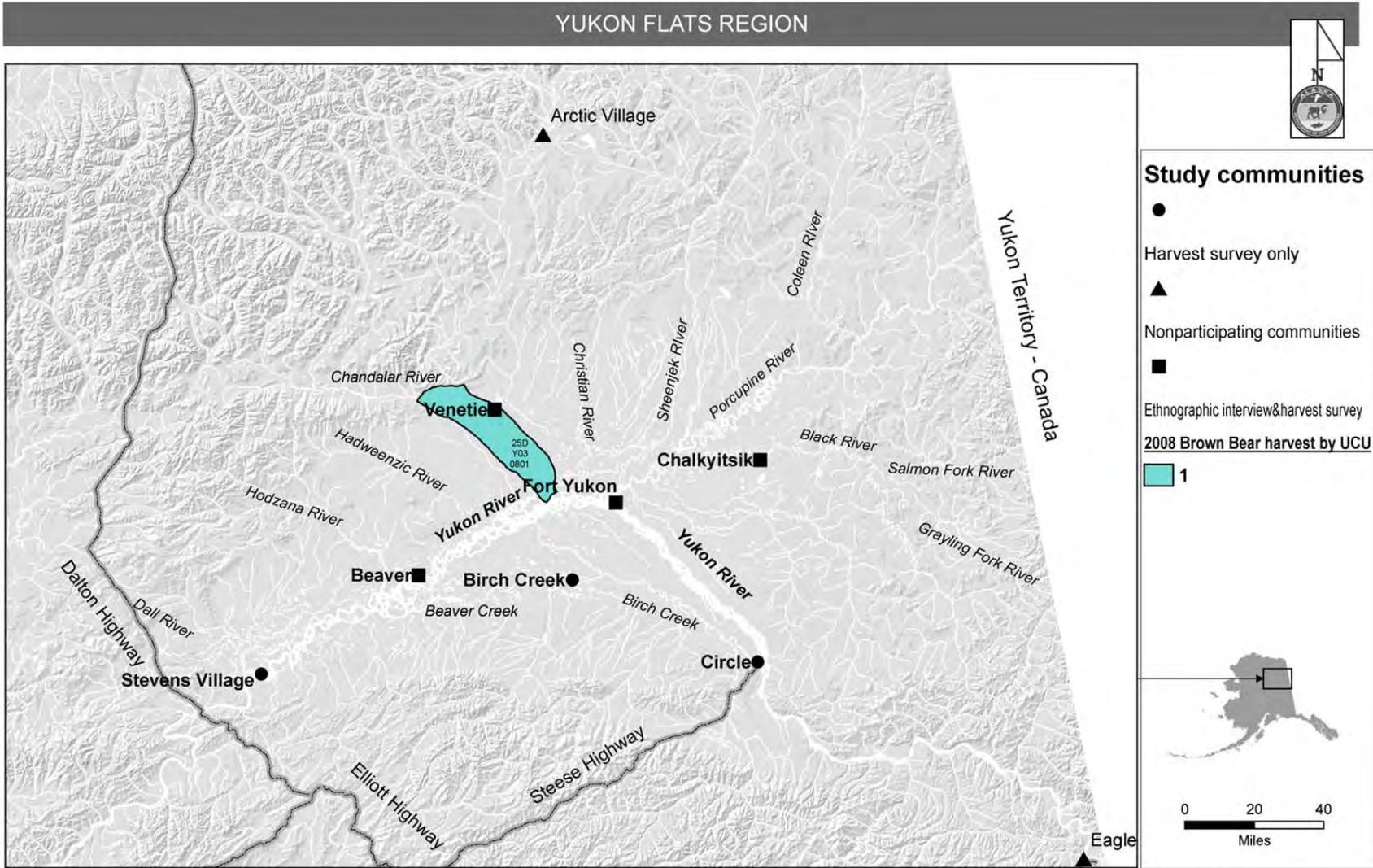


Figure 25.—Brown bear harvest locations, by UCU, 2008–2009.

The estimated harvest of brown bears by the participating community by month in the 2009–2010 regulatory year is included in Table 32. The majority (52%) of the 16 total brown bear harvests took place in fall during the months of September and October (8), 5 brown bears were harvested in the summer (June, July, and August), and 2 brown bears were harvested in the spring (May).

Table 32.—Estimated harvests of brown bears by month, Yukon Flats, 2009–2010.

Community	Estimated harvest by month													Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Chalkyitsik	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Circle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fort Yukon	0.0	0.0	2.0	2.0	0.0	6.1	2.0	0.0	0.0	0.0	0.0	0.0	0.0	12.2
Stevens Village	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
All	0.0	2.0	2.0	2.0	1.4	6.1	2.0	0.0	0.0	0.0	0.0	0.0	0.0	15.6

Source CATG and ADF&G Division of Subsistence household survey, 2010.

In 2009–2010, the majority of brown bear harvests by the participating communities occurred in GMU 25D (87%) (Table 33). This was followed by 13% of the brown bear harvest occurring in GMU 25A. In Figure 26 harvest locations are color coded to reflect the range of harvests which occurred in each UCU of GMU 25.

Table 33.—Estimated harvests of brown bears by GMU, UCU, and community, Yukon Flats, 2009–2010.

Harvest location GMU/UCU	Estimated harvest by location and community								Total	Percentage
	Beaver	Birch Creek	Chalkyitsik	Circle	Fort Yukon	Stevens Village	Venetie			
Subtotal GMU 25A	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	13.1%
25A P00-1401	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	13.1%
Subtotal GMU 25D	0.0	2.0	0.0	0.0	10.2	0.0	1.4	13.6	86.9%	
25D P00-1101	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	13.1%	
25D P02-1501	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	13.1%	
25D P03-1601	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	13.1%	
25D Y00-0105	0.0	0.0	0.0	0.0	4.1	0.0	0.0	4.1	26.1%	
25D Y04-0901	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	12.8%	
25D Y05-1001	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	8.9%	
Total	0.0	2.0	0.0	0.0	12.2	0.0	1.4	15.6	100.0%	

Source CATG and ADF&G Division of Subsistence household survey, 2010.

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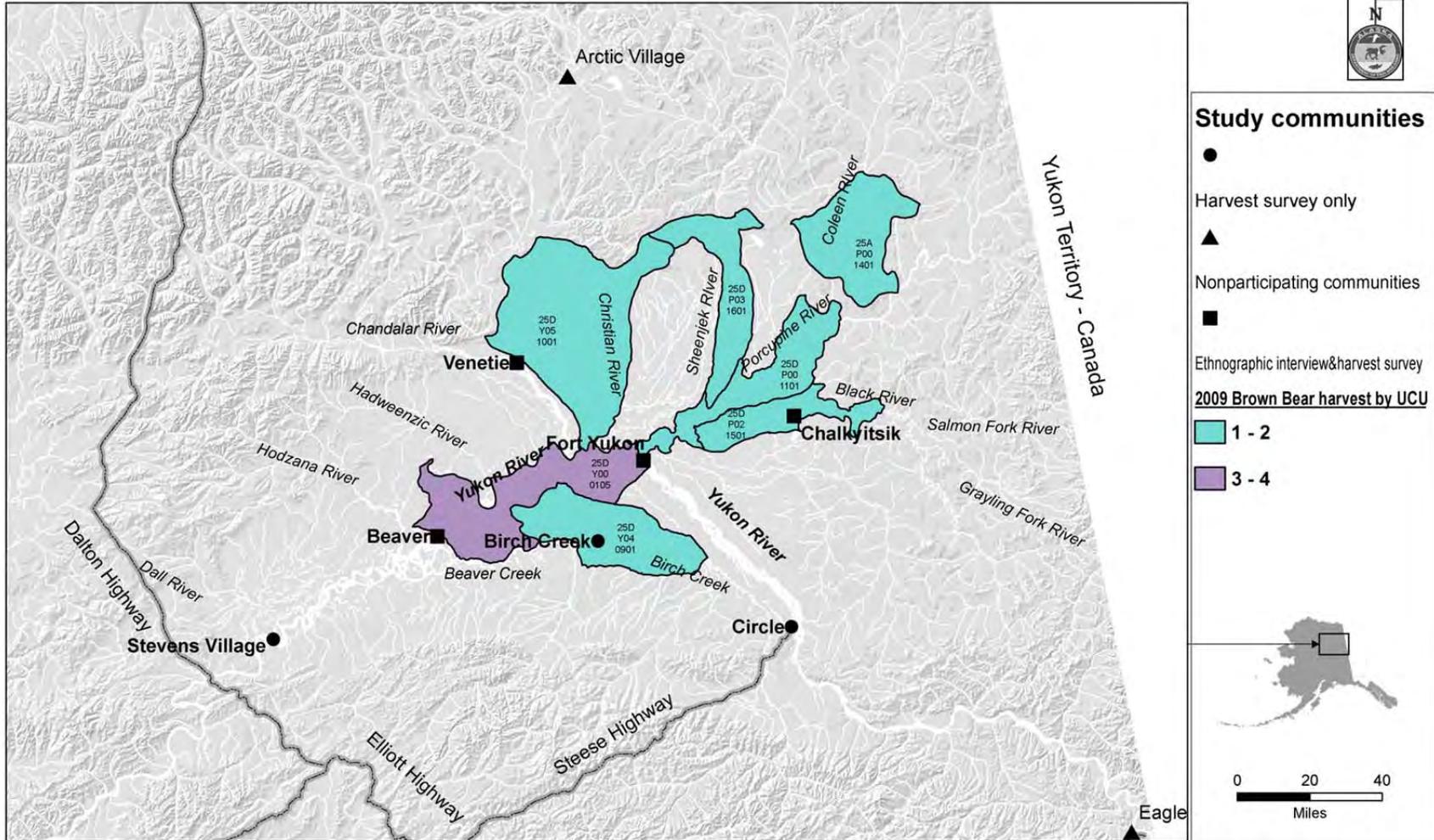


Figure 26.—Brown bear harvest locations, by UCU, 2009–2010.

BEAR HUNTING SEASONS BY REGULATION

During the 2008–2009 season, regulations allowed year-round black bear hunting in GMUs 25B, 25C, and 25D with a bag limit of 3 black bears per year. The state general season hunt required harvest tickets that could be obtained statewide from license vendors and ADF&G offices. In units 25C and 25D, possession of a resident harvest ticket was not required to harvest black bears. In GMU 25D, a community subsistence black bear harvest permit was also available to local residents.

During the 2008–2009 regulatory year, a variety of local brown bear hunting opportunities were available to residents of the participating communities. In GMU 25B, both state and federal regulations required a locking brown–grizzly¹⁸ bear tag that could be obtained statewide from license vendors and ADF&G offices for \$25. In units 25C and 25D, no locking tag was required.

In GMU 25B, Alaska residents and federally qualified rural residents were allowed to harvest 1 brown bear during the August 10–June 30 season. In GMU 25C, Alaska residents and federally qualified rural residents were allowed to harvest 1 brown bear during the September 1–May 1 season. In GMU 25D, Alaska residents were allowed to harvest 1 brown bear during the July 1–November 30 season or 1 brown bear during the March 1–June 30 season. Rural residents of GMU 25D hunting on federal lands in GMU 25D were allowed to harvest 1 brown bear during the July 1–June 30 season.

During the 2009–2010 regulatory year, the bear hunting opportunities available to residents of the participating communities were the same as those described above for the 2008–2009 regulatory year.

ETHNOGRAPHIC FINDINGS: CONTEMPORARY AND HISTORICAL HARVEST AND USES OF BEARS ON THE YUKON FLATS

Past studies described active bear hunting by Yukon Flats residents for both meat and hides (Nelson 1973, Sumida 1988). However, this is contrasted by other studies, which reported low interest in bear hunting in some Yukon Flats communities. Sumida and Alexander (1985) reported that bears were rarely consumed by Beaver, Stevens Village, and Birch Creek residents. Black bears were seldom seen in the areas traveled by members of those communities and brown bears were killed by them only as nuisance control (Sumida and Alexander 1985). Yukon Flats hunters interviewed by Stephen R. Braund & Associates (2007) reported that most bear hunting in the region is opportunistic and is often for the purpose of predator control.

During the current research, respondents reported that most Yukon Flats hunters opportunistically harvest black bears both for meat and for predator control purposes. Some Fort Yukon hunters reported intentionally pursuing black bears for meat and bear meat continues to be an important resource for some Beaver families. However, according to comments by respondents, the role of bears as a subsistence resource in Yukon Flats communities appears to be less significant now. A Venetie hunter reported that his grandparents and people from their generation ate black and brown bear meat regularly, but that Yukon Flats people no longer consume large amounts of bear meat. According to a Chalkyitsik hunter, bears were once actively sought as a source of food, but today bear hunting occurs only occasionally and sometimes residents use the meat only for dog food. The hunter said that most Chalkyitsik residents no longer intentionally hunt bears but that instead “We usually just see it and shoot it if we go for a ride, go fishing, or something.”

It is likely that cultural taboo regarding the use of bears has always limited the interest of some residents of Athabascan heritage to harvest and use bears, or even discuss bears. This cultural taboo may also affect reporting of harvest and responding to community surveys. For instance, several Beaver hunters reflected on a spiritual relationship with bears. One hunter stated:

18. Instances where the term “grizzly” bear or “grizzlies” occur in this report are in reference to brown bears.

They say not to talk about bears when I was a kid. They say “don’t talk about them.” They are going to hear you and they are gonna come after you ... we don’t even mention their names or talk about them; it’s taboo, you know, you don’t mention their names.

Schneider (1976) reported that Gwich’in from Beaver pursued bear hunting and use of bears conscientiously, but not to the same level as Stevens Village residents. Stevens Village residents are primarily Koyukon Athabascan, who are adherents of strict bear taboos that forbid women from eating bear meat and require them to cover their eyes when seeing a bear (Nelson 1983).

As a result of these spiritual implications, some hunters expressed a reluctance to harvest or consume bears. For instance, a Beaver hunter said that although some Beaver residents do harvest and use bears:

There’s also people like me that don’t bother with bear. They leave me alone and I leave them alone. It’s through dreams, you know ... I don’t eat bear meat and I don’t harm them and they don’t harm me ... you know, if you hunt them they’ll come after you or they’ll destroy your belongings, harm your family.

Similarly, a Chalkyitsik hunter reported that although he himself had hunted black bears his whole life without reservation, his uncle does not “really fool with bears. He [uncle] think if you fool with bears then they’ll fool with you ... like if you bother bears they’ll bother you in camp or something.” Schneider (1976) reported that although some Beaver residents said they respected bears very much and followed spiritual taboos regarding leaving them alone, others saw bears only as a threat and a nuisance.

Bear Hunting Seasons Reported by Community Respondents and Past Ethnographic Research

It is likely that winter den hunting was the primary means of harvesting bears during pre-contact years. In contemporary times, bears are generally hunted by Yukon Flats residents from April–October (McKenna 1965; Nelson 1973; Caulfield 1983; Sumida 1988). Hunters reported that black bear meat harvested in fall or early spring was most desirable.

Fall is considered an excellent time to harvest bears because of their high fat content at that time. Rendered bear fat is prized by some Yukon Flats residents (Nelson 1973, Schneider 1976, Sumida 1989). For instance, a Chalkyitsik hunter explained that because black bears consume large amounts of berries during late summer, residents of the community “try to get ‘em [black bear] in fall ... because they’re really fat and you could use the fat for grease.”

Bears generally maintain their fat through early spring and are thus also pursued in late April when they emerge from their dens (McKenna 1965; Nelson 1973; Caulfield 1983). A Fort Yukon hunter said that he especially pursued black bears in the spring season because “you’re generally out of moose meat by then ... so hey, you got bear ribs to barbeque on the fire and you could make some dry meat with it or sausage, or just cook, just have meat.” Chalkyitsik residents reported to Nelson (1973) that spring bear hunting is the easiest time to harvest bears because they are lethargic but still maintain good fat. However, soon after hibernation bears are not hunted at all because they become very lean (Nelson 1973). Nelson’s (1973) observations differ from reports by some hunters surveyed during this study who contend that bears emerging from their dens in the spring do not normally have enough fat to be considered worth harvesting.

Overwhelmingly, past research found that opportunistic black bear hunting during fall moose hunting yielded the most bear harvests for Yukon Flats residents (Nelson 1973; Caulfield 1983; Sumida 1988; Sumida 1989; Sumida and Andersen 1990). Community respondents during this research said that opportunistic bear hunting during the fall moose hunting season continues to be the primary time of the year when bears are harvested.

Bear Hunting Locations

For all Yukon Flats communities, bear hunting usually occurs along the same river corridors as moose hunting. For example, Sumida (1989) reported that Beaver residents hunted bears along the same river corridors, lakes, and meadows where they hunted moose. Caulfield (1983) reported that bears were sought immediately after break-up when they can often be encountered on river banks. In 2010, hunters also reported that bear hunting occurs opportunistically while moose hunting. Hunters did not report any specific bear hunting locations other than those where they searched for moose. Because of the overlap between bear and moose hunting locations, community-specific hunting location information can be found in the moose chapter of this report. Additionally, Stephen R. Braund & Associates (2007) provides recent detailed maps of bear hunting locations in the Yukon Flats.

Bear Harvest Strategies

Traditional Methods and their Uses Today

The pre-contact Gwich'in harvested bears by archery, deadfalls, snaring, spearing, and den hunting (Hadleigh-West 1963; McKennan 1965; Schneider 1976; Acheson 1977; Caulfield 1979; Ducker 1982; Caulfield 1983; Sumida and Alexander 1985; O'Brien 1997). Today firearms are used and bears are mostly killed opportunistically when encountered on river banks.

A Chalkyitsik hunter recalled that a now deceased elder from that community had killed bears with a bow and arrow at one time, likely in the late 19th century. Residents of the participating communities no longer harvest bears with bow and arrow.

Schneider's (1976) Beaver research documented accounts of pre-contact black bear trapping by deadfall. A deadfall trap for large game, such as bears, is constructed by suspending a large, very heavy log above the ground with strong cordage or rope. In order to lure the bear, bait of some type is placed under the deadfall. The cord holding the log above ground is held up by a trigger made of a strong stick. The trigger is connected to a configuration of horizontally placed wooden stakes which are used to guide the log directly on to its target. When an animal enters the trap it trips the trigger stick and, if executed properly, the log releases and falls heavily onto the neck of the bear, either immediately killing it or trapping it until a hunter returns to dispatch it. Residents of the participating communities no longer harvest bears by deadfall (Figure 27).

Bear snaring was an important traditional means of obtaining bears in Chalkyitsik (Nelson 1973). Pre-contact bear snaring was accomplished with braided babiche. Steel cable was used later (Nelson 1973). Nelson (1973) reported that Chalkyitsik hunters of 1969–1970 were knowledgeable about bear snaring techniques but that they did not appear to continue the practice. Some Fort Yukon hunters reported bear snaring continues to be practiced by other Fort Yukon residents.

An elder from Fort Yukon recalled stories of Gwich'in hunters spearing bears in the 19th century. According to O'Brien (1997), Tranjik Gwich'in hunters speared brown bears up to the 1860s–1870s. O'Brien's (1997) chief respondent, Chalkyitsik elder Rev. David Salmon, said that, traditionally, groups of male hunters would set out in search of a brown bear, having already determined who would spear the prey. The strategy employed was basically a coaxing method where the bear was confronted, agitated, and lured into impaling itself onto the hunter's spear, which was embedded into the ground (O'Brien 1997). Firearms eventually replaced the traditional practice of ritualized bear spearing. A Beaver hunter said that hunters would sneak up to brown bears and shoot them in the eye with a .22 rifle.



©2011 ADF&G. Photograph by James Van Lanen

Figure 27.—A deadfall trap for small land mammals.

Constructed by Bob Hunter (ADF&G), this trap is likely very similar to the deadfall traps used by Athabascans in Interior Alaska. A trap of this style constructed to target bears would be much greater in size. As Nelson (1973:240) points out, “Any kind of deadfall can be built on a different scale to catch virtually every animal found in ... any ... environment.” A subject in the photo is using a stick to trigger the trap; when triggered, the large log will fall. In this trap, another log is used as a weight for greater impact.

The pre-contact and historical Gwich'in and Koyukon also pursued den hunting for both brown and black bears. Nelson (1973) reported that den hunting by spear was likely one of the easiest ways to harvest bears prior to the availability of firearms. A Beaver elder recollected den hunting:

Around Chalkyitsik they did that a long time ago. I remember they know where the bear den is and they go there and they pull a bear out so everybody would have some bear meat, fresh meat; fat, too, you know. They [bears] eat nothing but berries so the meat tastes good.

Likewise, Nelson (1973:118) noted that “Den-killed bears are the fattest and best tasting of all.”

Although the practice of den hunting provided much knowledge of bear behavior, an elder from Beaver suggested that today, “A lot of it is lost. White man make regulation you can't pull it out of the den, you know. The reason for that is they're easy to get and a long time ago there's no refrigerator, no freezer, so they wait till the middle of winter when they get all the fresh meat.”

Den hunting is occasionally still practiced by Yukon Flats residents. During the winter of 2010, residents of Beaver reported that they attempted to pursue a bear in its den. A Chalkyitsik hunter recalled Chalkyitsik residents den hunting for bear in the recent past and suggested that it was somewhat likely that at least 1 Chalkyitsik resident has retained the practice into current times. He also described the Gwich'in den hunting practice: “In the fall time or early winter, they go out and look for bear dens and get a big long pole and poke around in there, wait on top of their hole, and when they come out, you shoot 'em.” The hunter stated that he always looks for bear dens to obtain meat, but had never found any yet:

“After the first snowfall I usually go out and look for bear tracks, see if I can find a den.” Nelson (1973) reported that once a den location was known it would be monitored by Chalkyitsik hunters for the presence of a bear each fall.

Nelson (1973) reported that both black and brown bears were taken by den hunting but that brown bear harvests by Chalkyitsik residents were rare because brown bears were not eaten in the community. Nelson (1973) stated that den hunting for brown bears is much more dangerous than for black bears because brown bears usually emerge from their dens with great ferocity. Chalkyitsik hunters told Nelson (1973) that brown bears may not even need to be coaxed out because the bears sometimes will come rushing out as soon as they are aware of a hunter’s presence. Because of this, hunters usually attempt to make a determination of what type of bear is occupying the den prior to action (Nelson 1973).

Contemporary Bear Harvest Effort and Perceptions

The current research corroborates numerous accounts from past research in the Yukon Flats area that reported that modern bear hunting primarily occurs opportunistically while traveling in a boat over open water during moose hunting, waterfowl hunting, or fishing, or when bears encroach on a camp or community (Nelson 1973, Caulfield 1983, Sumida 1988, Sumida 1989, Sumida and Andersen 1990). Nelson (1973:123) reported of that “a number [of bears] are usually taken during the fall moose hunt, when the Indians see them along the river.” In 2009, Van Lanen observed a similar practice while participating in a moose hunt with Chalkyitsik residents on Black River (Figure 28).



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Figure 28.—Steven Flitt of Chalkyitsik begins the process of skinning a black bear.

Several hunters stated that if they have an opportunity to shoot a bear they will do so, with or without any intention to obtain meat. Such opportunistic bear harvest is motivated by an interest to protect persons and property and to reduce bear predation on moose. For instance, a hunter from Fort Yukon said that a lot of people shoot bears opportunistically, mostly during summer activities or if a bear becomes a nuisance near town. Another Fort Yukon hunter stated, “I don’t do too much bear hunting. If I see them when I’m driving [a boat] I’ll shoot them, but I don’t hunt them.” A Beaver hunter stated “I don’t go out and hunt

black bears, no. I've killed a few in my days, but I don't 'hunt' bears." Another Beaver hunter expressed a belief that increasing efforts to harvest black bears "to lower the numbers" would be beneficial for increasing local moose populations. A Chalkyitsik hunter reported that once people gained access to modern food, the specific effort toward hunting black bears for meat was discontinued in the community.

The portrayal by some hunters of a general outlook of indifference toward using bears for meat is contrasted by other hunters who explained that meat from an opportunistically harvested bear is often a welcome supplement to food supplies. For example, a Fort Yukon hunter explained that he was more motivated to hunt bears for meat than to do so for predator control purposes: "I like to eat bear meat, it's good. There's nothing wrong with the bear meat at all." A Beaver hunter also explained his subsistence-oriented perspective on black bear hunting:

Well there's a lot of bears and if you see bear you'll kill it. Bear tastes good, small one. I don't like the big one. I like the small one, tender meat...just in fall time, in spring time ... when they come out of the hole they're too darn skinny and we just don't bother them, we just let 'em go. But in fall time they better watch it!

Some hunters expressed being uncomfortable harvesting a bear unless they planned to use the animal for meat. Although an elder from Beaver, reflecting on his knowledge of Koyukon bear spirituality, said that Gwich'in people do not often hold the same beliefs as Koyukon Athabascans residents of Stevens Village and have never taken human-bear relationships as seriously as the Koyukon Athabascans. Several of the hunters who expressed ethical and moral restraint toward bear use were residents of Beaver. Therefore it is possible that Beaver has retained some of the cultural restraint against the use of bears reported by Schneider (1976).

For instance, a hunter from Beaver explained that if he chooses to harvest a bear he always retains the meat. The hunter believed that killing a bear and leaving the meat could lead to bad luck in the future and said that he was not comfortable harvesting bears without retaining the meat:

People say just shoot anything you see now, but I'm not sure. It goes in with the good luck/bad luck thing, if you just leave it ... They just say "shoot 'em and leave 'em and wipe 'em out" but no, it's hard. I don't know, I could do it probably ... [but would prefer to shoot them during] fall time or late summer after blueberries ... is good time, because the bears get fat.

Similarly, another Beaver hunter explained that regardless of local concerns about bear predation on moose calves, because of teaching by his parents, he would not harvest a bear unless he plans to use it for meat: "Some of them [black bears], if I don't need it, you know, I just go by. I know it's getting young calves ... but you know, if I don't need it, I am raised up that way [not to kill anything unless it was needed] that's the way I was taught."

Another hunter from Beaver stated, "What I always heard [about bears] was that if you're not going to use the meat or use anything, then just leave them alone. You don't bother them, they don't bother you. That's what I do, I don't bother them."

Harvest Effort, Strategies, and Perceptions Specific to Brown Bears

Pre-contact Gwich'in and Koyukon harvested brown bears for food, and possibly as a ritual practice (Nelson 1973; Caulfield 1979; Nelson 1983; O'Brien 1997). Speaking of late 20th century Chalkyitsik hunters, Nelson (1973:125) stated that the Gwich'in "have a profound respect for grizzlies and an unconcealed fear of them, although they will try to kill them at almost any opportunity."

Reporting on modern brown bear use by Upper Yukon-Porcupine communities, Caulfield (1983:21) stated: "[brown bears are] rarely utilized for food, but are shot if found disrupting camps or caches." Sumida and Andersen (1990) reported that, historically, brown bears were not hunted for food by Fort Yukon residents, but were harvested primarily for predator control or to eliminate a nuisance. However,

some Fort Yukon residents during this research reported a use of brown bears for food in the community and Beaver residents are known to occasionally hunt and consume brown bears (Sumida 1989). A young hunter from Beaver said that he had killed a brown bear opportunistically in the recent past. He said that several Beaver families received the meat he distributed but that several other families in Beaver refused it.

A hunter from Chalkyitsik said that he had never seen anyone eat a brown bear. He said that Chalkyitsik hunters who do harvest a brown bear usually always keep the hide for use as a “sleeping mat,” but that the meat was never consumed. The hunter reflected on Chalkyitsik elders telling stories about the extreme danger of brown bears. Although the hunter said that brown bears are respected and viewed as a functioning part of the Yukon Flats ecosystem, he also believed that their population should be “kept in check.” The hunter said that brown bears are rarely seen by Chalkyitsik hunters.

Processing, Use, and Preservation of Bears

As a meat source, bears with sufficient fat are preferred. Berry-fattened bears are viewed by Yukon Flats residents as the most desirable for human consumption.

Once we went way up Hodzana [River]. We killed a black bear so we ate bear meat for 3 days. That was a good meat, though, because it got fat from the blueberries. You can taste that, taste different and it was good. ‘Cause around here [Beaver], hardly any berries you know, but up Hodzana there were a lot of berries, so that’s what it lived on. It was good tasting meat. That’s the only time I ever ate bear meat for 3 days.

Bears that have consumed fish are considered undesirable due to a repugnant taste and smell that results. A Venetie hunter said that this tenet only applies directly following fish season but that otherwise most bear meat is desirable. Nelson (1973:127) reported that Chalkyitsik hunters prefer the meat from a young, healthy, fat, and fish-free bear:

The Indians feel very strongly that a bear must be fat to be worth eating, and they say that cubs are the best of all. Bears that have been living mainly on fish are not very good eating, nor are the ones that feed heavily on “goose grass” (*Equisetum*) during the summer. When they eat plenty of roots and berries, however, they are very tasty.

Respondents consistently reported preparation of smoked and dried bear meat to be the most popular way in which to preserve and consume bear. Likewise, Sumida (1988) reported that black bear meat harvested by Stevens Village residents was usually smoked and dried. A Fort Yukon hunter said that black bear meat can be frozen for later use but that it is best enjoyed as a meat cooked in camp over a fire.

Several respondents discussed the practice of rendering black bear fat to make “grease.” Women respondents from Beaver often said they utilized bear fat in this manner and that their mothers and grandmothers rendered the fat from harvested bears into “grease.” A Fort Yukon hunter who never kept or consumed the meat from black bears he harvested said that he did often take the fat from bears for rendering. Sumida (1988, 1989) reported that Beaver residents rendered the fat of the bears they harvested and that Stevens Village residents prized bear grease which was used to make “Indian ice cream.”

Spiritual beliefs regarding bear use sometimes influence consumption practices. Reflecting on past experiences with spiritual taboos on bear use, an elder from Beaver recalled that:

[In Stevens Village] a woman is not supposed to eat bear meat or even touch the skin. I remember they came up 1 year when I was pretty small ... they would walk way around it [the bear skin]. They’re not even supposed to look at the bear skin ... around here [Beaver] anybody can eat bear meat, but down Stevens no, they wouldn’t eat bear meat, woman anyway, not supposed to eat bear meat.

Although consumption of bear meat certainly does occur, reports from respondents imply that there is generally a low interest in bear consumption among Yukon Flats residents. Some respondents reported a belief that the ribs were the only part of the bear desirable for consumption, while other respondents reported no desire whatsoever to consume bear. Bear meat might also be used for dog food (Caulfield 1983).

Black bears are used for other purposes than just food. Some respondents who did not consume black bear meat did use their hides. For example, a Fort Yukon hunter said that while he does not keep the meat from black bears he harvests, he does keep the hides. Respondents reported that bear hides are used as sleeping mats, floor mats, and as insulators tacked to cabin doors. For example, a Fort Yukon hunter said that he lets bear hides dry out and then uses them as a camp mattress: "It's very warm under your bed like that" he said. The hunter said that he also used to use caribou skin the same way but that the hair on caribou skin comes out quickly. In contrast "Bear skin does not shed hair like that, and it's warmer [than caribou skin] too, so it's the best mattress" (see Caulfield 1983 and Sumida 1988).

Although Yukon Flats residents formerly softened bear hides by brain tanning, most respondents reported that bear hides were no longer tanned locally. However, an elder from Beaver said that she continues to tan bear hides when given the opportunity: "I got 1 tanned now. I saved everything, the head; the head is still on it, and the foot, the bottom of the foot. I just cut off the bones ... about 5 or 6 years ago I tanned it." The elder said that she did not brain tan the hide, because she found scraping provided adequate softness to the hide. A Beaver hunter also described using bear grease as a waterproofing agent: "A long time ago they used to rub bear grease on shoes so they would not get wet." Her mother once made her and her sister bearskin boots that were sewed with bear sinew and then waterproofed by being rubbed with rendered bear fat.

Other than a Chalkyitsik hunter saying that bear claws were sometimes used to make necklaces and jewelry, there was no mention by respondents in the current study, nor was there any record found in review of previous research, of Yukon Flats residents using any other parts of black bears, such as organ meats, claws, teeth, or gall bladders.

Processing, Use, and Preservation Specific to Brown Bears

Some respondents discussed the consumption of brown bear meat. An elder from Fort Yukon said "Grizzly bear is real good if they don't eat fish, but ... if they eat fish even the smell turn your stomach." The elder said he once harvested a brown bear that had been eating only roots and grass. His family used the meat from that bear over the course of the winter and enjoyed the meat. The elder said that that he had to cut the bear in half to pack it because it was "twice the size of black bear." The elder did not have a strong recollection of other residents consuming brown bear meat but said that his family always did when the meat was available and recalled that at least 1 other family made a practice of harvesting and consuming brown bear meat. The elder said that, when processed properly, he relishes brown bear meat. He explained that when the hindquarter from a brown bear was cut into thin streaks about 1 inch wide: "It was the closest I think I've ate [of wild] meat to beef." The elder said that this particular bear was from the Bull River area and that the brown bears that inhabit that region eat only roots, berries, and other game. The elder believes that the diet of the bears from that area is the reason why the meat from them is so desirable. A Beaver hunter said that although black bear meat is much better tasting than brown bear meat, he will occasionally consume the meat from brown bears that he harvests: "Depends, if it's early in spring it's good, you know."

Other hunters expressed reservations about consuming brown bears as a result of spiritual beliefs passed onto them by elders. An elder from Beaver said that her mother told her brown bears did not taste good and that "every time she eat grizzly bear then she'll get nightmares." A Fort Yukon hunter said that elders told him "if you eat grizzly bear you'll go crazy." Still, this hunter gave meat from a brown bear he harvested to an elder who "cooked it up, [he] boils the feet like ham hocks and eats it."

Some respondents, especially from the community of Beaver reported the use of brown bear hides. Nelson (1973) observed that brown bears were rarely harvested by hunters from Chalkyitsik and that when harvested the meat was not eaten, the skin being the only part used. The hides which “are prime in fall, winter, and spring” were said to be used for mattresses or sold to fur buyers (Nelson 1973:127).

Sharing and Distribution of Bear Meat and Parts

The sharing of bear meat, particularly black bear meat, occurs in the Yukon Flats communities. The amounts of bear meat being distributed by hunters are proportional to the number of bears harvested, which are relatively low. Nevertheless, respondents from both Beaver and Fort Yukon reported a traditional practice of sharing black bear meat for human consumption. When a bear is harvested, the meat is usually shared with others or distributed as dog food. Fort Yukon hunters told of giving bear meat away to local mushers for use as dog food. A hunter from Chalkyitsik said that he does try to share black bear meat with other households but that it is often difficult to give away because many people do not care for it. Similarly, a Beaver hunter said that sharing black bear meat is “not so easy because a lot of people don’t want it, it’s not like moose.”

Past subsistence research reported that when community members harvested bear meat they often distributed it among households in Beaver and Fort Yukon. In 1989, Sumida reported that 29% of surveyed households in Beaver had received black bear meat and 13% of surveyed Beaver households had shared black bear meat with others (1989). In 1990, Sumida and Andersen reported that 20% of the households surveyed in Fort Yukon had received black bear meat and 25% of surveyed Fort Yukon households had shared black bear meat with others (1990). As reported in Table 23, during 2008–2009 only 9% of the total households surveyed on the Yukon Flats reported receiving black bear meat (2% reported sharing black bear meat with others). In Circle, 83% of households received black bear meat, followed by Birch Creek (10%), Beaver (7%), and Venetie (6%). No sharing of black bear meat was reported in Chalkyitsik, Fort Yukon, or Stevens Village during the 2008–2009 study year. As reported in Table 24, during 2009–2010 only 5% of the total households surveyed on the Yukon Flats reported receiving black bear meat (6% reported sharing black bear meat with others). In Birch Creek 27% of households received black bear meat, followed by Chalkyitsik (7%), Fort Yukon and Venetie (5%), and Beaver (3%). No sharing of black bear meat was reported in Circle or Stevens Village during the 2009–2010 study year.

Observations of Bear Population Status

Most respondents believed that black bear populations in the region are low or have become lower over recent years. A Beaver hunter said that he has seen much fewer black bears over recent years than he has in the past. The hunter believed that black bear populations in the Beaver area have declined. Another Beaver hunter believed that black bears are becoming rare in the area. The hunter said that she “only saw 1 [black bear] all summer last year at fish camp.” A hunter from Chalkyitsik believed that the black bear population in his area has declined in recent years, but that bear population levels are cyclical in nature.

In contrast, a Fort Yukon hunter said that black bears are so numerous at times on the upper Porcupine River that “they’re like stray dogs on the gravel bars.” The hunter reported that he consistently harvests his legal limit of 3 black bears every year without considerable effort. The hunter believed that the black bear population is currently greater than in the past “because people do not live in their fish camps anymore.” The hunter said that when people lived in fish camps during the summer they would harvest many more bears. He said that many families used to live in fish camps on the Porcupine River so that they could harvest chum salmon needed for dog food during winter trapping activities. The hunter believed that since the decline in fishing activity, black bear populations have increased dramatically in the Porcupine River area.

Sumida (1988) reported that Stevens Village residents had observed many more brown bears than black bears on the Yukon River and that Stevens Village residents blamed low moose numbers on the presence

of brown bears in the area. Similarly, a Fort Yukon hunter said that he believed that there were more brown bears than black bears in the region and that brown bear populations had increased over recent years. There are “more [brown bears] than there should be,” the hunter said. The hunter said that black bear populations have declined with the increase in brown bear populations due to brown bears preying on black bears: “They kill them off you know, brown bears kill black bears.” Similarly, Lenart (2009) reported recent increases in local observations of brown bears along the Yukon River corridor and Stephen R. Braund & Associates (2007) reported that Beaver residents had observed recent increases in both brown and black bears in the area.

A Fort Yukon hunter said that brown bear sightings are much rarer than black bear sightings because brown bears are much more cautious and elusive than black bears. The hunter said of harvesting brown bears: “A lot of time, brownies, you gotta be on the ball to get them, they’re quick to run.” A Venetie hunter said that brown bears are rarely seen near Venetie or Fort Yukon and that “They are all up [the] Sheenjek [River] and in the tundra areas.” Likewise, Lenart (2009:303) reported that brown bear “[d]ensities were generally the highest in the foothills and mountains of the Brooks Range...”

DISCUSSION: TRENDS IN BEAR HARVESTS AND ETHNOGRAPHIC ANALYSIS

As can be viewed in tables 22 and 23, when compared to 2008–2009, black bear harvests by households in the 7 participating communities increased by 88% during the 2009–2010 regulatory year (26 animals in 2008–2009 to 49 animals in 2009–2010), providing a 97% increase in pounds of black bear meat per person for the area as a whole (3 lb per person in 2008–2009 to 6 lb per person in 2009–2010). The bulk of this increase can be attributed to a large increase in black bear harvests by Fort Yukon hunters from 2008–2009 (6 animals) to 2009–2010 (31 animals). In contrast, reported black bear harvests by Circle dropped from 5 animals in 2008–2009 to zero animals in 2009–2010, and in Stevens Village reported black bear harvests dropped from 3 animals in 2008–2009 to zero animals in 2009–2010.

The drop from 70% of Circle households attempting to harvest black bears, 10% harvesting black bears, and 95% reporting use of black bear during 2008–2009 to zero percent of Circle households attempting to harvest, harvesting, or using black bears in 2009–2010 is a significant change over the course of the 2 study years. This does not necessarily reflect a complete drop in Circle’s attempts to harvest, harvests of, or use of black bears, and could be the result of a change in the 2009–2010 survey sample, such as the primary black bear hunting households not being contacted in 2009–2010. In 2008–2009, Circle TRNTs achieved a 100% community sample, and in 2009–2010 they only achieved a 50% community sample.

Also, because no ethnographic research with Fort Yukon residents was conducted subsequent to the 2009–2010 regulatory year, this report lacks information on the circumstances that may have contributed to this change in black bear harvests between the 2 study years. An understanding of the factors which influence fluctuations in black bear harvests can be gained by the continuation of regular annual research in the study area. The available ethnographic results inform us that further understanding of the primary reasons Yukon Flats hunters harvest black bears, either for food, for predator control, or both, is an important topic of study for future research. One way to obtain more accurate information on this topic is to delineate harvested bears that were used for food from harvested bears that were taken for predator control purposes and not used for food. Subsequent harvest surveys should include a method to delineate these harvests (see “Ethnographic Findings: Contemporary and Historical Harvest and Uses of Bears,” above, and “Ethnographic Findings: Predation and Predator Control,” below, for in-depth analysis of available information on this topic).

As can be viewed in tables 24 and 25, when compared to 2008–2009, brown bear harvests by households in the 7 participating communities increased by 700% during the 2009–2010 regulatory year (2 animals in 2008–2009 to 16 animals in 2009–2010). The bulk of this increase can be attributed to a large increase in brown bear harvests by Fort Yukon hunters from 2008–2009 (0 animals) to 2009–2010 (12 animals).

Because no ethnographic research or Fort Yukon residents was conducted subsequent to the 2009–2010 regulatory year, this report lacks information on the circumstances which contributed to this increased brown bear harvest between the 2 study years. Available ethnographic information informs us that brown bear harvests by residents of the participating communities are generally sporadic and opportunistic. Thus, the 2009–2010 increase may be a result of increased opportunistic brown bear encounters by Fort Yukon hunters. An understanding of the factors that influence fluctuations in brown bear harvests can be gained by a continuation of regular annual research in the study area (see “Ethnographic Findings: Contemporary and Historical Harvest and Uses of Bears,” above, and “Ethnographic Findings: Predation and Predator Control,” below, for in-depth analysis of available information on this topic).

CHAPTER 7: FURBEARERS AND SMALL LAND MAMMALS

Residents of the participating communities harvest a variety of furbearing and small game species throughout the year and they often target specific species during certain seasons of the year. Lynx, martens *Martes* sp., gray wolves, wolverines *Gulo gulo*, red foxes *Vulpes vulpes*, beavers *Castor canadensis*, muskrats *Ondatra zibethicus*, snowshoe hares *Lepus americanus*, mink *Neovison vison*, spruce grouse *Dendragapus canadensis*, ruffed grouse *Bonasa umbellus*, willow ptarmigan *Lagopus lagopus*, geese *Branta* spp., and a variety of ducks *Anatidae* spp. are all harvested and used by residents of the participating communities.

SURVEY FINDINGS: LYNX HARVESTS AND USES, APRIL TO MARCH, 2008–2009 AND 2009–2010

Participation in the Subsistence Harvest and Uses of Lynx

As shown in Table 34, residents of all 7 participating communities attempted to harvest, harvested, and used lynx during the 2008–2009 regulatory year. For the 7 participating communities combined, 9% of households reported using lynx, 8% of households attempted to harvest lynx, and 6% of households reported harvesting lynx.

As reported in Table 34, the estimated harvest of lynx by the participating communities was 409 animals. For communities that harvested lynx, Circle was the most successful. Circle trappers harvested 157 lynx, followed by Chalkyitsik (101 lynx), Beaver (80 lynx), Stevens Village (47 lynx), Fort Yukon (16 lynx), Birch Creek (8 lynx), and Venetie (1 lynx).

Chalkyitsik reported the largest percentage of households that attempted to harvest lynx (27%), followed by Circle (23%), Beaver (19%), Stevens Village (13%), Birch Creek (5%), Venetie (3%), and Fort Yukon (3%). Chalkyitsik reported the largest percentage of households that successfully harvested lynx (27%), followed by Circle (20%), Stevens Village (13%), Beaver (11%), Birch Creek (5%), Venetie (3%) and Fort Yukon (1%). Circle reported the largest percentage of households that used lynx (53%), followed by Chalkyitsik (27%), Beaver (15%), Stevens Village (13%), Birch Creek (5%), Venetie (3%) and Fort Yukon (1%).

For the 7 participating communities combined, 4% received lynx and 1% gave away lynx to other households. When compared to the other participating communities, Circle households reported a high rate of receiving lynx (35%), which may provide one explanation for 53% of Circle households reporting use of lynx.

Table 34.—Levels of participation in the harvest and uses of lynx in Yukon Flats communities, 2008–2009.

Community	Participation of households					Estimated harvest				
	Use	Attempt	Harvest	Receive	Give	Amount		95% confidence limits of total harvest		
						Total	Per household	± percentage	Low	High
Beaver	14.8%	18.5%	11.1%	3.7%	3.7%	79.5	2.7	39.5%	79.2	79.8
Birch Creek	5.0%	5.0%	5.0%	5.0%	5.0%	8.4	0.4	45.7%	8.4	8.4
Chalkyitsik	27.3%	27.3%	27.3%	0.0%	0.0%	100.5	3.9	35.0%	100.1	100.8
Circle	52.5%	22.5%	20.0%	35.0%	0.0%	156.8	3.9	0.0%	156.8	156.8
Fort Yukon	1.0%	3.1%	1.0%	0.0%	0.0%	16.4	0.1	158.0%	16.1	16.6
Stevens Village	12.5%	12.5%	12.5%	6.3%	6.3%	46.8	2.1	107.9%	46.2	47.3
Venetie	3.2%	3.2%	3.2%	0.0%	1.6%	1.1	0.0	48.5%	1.1	1.1
All	8.8%	7.6%	5.8%	3.7%	1.0%	409.4	0.9	17.5%	408.7	410.1

Source ADF&G Division of Subsistence household survey, 2009.

As shown in Table 35, residents of Birch Creek, Circle, Fort Yukon, and Venetie attempted to harvest, harvested, and used lynx during the 2009–2010 regulatory year. For these 4 participating communities combined, 7% of households reported using lynx, 7% attempted to harvest lynx, 7% harvested lynx, 2% received lynx, and 1% gave away lynx to other households.

The estimated harvest of lynx by the participating communities was 304 animals (Table 35). For the 4 participating communities which harvested lynx combined, this represents a harvest of 0.7 lynx per household. Fort Yukon trappers harvested 190 lynx, followed by Venetie (86 lynx), Birch Creek (20 lynx), and Circle (8 lynx).

Fort Yukon reported the largest percentage of households that attempted to harvest lynx (12%), followed by Birch Creek and Circle (7% in Birch Creek and 7% in Circle), and Venetie (3%).

Table 35.—Levels of participation in the harvest and uses of lynx in Yukon Flats communities, 2009–2010.

Community	Participation of households					Estimated harvest				
	Use	Attempt	Harvest	Receive	Give	Amount		95% confidence limits of total harvest		
						Total	Per household	± percentage	Low	High
Beaver	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0
Birch Creek	6.7%	6.7%	6.7%	6.7%	6.7%	20.0	1.3	0.0%	20.0	20.0
Chalkyitsik	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0
Circle	6.7%	6.7%	6.7%	0.0%	0.0%	8.0	0.3	151.7%	4.0	20.1
Fort Yukon	11.9%	11.9%	11.9%	2.0%	1.0%	189.7	0.9	51.9%	93.0	288.2
Stevens Village	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0
Venetie	3.1%	3.1%	3.1%	1.6%	1.6%	86.2	1.0	79.0%	62.0	154.3
All	7.3%	7.3%	7.3%	1.6%	1.1%	303.9	0.7	39.2%	184.8	423.0

Source CATG and ADF&G Division of Subsistence household survey, 2010.

Timing of Lynx Harvests and Lynx Harvests

The estimated harvest of lynx by the participating communities by month in the 2008–2009 regulatory year is included in Table 36. The majority of lynx harvests took place during the months of January (104 lynx) and February (100 lynx). During December, 86 lynx were harvested; during November, 53 lynx were harvested; and during April, 8 lynx were harvested.

Table 36.—Estimated harvests of lynx by month, Yukon Flats, 2008–2009.

Community	Estimated harvests per month												Unknown	Total
	2008										2009			
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.9	22.6	29.0	1.1	0.0	0.0	79.5
Birch Creek	8.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4
Chalkyitsik	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	35.5	29.5	24.8	0.0	0.0	100.5
Circle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.0	73.0	35.0	7.8	156.8
Fort Yukon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.4	16.4
Stevens Village	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	27.5	4.1	0.0	0.0	0.0	46.8
Venetie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	1.1
All	8.4	0.0	0.0	0.0	0.0	0.0	0.0	52.6	85.5	103.7	100.0	35.0	24.2	409.4

Source ADF&G Division of Subsistence household survey, 2009.

The estimated harvest of lynx by the participating communities by month in the 2009–2010 regulatory year is included in Table 37. The majority of lynx harvests took place during the month of December (117 lynx). During September, 2 lynx were harvested; during November, 50 lynx were harvested; during January, 74 lynx were harvested; and during February, 55 lynx were harvested.

Table 37.—Estimated harvests of lynx by month, Yukon Flats, 2009–2010.

Community	Estimated harvests per month												Unknown	Total
	2008										2009			
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0
Chalkyitsik	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Circle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	4.0	0.0	0.0	0.0	0.0	8.0
Fort Yukon	0.0	0.0	0.0	0.0	0.0	2.0	0.0	12.2	89.7	51.0	30.6	0.0	4.1	189.7
Stevens Village	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.9	23.6	23.6	25.0	0.0	0.0	86.2
All	0.0	0.0	0.0	0.0	0.0	2.0	0.0	50.1	117.4	74.6	55.6	0.0	4.1	303.9

Source CATG and ADF&G Division of Subsistence household survey, 2010.

LYNX HARVEST SEASONS BY REGULATION

During the 2008–2009 regulatory year in GMU 25C, Alaska residents possessing only a hunting license were allowed to harvest 2 lynx during the December 31–January 31 season. In the remainder of GMU 25, Alaska residents possessing only a hunting license were allowed to harvest 2 lynx during the November 1–February 28 season. Both state and federal seasons for GMU 25 were aligned. During the 2008–2009 regulatory year in GMU 25C, Alaska residents possessing a trapping license were allowed to harvest 2 lynx during the November 1–November 30 season and there was no bag limit on lynx during the December 1–February 28 season. During the 2008–2009 regulatory year, there was no bag limit on lynx in the remainder of GMU 25 for Alaska residents possessing a trapping license during the November 1–February 28 season. On federal lands in GMU 25, the lynx trapping season for 2008–2009 was also November 1–February 28 with no bag limit.

During the 2009–2010 regulatory year, the lynx harvest opportunities available to residents of the participating communities were the same as those described above for the 2008–2009 regulatory year.

SURVEY FINDINGS: MARTEN HARVESTS AND USES, APRIL TO MARCH, 2008–2009 AND 2009–2010

Participation in the Subsistence Harvest and Uses of Martens

As shown in Table 38, residents of Chalkyitsik, Circle, and Venetie attempted to harvest, harvested, and used martens during the 2008–2009 regulatory year. Residents of Fort Yukon attempted to harvest martens but were unsuccessful, and residents of Birch Creek used marten but did not harvest or attempt to harvest martens. For the 7 participating communities combined, 2% of households reported using martens, 3% attempted to harvest martens, 2% reported harvesting martens, less than 1% received martens, and no households reported giving away martens to other households.

As also reported in Table 38, the estimated harvest of marten by the participating communities was 11 animals. Chalkyitsik and Circle were the most successful (5 martens harvested by Chalkyitsik and 5 martens harvested by Circle). Venetie trappers harvested 1 marten.

Chalkyitsik and Circle reported the largest percentages of households that attempted to harvest martens (10% in each community). Chalkyitsik and Circle reported the largest percentages of households that used martens (10%) in each community.

Table 38.—Levels of participation in the harvest and uses of martens in Yukon Flats communities, 2008–2009.

Community	Participation of households					Estimated harvest				
	Use	Attempt	Harvest	Receive	Give	Amount		95% confidence limits of total harvest		
						Total	Per household	± percentage	Low	High
Beaver	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0%	1.0	0.0
Birch Creek	5.0%	0.0%	0.0%	5.0%	0.0%	0.0	0.00	0.0%	0.0	0.0
Chalkyitsik	10.0%	10.0%	9.1%	0.0%	0.0%	4.7	0.18	56.3%	2.1	7.4
Circle	10.0%	10.0%	10.0%	0.0%	0.0%	5.4	0.14	0.0%	5.0	5.4
Fort Yukon	0.0%	2.1%	0.0%	0.0%	0.0%	0.0	0.00	0.0%	0.0	0.0
Stevens Village	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0%	0.0	0.0
Venetie	1.6%	1.6%	1.6%	0.0%	0.0%	1.1	0.02	0.0%	0.0	1.1
All	1.9%	2.8%	1.6%	0.2%	0.0%	11.2	0.02	23.4%	11.2	11.2

Source ADF&G Division of Subsistence household survey, 2009.

As shown in Table 39, residents of Fort Yukon and Venetie attempted to harvest, harvested, and used martens during the 2009–2010 regulatory year. For these 2 participating communities combined, 2% of households reported using martens, 2% attempted to harvest martens, 2% reported harvesting martens, and less than 1% received or gave away martens.

As also reported in Table 39, the estimated harvest of martens by the participating communities was 303 animals. Fort Yukon was the most successful (253 martens). Venetie trappers harvested 50 martens.

Fort Yukon reported the largest percentage of households that attempted to harvest martens (4%), followed by Venetie (2%).

Table 39.—Levels of participation in the harvest and uses of martens in Yukon Flats communities, 2009–2010.

Community	Participation of households					Estimated harvest					
	Use	Attempt	Harvest	Receive	Give	Amount		95% confidence limits of total harvest			
						Total	Per household	± percentage	Low	High	
Beaver	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0	
Birch Creek	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0	
Chalkyitsik	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0	
Circle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0	
Fort Yukon	4.0%	4.0%	4.0%	0.0%	0.0%	252.9	1.2	130.4%	124.0	582.6	
Stevens Village	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0	
Venetie	1.6%	1.6%	1.6%	1.6%	1.6%	50.1	0.6	105.9%	36.0	103.1	
All	2.3%	2.3%	2.3%	0.3%	0.3%	303.0	0.7	109.4%	160.0	634.4	

Source CATG and ADF&G Division of Subsistence household survey, 2010.

Timing of Marten Harvests

The estimated harvest of martens by the participating communities by month in the 2008–2009 regulatory year is included in Table 40. The majority of marten harvests took place during the month of January (5 martens). During November, 2 martens were harvested; during December, 1 marten was harvested; and during February 1 marten was harvested.

Table 40.—Estimated harvests of martens by month, Yukon Flats, 2008–2009.

Community	Estimated harvests per month												Unknown	Total
	2008									2009				
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chalkyitsik	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	1.2	0.0	1.2	0.0	0.0	4.7
Circle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.4	5.4
Fort Yukon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stevens Village	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1
All	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	1.2	5.0	1.2	0.0	1.5	11.2

Source ADF&G Division of Subsistence household survey, 2009.

The estimated harvest of martens by the participating communities by month in the 2009–2010 regulatory year is included in Table 41. The majority of marten harvests took place during the month of January (102 martens). During November, 51 martens were harvested; during December, 75 martens were harvested; and during February, 75 martens were harvested.

Table 41.—Estimated harvests of martens by month, Yukon Flats, 2009–2010.

Community	Estimated harvests per month												Unknown	Total	
	2008									2009					
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar			
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chalkyitsik	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Circle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fort Yukon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.0	61.2	79.5	61.2	0.0	0.0	252.9
Stevens Village	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.9	22.3	13.9	0.0	0.0	50.1
All	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.0	75.1	101.8	75.1	0.0	0.0	303.0

Source CATG and ADF&G Division of Subsistence household survey, 2010.

MARTEN HARVEST SEASONS BY REGULATION

During the 2008–2009 regulatory year, there was no bag limit on martens in GMU 25 for Alaska residents possessing a trapping license during the November 1–February 28 season. Federal subsistence trapping seasons and harvest limits for martens were aligned with listed state seasons and bag limits.

During the 2009–2010 regulatory year, the marten harvest opportunities available to residents of the participating communities were the same as those described above for the 2008–2009 regulatory year.

SURVEY FINDINGS: WOLF HARVESTS AND USES, APRIL TO MARCH, 2008–2009 AND 2009–2010

Participation in the Subsistence Harvest and Uses of Wolves

As shown in Table 42, residents of Chalkyitsik, Circle, Fort Yukon, and Venetie attempted to harvest, harvested, and used wolves during the 2008–2009 regulatory year. Residents of Beaver and Stevens Village attempted to harvest wolves but were unsuccessful. For the 7 participating communities combined, 3% of households reported using wolves, 5% attempted to harvest wolves, 3% reported harvesting wolves, no household reported receiving wolves, and less than 1% gave away wolves to other households.

The estimated harvest of wolves by the participating communities was 46 animals (Table 42). For communities that harvested wolves, Fort Yukon was the most successful. Fort Yukon residents harvested 39 wolves, followed by Venetie (5 wolves), Chalkyitsik (1 wolf), and Circle (1 wolf).

Chalkyitsik reported the largest percentage of households that attempted to harvest wolves (9%). Circle and Chalkyitsik reported the largest percentages of households that successfully harvested wolves (5% in Circle and 5% in Chalkyitisk).

Table 42.—Levels of participation in the harvest and uses of wolves in Yukon Flats communities, 2008–2009.

Community	Participation of households					Estimated harvest				
	Use	Attempt	Harvest	Receive	Give	Amount		95% confidence limits of total harvest		
						Total	Per household	± percentage	Low	High
Beaver	0.0%	3.7%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0
Birch Creek	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0
Chalkyitsik	4.5%	9.1%	4.5%	0.0%	0.0%	1.2	0.0	81.6%	1.2	1.2
Circle	5.0%	7.5%	5.0%	0.0%	2.5%	1.0	0.0	0.0%	1.0	1.0
Fort Yukon	3.1%	5.2%	3.1%	0.0%	0.0%	38.6	0.1	145.5%	38.0	39.2
Stevens Village	0.0%	6.3%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0
Venetie	3.2%	3.2%	3.2%	0.0%	0.0%	5.3	0.1	35.0%	5.3	5.3
All	2.9%	5.1%	2.9%	0.0%	0.2%	46.1	0.1	35.4%	46.0	46.3

Source ADF&G Division of Subsistence household survey, 2009.

The estimated harvest of wolves by the participating communities was 20 animals (Table 43). For communities that harvested wolves, Fort Yukon was the most successful. Fort Yukon residents harvested 18 wolves. Venetie residents harvested 1 wolf.

Fort Yukon reported the largest percentage of households that attempted to harvest wolves (6%). Fort Yukon also reported the largest percentage of households that successfully harvested wolves (6%), followed by Venetie (2%).

Table 43.—Levels of participation in the harvest and uses of wolves in Yukon Flats communities, 2009–2010.

Community	Participation of households					Estimated harvest				
	Use	Attempt	Harvest	Receive	Give	Amount		95% confidence limits of total harvest		
						Total	Per household	± percentage	Low	High
Beaver	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0%	0.0	0.0
Birch Creek	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0%	0.0	0.0
Chalkyitsik	0.0%	6.7%	0.0%	0.0%	0.0%	0.0	0.00	0.0%	0.0	0.0
Circle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0%	0.0	0.0
Fort Yukon	6.9%	5.9%	5.9%	2.0%	1.0%	18.4	0.09	71.1%	9.0	31.4
Stevens Village	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.00	0.0%	0.0	0.0
Venetie	1.6%	1.6%	1.6%	0.0%	0.0%	1.4	0.02	105.9%	1.0	2.9
All	3.8%	3.6%	3.3%	1.0%	0.5%	19.7	0.05	66.0%	10.0	32.8

Source CATG and ADF&G Division of Subsistence household survey, 2010.

Timing and Location of Wolf Harvests

The estimated harvest of wolves by the participating communities by month in the 2008–2009 regulatory year is included in Table 44. The month of harvest for the majority of wolf harvests by the participating communities was reported as unknown.¹⁹ Where month of harvest was reported the majority took place during the month of January (3 wolves). During November, 3 wolves were harvested; during December, 2 wolves were harvested; during February, 1 wolf was harvested; and during March, 1 wolf was harvested.

19. All unknown wolf harvest timing pertains to Fort Yukon. This may be a result of the survey question regarding wolf harvest timing not being asked by TRNTs.

Table 44.—Estimated harvests of wolves by month, Yukon Flats, 2008–2009.

Community	Estimated harvests per month												Unknown	Total
	2008						2009							
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chalkyitsik	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.2
Circle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0
Fort Yukon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.0	35.9	38.6
Stevens Village	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	1.1	1.1	1.1	0.0	5.3
All	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.1	3.2	1.1	1.1	35.9	46.1

Source ADF&G Division of Subsistence household survey, 2009.

Wolf harvest quantities by residents of the participating communities, organized by GMU and UCU, are summarized in Table 45. In Figure 29, harvest locations are color coded to reflect the range of harvests which occurred in each UCU of GMU 25.

The harvest locations for wolves were the only furbearer harvest locations mapped during the 2008–2009 study year. However, mapping wolf harvest locations received minimal success. The majority of wolf harvest locations by the participating communities were reported as unknown (79%). The remaining 22% of wolf harvests occurred in GMU 25D.

Table 45.—Estimated wolf harvests by GMU, UCU, and community, Yukon Flats, 2008–2009.

Harvest location GMU/UCU	Estimated harvest by location and community								Total	Percentage
	Beaver	Birch Creek	Chalkyitsik	Circle	Fort Yukon	Stevens Village	Venetie			
Subtotal GMU 25D	0.0	0.0	1.2	1.0	2.7	0.0	5.3	10.2	22.2%	
25D P03-1601	0.0	0.0	1.2	0.0	0.0	0.0	0.0	1.2	2.6%	
25D Y00-0501	0.0	0.0	0.0	0.0	2.7	0.0	0.0	2.7	5.9%	
25D Y03-0801	0.0	0.0	0.0	0.0	0.0	0.0	3.2	3.2	6.9%	
25D Y04-0905	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	2.2%	
25D Y05-1001	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.1	4.6%	
Unknown	0.0	0.0	0.0	0.0	35.9	0.0	0.0	35.9	77.8%	
Total	0.0	0.0	1.2	1.0	38.6	0.0	5.3	46.1	100.0%	

Source ADF&G Division of Subsistence household survey, 2009.

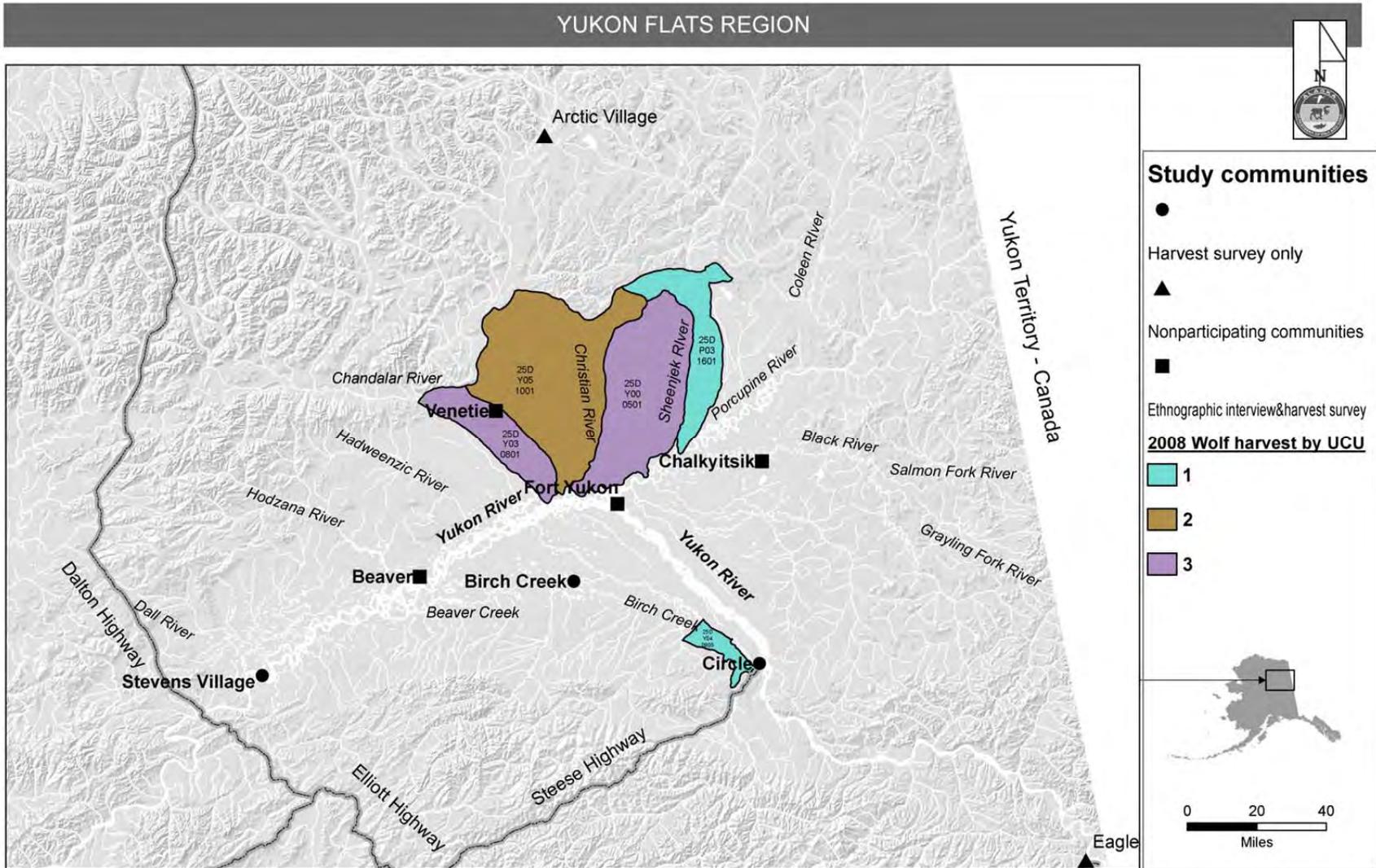


Figure 29.—Wolf harvest locations, by UCU, 2008–2009.

The estimated harvest of wolves by the participating communities by month in the 2009–2010 regulatory year is included in Table 46. The majority of wolf harvests by the participating communities took place during the month of January (6 wolves). During October, 2 wolves were harvested; during November, 2 wolves were harvested; during December, 2 wolves were harvested; during February, 3 wolves were harvested; and during March, 4 wolves were harvested.

Table 46.–Estimated harvests of wolves by month, Yukon Flats, 2009–2010.

Community	Estimated harvests per month												Unknown	Total
	2008									2009				
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chalkyitsik	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Circle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fort Yukon	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	2.0	6.1	2.0	4.1	0.0	18.4
Stevens Village	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.4
All	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	2.0	6.1	3.4	4.1	0.0	19.7

Source CATG and ADF&G Division of Subsistence household survey, 2010.

Wolf harvest quantities by residents of the participating communities, organized by GMU and UCU, are summarized in Table 47. In Figure 30, harvest locations are color coded to reflect the range of harvests which occurred in each UCU of GMU 25.

The majority of wolf harvest locations by the participating communities occurred in GMU 25A (48%). This was followed by 41% of the wolf harvest occurring in GMU 25D, and 10% of the wolf harvest locations reported as unknown.

Table 47.–Estimated harvests of wolves by GMU, UCU, and community, Yukon Flats, 2009–2010.

Harvest location GMU/UCU	Estimated harvest by location and community								Total	Percentage
	Beaver	Birch Creek	Chalkyitsik	Circle	Fort Yukon	Stevens Village	Venetie			
Subtotal GMU 25A	0.0	0.0	0.0	0.0	8.2	0.0	1.4	9.5	48.4%	
25A P00-1401	0.0	0.0	0.0	0.0	8.2	0.0	0.0	8.2	41.3%	
25A Y05-0901	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	7.0%	
Subtotal GMU 25D	0.0	0.0	0.0	0.0	8.2	0.0	0.0	8.2	41.3%	
25D P00-1101	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	10.3%	
25D P03-1601	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	10.3%	
25D Y00-0105	0.0	0.0	0.0	0.0	4.1	0.0	0.0	4.1	20.7%	
Unknown	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	10.3%	
Total	0.0	0.0	0.0	0.0	18.4	0.0	1.4	19.7	100.0%	

Source CATG and ADF&G Division of Subsistence household survey, 2010.

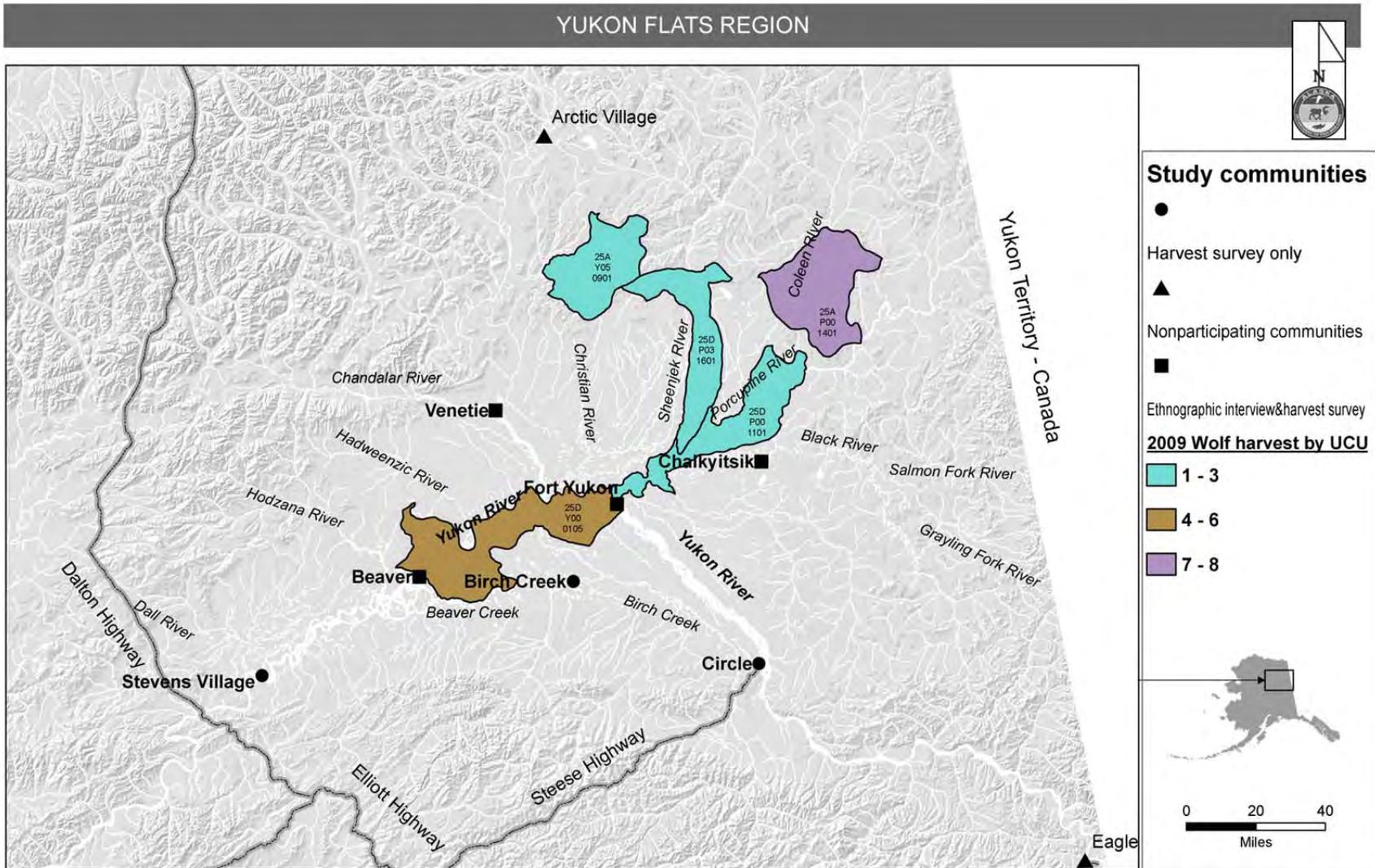


Figure 30.—Wolf harvest locations, by UCU, 2009–2010.

WOLF HARVEST SEASONS BY REGULATION

During the 2008–2009 regulatory year in GMU 25C, Alaska residents possessing only a hunting license were allowed to harvest 5 wolves during the August 10–May 31 season. In the remainder of GMU 25, Alaska residents possessing only a hunting license were allowed to harvest 10 wolves during the August 10–May 31 season. During the 2008–2009 regulatory year there was no bag limit on wolves in GMU 25D for Alaska residents possessing a trapping license during the October 1–April 30 season, and in the remainder of GMU 25 there was no bag limit for the November 1–April 30 season. Federal subsistence wolf hunting season on federal lands for GMU 25A allowed an unlimited harvest of wolves during the August 10–April 30 season. Federal subsistence wolf trapping season on federal lands for GMU 25 allowed an unlimited harvest of wolves during the November 1–April 30 season.

During the 2009–2010 regulatory year, the wolf harvest opportunities available to residents of the participating communities were the same as those described above for the 2008–2009 regulatory year.

SURVEY FINDINGS: SNOWSHOE HARE HARVESTS AND USES, APRIL TO MARCH, 2008–2009 AND 2009–2010

Participation in the Subsistence Harvest and Uses of Snowshoe Hares

Snowshoe hares were an addition to the 2009–2010 survey form and were not listed on the 2008–2009 survey form (see “Methods”). Although not included on the 2008–2009 survey form, snowshoe hares received attention as a “write-in” species during the survey year. As shown in Table 48, residents of Birch Creek, Chalkyitsik, Circle, and Fort Yukon attempted to harvest, harvested, and used snowshoe hares during the 2008–2009 regulatory year. For the 7 participating communities combined, 11% of households reported using snowshoe hares, 8% attempted to harvest snowshoe hares, 6% reported harvesting snowshoe hares, 10% received snowshoe hare, and 9% gave away snowshoe hare to other households. It is important to note that these are minimum percentages, since question about attempts to harvest, harvest, and use of snowshoe hares were not asked systematically in this study year.

As reported in Table 48, the estimated harvest of snowshoe hare by the participating communities was 82 animals. For the area as a whole this represents a harvest of 0.9 snowshoe hare per household. For communities that harvested snowshoe hares, Birch Creek was the most successful. Birch Creek residents harvested 56 snowshoe hares, followed by Circle (13 snowshoe hares), Chalkyitsik (7 snowshoe hares), and Fort Yukon (6 snowshoe hares).

Circle reported the largest percentage of households that attempted to harvest snowshoe hares (58%), followed by Birch Creek (30%), Chalkyitsik (5%), and Fort Yukon (2%). Birch Creek reported the largest percentage of households that successfully harvested snowshoe hares (30%), followed by Circle (33%), Chalkyitsik (5%), and Fort Yukon (2%). Birch Creek reported the largest percentage of households that used snowshoe hares (70%), followed by Circle (68%), Chalkyitsik (24%), and Fort Yukon (2%).

Table 48.—Levels of participation in the harvest and uses of snowshoe hares in Yukon Flats communities, 2008–2009.

Community	Participation of households					Estimated harvest				
	Use	Attempt	Harvest	Receive	Give	Amount		95% confidence limits of total harvest		
						Total	Per household	± percentage	Low	High
Beaver	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	24.0%	0.0	0.0
Birch Creek	70.0%	30.0%	30.0%	70.0%	70.0%	56.4	2.7	81.6%	55.9	56.8
Chalkyitsik	23.8%	4.8%	4.5%	20.0%	20.0%	7.1	0.3	0.0%	7.1	7.1
Circle	67.5%	57.5%	32.5%	67.5%	45.0%	13.0	0.3	0.0%	13.0	13.0
Fort Yukon	2.1%	2.1%	2.1%	0.0%	1.0%	5.5	0.0	0.0%	5.5	5.5
Stevens Village	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	17.5%	0.0	0.0
Venetie	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	39.5%	0.0	0.0
All	11.4%	7.7%	5.6%	10.0%	8.7%	81.9	0.9	108.8%	81.0	82.8

Source ADF&G Division of Subsistence household survey, 2009.

As shown in Table 49, residents of Beaver, Birch Creek, Chalkyitsik, Fort Yukon, and Stevens Village attempted to harvest, harvested, and used snowshoe hares during the 2009–2010 regulatory year. For these 5 participating communities combined, 36% of households reported using snowshoe hares, 34% attempted to harvest snowshoe hares, 33% reported harvesting snowshoe hares, 30% received snowshoe hares, and 24% gave away snowshoe hares to other households. It is important to note that the snowshoe hare results for 2009–2010 are not comparable to the previous year due to their being a “write-in” species on the 2008–2009 survey form.

The estimated harvest of snowshoe hares by the participating communities was 1,612 animals (Table 49). For the 5 communities that harvested snowshoe hare combined, this represents a harvest of 3.9 snowshoe hares per household. For communities that harvested snowshoe hares, Fort Yukon was the most successful. Fort Yukon residents harvested 1,442 snowshoe hares, followed by Beaver (65 snowshoe hares), Chalkyitsik (55 snowshoe hares), Birch Creek (45 snowshoe hares), and Stevens Village (5 snowshoe hares).

Chalkyitsik reported the largest percentage of households that attempted to harvest snowshoe hare (60%). Chalkyitsik reported the largest percentage of households that used snowshoe hares (73%), followed by Fort Yukon (57%).

Table 49.—Levels of participation in the harvest and uses of snowshoe hares in Yukon Flats communities, 2009–2010.

Community	Participation of households					Estimated harvest				
	Use	Attempt	Harvest	Receive	Give	Amount		95% confidence limits of total harvest		
						Total	Per household	± percentage	Low	High
Beaver	35.5%	25.8%	25.8%	12.9%	16.1%	64.7	1.9	31.9%	59.0	85.3
Birch Creek	20.0%	20.0%	20.0%	20.0%	13.3%	45.0	3.0	0.0%	45.0	45.0
Chalkyitsik	73.3%	60.0%	46.7%	73.3%	66.7%	55.2	3.1	27.4%	46.0	70.3
Circle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0
Fort Yukon	57.4%	56.4%	55.4%	50.5%	37.6%	1,442.0	7.0	26.2%	1,064.9	1,819.1
Stevens Village	5.3%	5.3%	5.3%	0.0%	5.3%	4.6	0.2	77.6%	4.0	8.2
Venetie	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0
All	35.7%	33.8%	32.7%	30.1%	23.7%	1,611.5	3.9	23.3%	1,236.5	1,986.6

Source CATG and ADF&G Division of Subsistence household survey, 2010.

Timing of Snowshoe Hare Harvests

The estimated harvest of snowshoe hares by the participating communities by month in the 2008–2009 regulatory year is included in Table 50. The majority of snowshoe hare harvests took place during the month of December (48 snowshoe hares). During September, 2 snowshoe hares were harvested; during November, 15 snowshoe hares were harvested; during February, 1 snowshoe hare was harvested; and during March, 1 snowshoe hare was harvested.

Table 50.—Estimated harvests of snowshoe hares by month, Yukon Flats, 2008–2009.

Community	Estimated harvests per month												Unknown	Total
	2008						2009							
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek	0.0	0.0	0.0	0.0	0.0	1.1	0.0	8.1	47.3	0.0	0.0	0.0	0.0	56.4
Chalkyitsik	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	0.0	0.0	0.0	0.0	0.0	7.1
Circle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	13.0
Fort Yukon	0.0	0.0	0.0	0.0	0.0	1.4	1.4	0.0	0.9	0.9	0.9	0.0	0.0	5.5
Stevens Village	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Venetie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	0.0	0.0	0.0	0.0	0.0	2.4	1.4	15.2	48.2	0.0	0.9	0.9	0.0	81.9

Source ADF&G Division of Subsistence household survey, 2009.

Note Values less than 1 indicate missing harvest information, resulting in mean replacement.

The estimated harvest of snowshoe hares by the participating communities by month in the 2009–2010 regulatory year is included in Table 51. The majority of snowshoe hare harvests took place during the month of October (521 snowshoe hares). During September, 416 snowshoe hares were harvested; during November, 174 snowshoe hares were harvested; during January, 162 snowshoe hares were harvested; during February, 59 snowshoe hares were harvested; and during March, 18 snowshoe hares were harvested.

Table 51.—Estimated harvests of snowshoe hares by month, Yukon Flats, 2009–2010.

Community	Estimated harvests per month												Unknown	Total
	2008						2009							
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
Beaver	0.0	0.0	0.0	0.0	0.0	6.6	21.9	27.4	2.2	0.0	0.0	0.0	6.6	64.7
Birch Creek	0.0	0.0	0.0	0.0	0.0	0.0	5.0	20.0	0.0	20.0	0.0	0.0	0.0	45.0
Chalkyitsik	0.0	0.0	0.0	0.0	0.0	7.2	2.4	16.8	24.0	4.8	0.0	0.0	0.0	55.2
Circle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fort Yukon	0.0	0.0	0.0	0.0	0.0	401.8	491.5	110.1	165.2	132.6	59.1	18.4	63.2	1,442.0
Stevens Village	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	0.0	4.6
Venetie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	0.0	0.0	0.0	0.0	0.0	415.6	520.9	174.4	191.4	162.0	59.1	18.4	69.8	1,611.5

Source CATG and ADF&G Division of Subsistence household survey, 2010.

SNOWSHOE HARE HARVEST SEASONS BY REGULATION

During the 2008–2009 regulatory year there was no bag limit on snowshoe hares in GMU 25 for Alaska residents possessing a hunting license. Snowshoe hares were open to harvest in GMU 25 year-round in both state and federal regulations for 2008–2009.

During the 2009–2010 regulatory year the snowshoe hare harvest opportunities available to residents of the participating communities were the same as those described above for the 2008–2009 regulatory year.

SURVEY FINDINGS: MUSKRAT HARVESTS AND USES, APRIL TO MARCH, 2009–2010

Participation in the Subsistence Harvest and Uses of Muskrats

Muskrats were an addition to the 2009–2010 survey form and were not listed on the 2008–2009 survey form (see “Methods). As shown in Table 52, residents of Birch Creek, Chalkyitsik, and Fort Yukon attempted to harvest, harvested, and used muskrats during the 2009–2010 regulatory year. Residents of Beaver reported attempting to harvest muskrats but that they were unsuccessful, although residents of Beaver did use muskrats during the study year. For these participating communities combined, 11% of households reported using muskrats, 10% attempted to harvest muskrats, 9% reported harvesting muskrats, 9% received muskrats, and 8%, and gave away muskrats to other households.

The estimated harvest of muskrats by the participating communities was 367 animals (Table 52). For the communities that harvested muskrats combined, this represents an estimated harvest of 1 muskrat per household. For communities that harvested muskrats, Fort Yukon was the most successful. Fort Yukon residents harvested 286 muskrats. Birch Creek residents harvested 71 muskrats. Chalkyitsik residents harvested 11 muskrats.

Birch Creek reported the largest percentage of households that attempted to harvest muskrats (27%), followed by Chalkyitsik (20%), Fort Yukon (16%), and Beaver (3%). Birch Creek reported the largest percentage of households that successfully harvested muskrats (27%), followed by Chalkyitsik (20%), and Fort Yukon (15%). Birch Creek reported the largest percentage of households that used muskrats (27%), followed by Chalkyitsik (20%), Fort Yukon (17%), and Beaver (7%).

Table 52.–Levels of participation in the harvest and uses of muskrats in Yukon Flats communities, 2009–2010.

Community	Participation of households					Estimated harvest				
	Use	Attempt	Harvest	Receive	Give	Amount		95% confidence limits of total harvest		
						Total	Per household	± percentage	Low	High
Beaver	6.5%	3.2%	0.0%	6.5%	0.0%	0.0	0.0	0.0%	0.0	0.0
Birch Creek	26.7%	26.7%	26.7%	26.7%	26.7%	71.0	4.7	0.0%	71.0	71.0
Chalkyitsik	20.0%	20.0%	20.0%	20.0%	20.0%	10.8	0.6	52.9%	9.0	16.5
Circle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0
Fort Yukon	16.8%	15.8%	14.9%	13.9%	11.9%	285.5	1.4	56.9%	140.0	448.0
Stevens Village	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0
Venetie	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0%	0.0	0.0
All	10.7%	10.0%	9.2%	9.3%	7.7%	367.3	0.9	43.9%	220.0	528.6

Source CATG and ADF&G Division of Subsistence household survey, 2010.

Timing of Muskrat Harvests

The estimated harvest of muskrats by the participating communities by month in the 2009–2010 regulatory year is included in Table 53. The majority of muskrat harvests took place during the month of April (260 muskrats). During March, 35 muskrats were harvested; and during May, 71 muskrats were harvested.

Muskrat Harvest Seasons by Regulation

During the 2009–2010 regulatory year, there was no bag limit on muskrats in GMU 25 for Alaska residents possessing a trapping license during the November 1–June 10 season. The federal and state seasons and harvest limits were aligned.

Table 53.–Estimated harvests of muskrats by month, Yukon Flats, 2009–2010.

Community	Estimated harvests per month												Unknown	Total	
	2008						2009								
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar			
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch Creek	0.0	71.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.0
Chalkyitsik	10.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8
Circle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fort Yukon	248.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.7	2.0	285.5	
Stevens Village	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Venetie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
All	259.6	71.0	0.0	34.7	2.0	367.3									

Source CATG and ADF&G Division of Subsistence household survey, 2010.

SURVEY FINDINGS: FOX, BEAVER, MINK, AND COYOTE HARVESTS AND USES, APRIL TO MARCH, 2008–2009 AND 2009–2010

Participation in the Subsistence Harvest and Uses of Foxes, Beavers, Mink, and Coyotes

Although not included on the 2008–2009 or 2009–2010 survey forms, foxes, mink, beavers, and coyotes received attention as “write-in” species during either of the 2 study years. The results of these “write-in” data are briefly summarized here.

During the 2008–2009 regulatory year, residents of Birch Creek and Chalkyitsik attempted to harvest, harvested, and used foxes. Residents of Venetie reported attempting to harvest foxes but were unsuccessful. The estimated harvest of foxes by the participating communities was 4 animals. For communities that harvested foxes, Birch Creek was the most successful. Birch Creek residents harvested 3 foxes. Chalkyitsik residents harvested 1 fox. The majority of fox harvests took place during the month of April (3 foxes). During January, 1 fox was harvested.

During the 2008–2009 regulatory year, Chalkyitsik residents used beavers. No Chalkyitsik households reported attempting to harvest beavers. However, 5% of Chalkyitsik households reported receiving beavers, and 5% of Chalkyitsik households reported giving away beavers to other households.

During the 2008–2009 regulatory year 2% of Venetie residents attempted to harvest mink and 2% of Venetie residents used mink. No Venetie households reported successfully harvesting mink. Because Venetie households did not report either harvesting or receiving mink it is unclear how the 2% of Venetie households that reported using mink obtained mink for use during 2008–2009. It is possible that surveyor error explains the inconsistency, or that residents possibly bought or traded for mink for use, or had mink left over from a previous year that they used.

During the 2009–2010 regulatory year, 1 Birch Creek household attempted to harvest, harvested, and used a single coyote. The single coyote harvest took place during the month of September.

FOX HARVEST SEASONS BY REGULATION

During the 2008–2009 regulatory year in GMU 25, Alaska residents possessing only a hunting license were allowed to harvest 10 foxes during the September 1–March 15 season. During the 2008–2009 regulatory year there was no bag limit on foxes in GMU 25 for Alaska residents possessing a trapping license during the November 1–February 28 season. Federal subsistence trapping seasons and harvest limits aligned with the listed state season and bag limits. The federal subsistence fox hunting season on federal lands for GMU 25 allowed for 10 foxes; however, no more than 2 foxes could be taken prior to October 1 for the September–March 15 season.

MINK HARVEST SEASONS BY REGULATION

During the 2008–2009 regulatory year, there was no bag limit on mink in GMU 25 for Alaska residents possessing a trapping license during the November 1–February 28 season. Federal and state seasons and harvest limits were aligned.

BEAVER HARVEST SEASONS BY REGULATION

During the 2008–2009 regulatory year in GMU 25, there was no open state hunting season for beavers for Alaska residents possessing only a hunting license. There was a federal subsistence hunting season on federal lands for beavers in units 25A, 25B, and 25D that allowed the taking of 1 beaver per day with 1 in possession for the April 16–October 31 season. During the 2008–2009 regulatory year, there was no bag limit on state lands for beavers in GMU 25 for Alaska residents possessing a trapping license during the September 1–June 10 season. There was no bag limit on beavers for federally qualified rural residents trapping on federal lands in GMU 25C during the November 1–April 25 federal season. On federal lands in the remainder of GMU 25, federally qualified trappers were allowed to harvest 50 beavers during the November 1–April 25 federal season.

COYOTE HARVEST SEASONS BY REGULATION

During the 2009–2010 regulatory year in GMU 25, Alaska residents possessing only a hunting license were allowed to harvest 10 coyotes during the August 10–April 30 season. During the 2009–2010 regulatory year, there was no bag limit on coyotes in GMU 25 for Alaska residents possessing a trapping license during the November 1–March 31 season. The federal and state seasons and harvest limits were aligned.

ETHNOGRAPHIC FINDINGS: FURBEARERS AND SMALL GAME

Using information from both past research and the results of this study, a general overview of historical and contemporary furbearer and small game harvest and uses on the Yukon Flats is presented here.

Historical and Contemporary Harvest and Uses of Furbearers in the Yukon Flats Region

Socio-Economic Transformation and its Consequences

The major furbearers found in the Yukon Flats region are lynx, foxes, wolverines, mink, martens, muskrats, wolves, snowshoe hares, and beavers. With the Hudson’s Bay Company’s establishment of Fort Yukon in 1847, the Yukon Flats, and especially the Upper Yukon–Porcupine region, became one of the most productive and historically recognized trapping areas in Alaska (Nelson 1973; Caulfield 1983). Prior to the development of the trapping industry, pre-contact Gwich’in did not pursue fur bearing small land mammals as a source of cash income. For example, a woman from Chalkyitisk, speaking of pre-contact times, stated: “We didn’t hunt for furs...What would we hunt them for anyway? We didn’t know about buying things” (Herbert 1982). However, research has documented that fur was harvested for intertribal trade and the manufacture of clothing (Slobodin 1981; Schneider 1976). Pre-contact use of furbearing animals by Gwich’in people consisted of employing deadfalls and snares to harvest animals such as

beavers, muskrats, snowshoe hares, wolves, weasels, wolverines, martens, and lynx for both food and fur (Hadleigh-West 1963; Nelson 1973; Caulfield 1979; Slobodin 1981).

Ultimately it was the ability to obtain goods from Euroamerican traders that created the impetus for a steadily increasing trapping effort by Yukon Flats peoples over the second half of the 19th century and the first half of the 20th century (Nelson 1973; Caulfield 1983; Stephen R. Braund & Associates 2007). This shift toward trapping as a major component in the Yukon Flats subsistence economy initiated a socio-economic transformation that changed the way of life of Native peoples in the region. As Ducker (1982:83–84) stated: “The Indians, who in the aboriginal period had spent relatively little time searching for fur-bearers which had minimal food value, changed their habits to devote time to trapping beaver, fox, and marten.” Not only did the socio-economic environment change with the initiation of the trapping industry in the region, the cultural and political environment did so as well: “Fur brought the white man into Kutchin country, fur kept him there, and fur has been the nexus between the Indian and the world outside for most of the past 120 years,” stated Nelson (1973:147).

The large scale shift in socio-economic relations resulting from an outside demand for fur products and burgeoning internal demand for trade goods ultimately transformed the way of life and culture of the Gwich'in people toward compatibility with participation in the trapping economy (Nelson 1973; Schneider 1976; Ducker 1982; Sumida and Alexander 1985; Stephen R. Braund & Associates 2007). “The Kutchin became increasingly dependent on trade goods, which necessitated an ever-greater trapping effort. Steel traps began to replace snares and deadfalls for catching furs as rifles displaced bows, spears, and snares for big game” (Nelson 1973:148). Evolving socio-economic changes in the region slowly affected both Native and non-Native inhabitants of the Yukon Flats (Sumida and Andersen 1990). Where once families stayed together throughout the winter in trapping camps, women and children began to stay in villages to attend school, while men would spend the winters trapping in remote locations (Nelson 1973, Ducker 1982, Sumida and Andersen 1990). During the 1930s–1940s, fluctuations in fur price meant that when fur value declined, men would trap less consistently and instead migrate to the community for family time, wage labor opportunities, and to take advantage of newly created government social services (Nelson 1973, Ducker 1982). Whereas once Yukon Flats trappers traveled by dog team for winter trapping activities, the introduction of the snowmachine in the 1960s allowed trappers the ability to continue trapping, while staying for longer periods of time, or even permanently, in the villages (Ducker 1982).

Trapping Change and Effort: 20th Century

Because residents of the Yukon Flats needed cash to purchase supplemental food goods and modern hunting, fishing, and trapping equipment, 20th century trapping activities were motivated by monetary needs. Professional trappers in the region developed an unprecedented level of financial wealth during certain periods. In the 1920s, it was reported that Native trappers on the Black River were earning approximately \$7,000 annually from the sale of furs, a large amount of income for the time (Ducker 1982). Trapping income was also pursued by some trappers more simply as a means to supplement wild harvested foods with store-bought foods, such as flour, sugar, and coffee. For example, speaking of her youth in the Canyon Village area of the upper Porcupine River, an elder from Fort Yukon stated: “Everyone trapped and they got marten, mink, lynx. That’s how we got our food winter time. My mom would sew with some fur, the other women would sew with some fur, they send it to town, they sell it and they send us food for it.”

Because of its economic viability, trapping became an essential practice for most Yukon Flats residents and families for much of the 20th century. Following the 1940s, fur prices began to decline and fluctuate to the point that most Yukon Flats households could no longer support themselves purely from trapping activities. Nevertheless, the trapping of furbearers remained an important source of supplementary income and a component of the seasonal round for many residents (Sumida and Andersen 1990). Reporting on Chalkyitsik, Nelson (1973:169) stated: “Old-timers speak of trapping as if it were their highest aim in life,

their greatest interest and concern. These older Kutchin consider themselves trappers first and foremost.” An elder from Fort Yukon told of the arrangement of mid-20th century Yukon Flats life around trapping: “Long time ago, every 15 to 20 miles on the river there would be another family living out, because then everybody trapped. Kids did not go to school then.” The elder explained how the establishment of community schools contributed to a transition away from full time trapping for Yukon Flats families.

Kids had to go to school. I remember first...the woman stay here [in Fort Yukon] and the husband would get a little wood and then go back out on trapline but that didn't last very long, 1 or 2 years I guess, they trap from here, go up you know, but that's it you know. Pretty soon everybody stayed in town.

Arnold (1968) reported that due to large declines in fur prices, overall trapping effort on the Yukon Flats had severely declined from past levels. “This source of supplementary income is now lost,” stated Arnold (1968:212). Although in the early 1970s Nelson (1973:149) observed a core contingent of Chalkyitsik trappers who were highly dependent upon the trapping economy for their main source of income, he noted that “trapping as a way of life, as *the* way of life, has practically disappeared since villages, jobs, and schools came into Black River country.” Nelson (1973) reported that many Chalkyitsik residents earned income from employment and that their interest in trapping was very low; and that during the winter of 1969–1970 there were only 6 active trappers residing in Chalkyitsik. Nelson (1973:151) also noted a “decrease in the size and complexity of traplines.” Acheson (1977) reported that the income from trapping and pelt prices had greatly declined in Old Crow, Yukon Territory. Acheson (1977) noted that Old Crow Gwich'in trapping camps had declined and that most trapping was conducted as single day or overnight activities with quick returns to the community, as opposed to the former practice of spending entire winters in camp. Moreover, because the introduction of snowmachines had greatly reduced the time required to travel to trapping areas, it was no longer necessary for Yukon Flats trappers to stay in isolated cabins throughout the winter season (Ducker 1982).

Despite the general shift in regional trapping patterns, practices, and time spent in effort, the trapping of furbearers and the supplemental income it provided remained an integral component of Yukon Flats life throughout the 20th century. Caulfield (1983) reported that although low fur prices had caused declines in effort, during the late 1970s and early 1980s, trapping continued to provide substantial supplemental income to the communities of Arctic Village, Chalkyitsik, and Venetie. At least 6 Circle residents were reported to be heavily dependent on trapping wolf, marten, and lynx as a source of income (Caulfield 1979). During the 1980s, trapping of furbearers was also reported to still be a common practice for residents of Beaver, Birch Creek, Fort Yukon, and Stevens Village (Sumida and Alexander 1985). Although fur resources continued to be sold on the national market, they also were reported to sometimes be sold to residents of other Yukon Flats communities, where they were used for the production of local crafts (Caulfield 1983).

Change and Effort: 21st Century

Respondents from the participating communities reported a continuing interest in the practice of furbearer trapping, yet they reported trapping to be of minor interest when compared to the past. During the study period, respondents reported that furbearer trapping was only heavily pursued as a primary source of income by a few individuals.

Although some Beaver trappers said there was a strong trapping interest in the community, others reported that very few residents consistently put effort toward trapping. Beaver trappers reported that community trapping effort centers mostly on the harvest of lynx and marten. An elder from Beaver said that up until very recently she maintained a winter trapline in the immediate vicinity of the community. The elder said that because she maintained full-time employment, the trapline was placed in this location for ease of access before and after work hours. Beaver trappers said that wolves were not generally sought out, but that if wolf sign is encountered, attempts will be made to harvest them. One Beaver trapper was actively pursuing wolves during the 2009–2010 winter trapping season and stated his motivation is more

for predator control purposes than for income. Beaver trappers said that most wolf harvests by residents occur as incidental catches in lynx snares and traps.

A Venetie respondent reported that although certain individuals in the community place heavy emphasis on trapping activities, very few Venetie residents remain dedicated trappers. The respondent stated that those Venetie residents who trap do so in the areas easily accessed from the community: “[It’s] not like it used to be, where, you know, people would have 50-mile traplines. Now days you just see ‘em, they’ll trap right around the village, not in the village, but, you know, close.” The respondent said that lynx is the primary species harvested by Venetie trappers and that much smaller numbers of marten, wolf, and wolverine are generally harvested.

Fort Yukon trappers reported lynx and marten to be the primary furbearing species harvested by community residents. Wolverines are also harvested, but to a lesser extent. Respondents said mink have been an important trapping target for Fort Yukon trappers but are seldom harvested in abundance. Fort Yukon trappers reported that due to opportunities to earn income by alternative means, trapping effort by community residents is relatively low in contemporary times. A small portion of the population, however, continues to rely on furbearer trapping as a primary source of income. An elder from Fort Yukon explained that although most Fort Yukon families were formerly dependent upon trapping income for livelihood, today, the majority of residents who continue to trap do so only as a recreational activity. The elder explained that due to the cost of supplies and fuel today, very few Fort Yukon trappers earn significant income from trapping. The elder suggested that due to high operational costs, some trappers may not even see equal returns on their investment in trapping. Another Fort Yukon trapper stated that although his family had a history of trapping for money, today he only traps “recreationally, just to get the hell out of the house in the winter time, if I got the extra gas and the extra money.” Likewise, an elder stated: “There’s only a few dedicated trappers left that stay out on the lines, and then there’s a few more who are dedicated but they just run their lines on the weekend from town, day trippers.” The elder said that the high efficiency of modern snowmachines, which allows one to travel great distances, has made a weekend trapping lifestyle possible for Fort Yukon residents.

Long-distance snowmachine trips are only possible for those who can afford to purchase one and the fuel required. High fuel prices prohibit the majority of Fort Yukon residents from trapping heavily. For instance, a Fort Yukon trapper reported that he and his brother must harvest at least 2 foxes per trapping trip in order break even on the fuel costs for 2 snowmachines. The trapper said that current success rates do not consistently pay for costs. Additionally, some Fort Yukon trappers reported the purchase cost of modern snowmachines to be extremely high, and unaffordable for most residents. Two elders reported that the Ski-Doo Elan model, very popular with Alaska bush trappers in the 20th century because of its practicality and low-cost, was no longer manufactured, and blamed the loss of this “trapper’s” snowmachine for additional declines in trapping effort. An elder from Fort Yukon explained that the overhead cost of necessary trapping supplies had simply become unaffordable in modern times: “A #1 trap used to be \$12 for a dozen and today they are \$84 a dozen. Gas used to be \$2.50 a can and now it is \$6.90 a gallon.” This elder believed that due to the circumstances described above, and the generally negative cost-benefit ratios associated with modern trapping activities, the future of furbearer trapping on the Yukon Flats is questionable.

Trapping Seasons on the Yukon Flats

Furbearer trapping has historically been the focus of winter activities for Yukon Flats residents. The trapping season generally begins in November and extends through March (Nelson 1973; Schneider 1976; Caulfield 1983; Sumida 1989). Sumida (1989) reported that November brings prime pelt conditions for furbearing species and also provides adequate snow and ice to allow snowmachine travel. Nelson (1973) noted that the heaviest trapping season runs from early November into December and then slows down once heavy winter and cold set in, picking back up in February and March. Nelson (1973) reported that Chalkyitsik residents became immersed in trapping for marten, wolf, lynx, and wolverine around

November 15 and continued their efforts to harvest those species through late February to early March. Both Fort Yukon and Birch Creek residents normally pursued marten, lynx, wolf, and wolverine during this time (Caulfield 1983). Sumida (1989) reported that, by March, Beaver trappers focused on the harvest of beaver and muskrat. Respondents reported that contemporary trapping seasons were in alignment with the past reports. Species specific information on furbearer harvest seasons will be presented below.

Traplins and Trapping Locations

With the establishment of the trapping trade on the Yukon Flats, family-specific trapping territories evolved across the landscape. “Families settled in a rather restricted region and trapped, returning to villages for the purpose of trade and resupplying their outfit,” reported Schneider (1976:215). Trapping rights and knowledge are informally passed down to relatives. Trapping locations used by Beaver residents are sometimes considered the property of specific persons or families and are used by the same families for 2 or 3 generations (Schneider 1976; Sumida 1989).

Schneider (1976) reported the existence of several family-specific trapping locations used by residents of Beaver, including the 60 mile long territory of “Old Thomas,” who was the son of famed Gwich’in Chief Shahnayati’. This territory extended along the Yukon River downriver from Moose Island into Rampart Canyon. The George family of Stevens Village formerly used the territory extending from Stevens Village upriver to Moose Island for trapping (Schneider 1976). Sumida (1989) reported that most trapping by Beaver residents occurred north of the Yukon River along the Hadweenzic and Hodzana rivers. During the 1970s, the Pitka family of Beaver used Moose Island for trapping and the Adams family of Beaver used a trapline up the Hodzana River (Schneider 1976). According to a Beaver trapper from this study, Beaver families continue to use their traditional territories for trapping activities today. Beaver residents also trapped in the Beaver River drainage, along Lost Creek into the White Mountains, along the slopes of Mount Schwatka, and across the flats and foothills to the base of Lone Mountain and Nelson Mountain (Sumida 1989). Beaver trappers during this study reported trapping along the Hodzana River, along the Government Road, and “downriver at the first island.”

Chalkyitsik trappers used the Black River, Salmon River, Porcupine River, Grass River, the Sucker River, the Little Black River, the Collen River, and the Grayling Fork River drainages (Nelson 1973, Caulfield 1983). Speaking of the trapping locations used by Chalkyitsik residents, Nelson (1973:156) reported: “As they are defined in practice by the Tranjik Kutchin, traplines are areas in which individuals or families have exclusive rights to all furbearers.” Nelson (1973) went on to explain that “ownership” of traplines by Chalkyitsik families did not restrict use of their designated area for other activities, such as moose hunting, and that the zones claimed by ownership were trails, rather than whole areas. If abandoned, family-owned trails were then open for use by anyone. Additionally, trails which were considered “main thoroughfares” were never “owned,” and in such locations people freely placed traps anywhere they chose to do so (Nelson 1973). Nelson (1973) reported that during highly active trapping times of the past, an individual trapline could extend from 100 to 250 miles, an unlikely occurrence today. Nelson (1973) reported that the extent of territory used for trapping by Chalkyitsik trappers had drastically declined, with locations in proximity to the community being of primary use in modern times. However, some Chalkyitsik trappers were reported to be targeting specific species in specific locations that often required longer distances to travel (Nelson 1973). For example, foothill areas were considered more productive for marten and wolf, while lynx were believed to be found in the flats (Nelson 1973).

Caulfield (1983) reported that Fort Yukon residents used the Porcupine River, Grass River, Sucker River, Little Black River, Birch Creek, and Beaver Creek drainages for trapping. A Fort Yukon trapper during this study reported that he once operated a family trapline approximately 30 miles downriver from Fort Yukon, but that the cabin at the location had since fallen in. Caulfield (1983) reported the bulk of Birch Creek resident’s trapping activities occurred south of the community on established trapping trails and in the foothills of the White Mountains at the headwaters of Preacher, Birch, and Beaver creeks. Venetie

trapping was done to the east of the community as far as Kwittevunkud Lake, near Alexander's Village, Christian Village, and at locations between the Christian River and the Chandalar River (Caulfield 1983).

Stephen R. Braund & Associates (2007) provides recent mapping information on general small land mammal search and harvest locations used by 21st century residents of Beaver, Birch Creek, and Fort Yukon. Available species specific information on furbearer harvest locations will be presented below.

Trapping Tactics and Strategies

As the trapping industry evolved on the Yukon Flats and the effort increased, taking up seasonal residence at remote trapping camps became the primary trapping strategy (Nelson 1973, Schneider 1976). Some early Yukon Flats trappers would travel to winter camping locations by waterways prior to freeze-up of the rivers. Describing the method of transport used by Beaver residents in 1935, Schneider stated:

In the fall they would make trips by boat up the Hodzana to get supplies to their trapline cabins. The movement out to the trapline was made when the water level was high enough to get a boat up the river to the home cabin. The return trip in the spring was also made at the time of high water. (1976:92)

Travel to seasonal trapping locations by dog team, and later by snowmachine, would occur when it could be accomplished on ice and snow after freeze-up. Dog teams were still in heavy use on the Yukon Flats during Nelson's fieldwork and were often used for winter travel related to trapping activities (Nelson 1973). Snowshoes were also used for winter transport and Schneider (1976) reported that 2 trappers had once traveled 10 miles by snowshoe to use a cabin and trapline. Nelson (1973) reported that Chalkyitsik trappers would stay out on a trapline anywhere from 1 to 10 days and that overnight stays were done in cabins, wall tents, and sometimes even the open air. From their camping locations, trappers were said to complete "a series of one-day circuits (each estimated at 6 to 10 miles), permitting them to travel each side line in a day and to return to the cabin at night" (Schneider 1976:234). Schneider (1976) reported that this formidable distance of daily movement was usually accomplished on foot. Nelson (1973) reported that Chalkyitsik trappers usually trapped as partners, where 2 men would travel and camp together, sharing the work and the resulting bounties. A Chalkyitsik trapper from this study reported that he currently shares his winter trapline with a partner with whom he splits the money earned from their efforts.

According to Caulfield (1983), trapping activity by Yukon Flats residents normally increased with rises in pelt prices during periods of species abundance, and as a source of income when other sources were not available. Several trappers from the participating communities reported that increases in market prices will motivate them to pursue trapping activities more heavily. For example, a Chalkyitsik trapper stated: "If it's got a good price, I'll go for it."

Schneider (1976) reported that Beaver trappers only remained in trapping camps for a few days at a time and sometimes only made single day, out-and-back trips from the community. Caulfield (1983) reported that no Chalkyitsik trappers stayed out in cabins on the Black River for the entire season, but that during the winter of 1981–1982, trappers from 6 different households overwintered in the Black River watershed. When trappers do not spend the season living on their traplines they must travel from the community frequently to check their traps. Checking traps needs to be efficient, and, if traveling a long distance, it does not make sense to do so excessively because all the traps need time to produce (Nelson 1973). Nelson (1973) reported that checking traps every 4 to 10 days is optimal. A Beaver trapper during this research reported that he checks his trapline once per week throughout the season, spending 1 full day to travel and conduct the work. A Beaver trapper who maintains a trapline in proximity to the community reported that she normally checks her trapline each day. Schneider (1976) reported that adequate snowfall creates conditions which allow traps to be disguised but also that new snow causes traps to fill in and that they must be cleared away by the trapper following each snowfall. Similarly, an elder from Fort Yukon

reported that in locations where the wind blows often, such as the Upper Porcupine hills, it is important to never set traps on the south side of a tree because the wind will cause the snow to drift in and cover it up.

Today it is rare for trappers to spend the entire winter out on a trapline, and while people do use the traplines of their family's use patterns, they generally do not travel as far on these lines as past generations of users did. Instead, they use much smaller portions of the former territory. This decline in use area and overall trapping effort resulted from the need to return to the community because of familial and professional obligations (Schneider 1976). A corollary to settlement was that many Yukon Flats residents became "backyard trappers," described by Schneider (1976:236) as "individuals, usually women and juveniles, who have a few traps set out at a distance of a couple miles from the village." Males, females, youth, and elders from the participating communities during this research consistently expressed approaching their own trapping activities with a strategy similar to the "backyard trappers" described above.

Species-Specific Harvest and Uses of Furbearing Animals and Small Game on the Yukon Flats

Lynx Harvest and Uses

Due to their relative abundance in the region, when compared to martens and wolves, trappers from both Beaver and Fort Yukon reported that lynx are the most important, and heavily used, furbearing animal for trappers from the 2 communities. Trappers from Beaver consistently reported that lynx were their primary targets for harvest.

Snowshoe hares are the primary prey for lynx and thus lynx maintain a symbiotic relationship with snowshoe hares, whereby the population size of each animal fluctuates with predation mortality cycles of approximately 10 years (USDOI 1974). Respondents from the participating communities consistently reported their own local knowledge of the relationship between snowshoe hares and lynx. For example, a Chalkyitsik trapper stated: "If there's a lot of rabbits out there'll be a lot of lynx out, and if there's no rabbits there wouldn't be much lynx." The trapper reported that the winter of 2008–2009 had been a productive lynx season because there had been a high population of snowshoe hares in the area. Similarly, a Beaver trapper reported that over the previous 4 years (2006–2009) there was a "big boom" in lynx populations, but that he expected populations to begin declining soon, in tandem with a projected decline in the snowshoe hare population. Several Beaver trappers reported observations of a healthy lynx population in the region over recent years.

Lynx trapping for Yukon Flats residents normally begins in November and continues into March (Nelson 1973, Schneider 1976, Caulfield 1983, Sumida 1988). Nelson (1973) reported that Chalkyitsik residents began trapping for lynx around November 15 and continued efforts to harvest them through late February or early March. Fort Yukon and Birch Creek residents were reported to also normally pursue lynx from November to March (Caulfield 1983). While lynx are taken in early winter, lynx fur becomes prime later in the season and into spring (Nelson 1973; Schneider 1976; Caulfield 1983; Sumida 1988). Sumida (1988) reported that Stevens Village residents consider lynx fur to be prime in January or February. Nelson (1973) reported that Chalkyitsik residents consider lynx fur to be prime after January 1 with fur quality declining in March. Many lynx can be caught in spring because lynx are very active at that time, while during mid-winter the cold causes them to move about less (Nelson 1973).

Consistent with Nelson's observation, a Chalkyitsik trapper reported that Chalkyitsik trappers consider lynx fur to be prime in January and February. However, the trapper reported that Chalkyitsik residents begin setting traps for lynx late in November or early December and continue trapping efforts through March. Beaver trappers reported that they consider lynx to become prime during the early months of winter. For example, a Beaver trapper stated: "They [lynx] really don't get good until around December, about the end of December." Two Beaver trappers said that the timing of prime fur is more dependent upon temperature trends than the particular month. For example, a Beaver trapper stated: "Start looking

for lynx after its been cold for a while, waiting for the hair to get thicker and the color to be better.” Another Beaver trapper stated: “When it get cold, they [lynx] get the really good hair on ‘em.” The trapper expressed concern that consistently warmer temperatures over recent years had negatively affected fur quality: “That warm, warm, warm climate nowadays, you know, I think last few years lynx got shorter hair.”

Lynx were targeted by Yukon Flats residents in flat, forested areas (Nelson 1973). Specific valleys were said to be the best locations for trapping lynx (Nelson 1973; Caulfield 1983). Beaver residents targeted lynx “in the portages” between lakes and on forest ridges (Schneider 1976:114). Respondents during Schneider’s research (1976) described lynx as smart but curious, and that they travel on ridges away from deep snow. Nelson reported that Chalkyitsik trappers often placed traps near geographical locations which:

...funnel lynx through a certain place, such as a narrow isthmus of forest between two open areas, or the end of a forested point jutting out into a lake or meadow. A narrow V-shaped ravine, creek, or slough is good, because it is a constricted natural pathway. The top of any steep river or lake bank is also attractive for lynx, because they like to walk along in the woods at the edge of an open area. (1973:226–227)

Trapline locations for lynx are selected by Chalkyitsik trappers because of historical use and past success (Nelson 1975). Some Chalkyitsik trappers were reported to have trapped lynx on same line for an entire lifetime (Nelson 1973). Trappers from both Chalkyitsik and Fort Yukon during this study reported that lynx are sought and harvested in the Black River drainage. Fort Yukon trappers also reported that good lynx trapping could be found in close proximity to the community.

Nelson (1973) reported that Chalkyitsik residents set lynx traps at locations with at least 2 or more sets of lynx tracks that show sign of lynx crossing back and forth across an area. Traps were not set along lynx tracks going in only one direction unless the tracks occurred on the same trail multiple times (Nelson 1973). However, reporting on his strategy for trapping lynx, a Chalkyitsik trapper during this study stated: “Set a line any place you find tracks.”

Nelson (1973) reported that Chalkyitsik residents consider #3 size traps the best trap size for harvesting lynx and that #4 size traps also will catch lynx, but that they were not often used by Chalkyitsik trappers. Lynx traps were placed in cubby sets²⁰ at the base of a spruce tree. Cubby sets for lynx are built larger in size than they are for marten (Nelson 1973). A Chalkyitsik trapper stated that the cubby set method for lynx and marten is identical: “...lynx pretty much the same trapping style [as for marten]. Like a little tent on the trunk of the spruce tree. About the same size as a marten trap and same time of the year, same everything.”

Nelson (1973) observed Chalkyitsik trappers setting few snares for lynx but reported the success rate of snares to be greater than for traps. Lynx snares were set in trails heavily used by people, not in lynx trails, but near areas where lynx are known to travel or cross a trail (Nelson 1973). Sometimes a long cubby is made with a snare set inside it to catch the lynx as it travels through to inspect bait (Nelson 1973). Chalkyitsik trappers made trap bait from beaver castor oil and often combined it with rotten fish, or the musk from muskrats or mink. The bait is placed on a piece of fur, a hare foot, or a bird wing (Nelson 1973). Beaver residents sometimes used seal oil for trap bait. Beaver’s Eskimo residents sometimes brought back seal oil from visits to relatives on the coast (Schneider 1976).

Although the contemporary primary use of harvested lynx is sale of the pelt, there is a documented history of lynx meat consumption by Yukon Flats residents. Acheson (1977) reported that the pre-contact Gwich’in were known to have hunted and eaten lynx, but did not harvest them specifically for fur.

20. A cubby set is a small enclosure used by trappers to lure game. Cubby sets are usually placed at the base of a tree and made of rocks, logs, bark, or plywood. Bait is placed inside the enclosure and a trap is set near its entrance.

Schneider (1976:129) reported that Beaver residents considered lynx to be “good eating if you cook it right,” and Caulfield (1979) reported that Circle trappers considered lynx meat “quite delicious.” During the time of Nelson’s research, lynx meat was often consumed by Chalkyitsik residents: “The carcasses are rarely discarded after skinning, because lynx flesh is considered good eating. The fat ones are preferred, and thin or old ones are fed to the dogs. Not enough lynx are caught to add much bulk to the diet, but they are considered a treat or at least a variation from the daily fare” (Nelson 1973:234). Caulfield (1983) reported that residents of Upper Yukon–Porcupine communities considered lynx meat a prized food, but that if it was not consumed, it was given to dogs. Stevens Village, Fort Yukon, and Beaver residents were also known to use lynx meat as human food (Sumida and Alexander 1985; Sumida 1988; Sumida 1989; Sumida and Andersen 1990).

Respondents from the participating communities during this study made little mention of using lynx meat for food. A single Fort Yukon trapper reported that he frequently eats lynx meat. Another Fort Yukon trapper reported that the meat from most lynx harvested by Fort Yukon residents is fed to dogs, but that “a few people eat lynx, more long ago, when people lived out in the bush.” A Chalkyitsik trapper stated: “Some [people eat lynx meat]; they will cut a little fry meat off the back hams. But they don’t do that all the time.” Trappers from Beaver reported that the meat from lynx harvested by Beaver residents is almost always used as dog food and not for human consumption. For example, explaining what is done with a harvested lynx, an elder from Beaver stated: “We skin it [lynx] and we stretch it and we try to sell the hide, and the meat we boil it up and give it to the dogs. It’s good eating when you are really hungry and no food around.” The elder said that she makes mitts out of lynx pelts and sells them. Beaver trappers consistently reported that if a lynx pelt was not sold it would be used for sewing mitts, parka ruffs, or hats.

Marten Harvest and Uses

Historically, martens were probably the most heavily used furbearing species on the Yukon Flats overall (Nelson 1973; Acheson 1977; Sumida 1988). However, the use of martens seems to fluctuate over time for various reasons. Nelson (1973:223) reported that “men who go into wilder areas make exceptionally large catches” of martens, but speculated that, due to a lack of persistent trapping effort in the outlying areas around Chalkyitsik, marten populations had grown immensely. Sumida (1988) reported Stevens Village residents believed marten populations in the region were healthy.

Trappers from the participating communities during this research expressed a general observation that marten populations around the Yukon Flats regions were low. A Chalkyitsik trapper reported that while community residents formerly harvested a significant number of martens, harvests had been low to non-existent in recent times. The trapper suggested that marten populations in the region had “declined quite a bit because there has been a lot of fires around here, yeah, you don’t really see them [martens] around much anymore.” Similarly, an elder from Beaver said that she had not seen martens in the area around Beaver for 2 to 3 years and suggested that their disappearance was a result of wild fires in the region. While some Beaver trappers told of a past abundance of martens and a previously heavy use of martens, they reported that martens were rarely caught or used by Beaver residents anymore. A Beaver trapper observed that marten populations in the Beaver area had declined severely: “I usually trap marten but there haven’t been any for 4 or 5 years now. There’s just nothing around. Don’t even see tracks.” The trapper suggested that marten populations may have moved out of the flats and into the hills. Another Beaver trapper suggested a cyclical correlation between lynx abundance and marten declines due to lynx preying on marten: “When the lynx come back, then the marten move out, now they move back up in the hills. There used to be a lot of marten in the flats until the lynx started coming back.” Similarly, Nelson (1973) reported that Chalkyitsik residents had informed him that lynx prey on marten and will drive them away.

Nelson (1973) reported that Chalkyitsik residents began targeting marten around November 15 and continued their efforts to harvest martens through late February. A Chalkyitsik trapper reported that

Chalkyitsik trappers normally begin targeting martens in late November and continue through March. Fort Yukon, Beaver, and Birch Creek residents also normally pursued martens from November through the following spring (Caulfield 1983, Sumida 1988). In contrast, Schneider (1976) reported that Beaver trappers considered marten fur to be prime in early fall. Similarly, an elder from Fort Yukon during this study stated: “Marten will even [be] prime when there is no snow on the ground, when there is a late fall freeze.” A Beaver trapper said that air temperatures determine when marten fur becomes prime: “Marten should be good now [late October] but it’s not cold, you know, they got short hair. Once it starts getting 30-40 below, then that’s good for the fur.” Another trapper from Beaver, who normally traps marten from November through February stated: “Fur’s best in January and February, when they are tan, but now [late October] they are kinda brown.” An elder from Fort Yukon observed that marten fur becomes prime in October and suggested that because of this a regulatory change is necessary:

I would like Fish and Game to change the marten season to open 1 month earlier in the fall because marten is prime in October, not in November. In November, the marten has lost a lot of fur and a large benefit to the trapper. Today, they open the season too late and they close it too late, also. It should be closed 1 month earlier. When you get marten too late, the fur smells bad and sometimes the marten are pregnant at that time and they should not be trapped but be allowed to reproduce. It’s not ok to trap marten just because there is still snow on the ground in March and April.

Martens occur in forests dominated by spruce and feed primarily on red squirrels, mice, and voles (USDOI 1974). Foothills are regarded by Yukon Flats residents as the best marten country and martens are specifically targeted by trappers in such locations (Nelson 1973, Schneider 1976, Caulfield 1983). Of marten trapping locations in the Chalkyitsik area, Nelson stated:

They occur everywhere, but are most likely to be found in the hills flanking the Porcupine River and Black River valleys. Anyone interested in trapping specifically for marten has to go into the larger and steeper hills, because in other areas they are not common enough to make the effort worthwhile. (1973:218)

An elder from Fort Yukon who once resided in Canyon Village in Upper Porcupine country, reported that productive marten trapping occurs in the foothills of that area. Caulfield (1979) reported that Circle residents trap marten in the Little Black River drainage. Despite a consistent view that martens are to be found in the hilly areas of the region, catching martens is never guaranteed due to their high level of mobility (Nelson 1973).

To trap marten, a trapper first finds fresh tracks in the area and then decides where to set the traps. If marten tracks are not found, then traps are set in places where the trapper has previously been successful (Nelson 1973). The standard methods of trapping martens are to use a marten pole on which the trap and bait are placed, or to use a cubby set placed up against a tree trunk with the bait secured to the tree trunk. Martens are not snared. A Chalkyitsik trapper described marten trapping via the cubby set method:

You usually go down the trail, walk off the trail to a tree, make a little house with sticks, and then you set your bait in there and put your trap outside of it, marten or lynx pretty much the same trapping style. Like a little tent on the trunk of the spruce tree.

Chalkyitsik trappers made trap bait from “strong-smelling rotted fish, beaver castor smeared on a duck’s wing, hare’s foot, or piece of furry moosehide” (Nelson 1973:220). Schneider (1976) reported that martens generally feed on squirrels but that they were also considered by Beaver residents to behave much like a “camp robber” (gray jay *Perisoreus canadensis*): very curious and eager to consume anything accessible. Martens are harder to catch late in the season because their behavior changes at that time due to mating (Schneider 1976). Martens are also known to be incidentally harvested in traps set for larger animals, but they are primarily targeted with #1 traps (Nelson 1973).

In 1973, Nelson reported: “A good [marten] trapper puts out a total 100 to 150 sets today, and in the past this figure was probably doubled” (1973:219). Nelson (1973) also reported that Chalkyitsik trappers specifically targeting martens must use traplines much farther from the community, a practice requiring much more time, energy, and effort than is required for trapping other species. For this reason, Chalkyitsik marten trappers usually must reside in their trapping camps or cabins in remote locations for extended periods of time. Nelson (1973) also observed that because of high lynx value at the time of his research, Chalkyitsik trappers were targeting lynx much more so than they were targeting martens. However, Nelson (1973) also reported that martens provided good income to Chalkyitsik trappers who trapped in the hilly areas to the north and east of the community. Nelson (1973) also stated that martens were rarely caught by Chalkyitsik trappers who put more trapping effort into lowland areas.

McKenna (1965) reported that martens were occasionally consumed as food by Venetie residents. Nelson (1973) reported that Chalkyitsik residents either discarded marten carcasses or used them for dog food. Several Beaver trappers reported that marten fur that is not sold on the market is used to make traditional hats and that marten meat was given to dogs. A Chalkyitsik trapper reported that marten fur is either sold or used to make hats or mitts. An elder from Beaver reported that she had made and sold several hats from marten pelts she had harvested over the years: “To tan it I wash it with Ivory soap and Clorox. Need to get the smell out of it. It’s [marten] easy to tan, but mink is much harder to tan.”

Wolf Harvest and Uses

Wolves inhabiting the Yukon Flats are known to often feed upon moose and caribou (USDOI 1974, Caulfield 1983). Caulfield (1983) reported that Yukon Flats residents did not consider wolves to be abundant in the region and that wolves were seldom trapped. In 1985, researchers reported that no wolves had been harvested by residents of Beaver, Birch Creek, and Stevens Village, and that wolves were seldom seen in the region (Sumida and Alexander 1985). In 1988, Sumida reported that no wolves were harvested by Beaver residents and that residents did not consider wolves to be abundant (Sumida 1988).

Respondents from the participating communities during this research generally corroborated this reported indifference to wolf trapping effort and resulting paucity of wolf harvests. With the exception of a few respondents who reported seeing locations where wolves had killed moose, respondents reported that they had seen little or no sign of wolves in the region in recent years. Nevertheless, because some respondents believed that wolves have a detrimental effect on moose populations in the region, they expressed strong support for the harvest and control of wolves.

Trappers reported that wolf harvests are inconsistent and fluctuate from year to year. Generally, trappers portrayed wolf harvests as occurring incidentally, with wolves becoming trapped in traps set for other animals. For example, a Beaver trapper stated: “I don’t even wanna fool with ‘em [wolves], they just end up in my traps.” Similarly, a Fort Yukon trapper stated: “I’ve never seen a pack of wolves, only 1 or 2 here and there; I don’t really mess with wolves. If I see 1, maybe, if it’s prime.”

On the other hand, a minority of trappers did report specifically targeting wolves in their trapping activities. For example, a Beaver trapper motivated by predator control explained that while he formerly placed no effort toward trapping wolves, he had now begun to focus on wolf harvesting. The trapper explained that, in recent years, he has financially invested in supplies and fuel for the purpose of locating moose-kill sites and setting traps and snares in those locations for wolves. The trapper believed that his efforts had made a positive impact on local moose populations. The trapper reported that he had been urging other Yukon Flats trappers to follow his lead in wolf control efforts.

Nelson (1973) reported that Chalkyitsik residents began attempting to trap wolves by November 15 and continued efforts to harvest wolves through late February to early March. Both Fort Yukon and Birch Creek residents were reported to pursue wolves during this general winter trapping season (Caulfield 1983). Sumida (1988) reported that Stevens Village residents attempted to trap wolves from November

through April. A Fort Yukon trapper during the current research reported that wolf fur is prime in November.

Caulfield reported that Circle residents took many wolves from the Yukon–Charley and Birch Creek areas, and that up to 25 wolves per year were harvested by Circle trappers in the “Black, Kandik, Nation, and Charley River drainages” (1979:39). Hilly areas are more productive for trapping wolves than are lowlands (Nelson 1973). Nelson reported Chalkyitsik residents setting wolf traps around the site of a freshly killed moose:

One man said he toggles his traps onto the antlers of a bull moose head, setting 1 trap on each side. He also stakes the hide out on the ground and sets about a dozen traps around it. (1973:242)

Because they are in an open area and wolves are bound to find them, moose heads placed on lake ice are another form of wolf bait used by Chalkyitsik residents (Nelson 1973).

Nelson (1973) reported that Chalkyitsik residents did not intentionally hunt wolves but that wolves were shot opportunistically when seen, which was extremely rare. A Beaver trapper during this study reported that wolves are shot with a rifle if they are seen. A Chalkyitsik trapper stated: “If I see it [wolf], I’ll shoot it. In winter time we trap ‘em for extra money.” Some trappers from Beaver reported that while they never trapped wolves intentionally, they had taken them incidentally in traps set for lynx.

Trappers who target wolves use either steel traps or snares. Because the movement of wolves is highly unpredictable, they are said to be very difficult to catch (Nelson 1973; Caulfield 1979). A Fort Yukon trapper stated: “People set wolf snares but they are hard to trap because they are smart.” Nelson (1973) reported that visible wolf tracks were not required to motivate Chalkyitsik trappers to set traps for them and that it was normal for the trappers to place some additional traps specifically for wolves around a trapline in order to avoid having wolves scavenge their catches. Schneider (1976) reported that Beaver residents viewed younger wolves to be easier to trap than older wolves who become wise with age, and also that packs of wolves are smarter and thus more difficult to trap than individual wolves. On the difficulty of trapping wolves a Beaver trapper stated: “They’re elusive.”

The majority of trappers from the participating communities reported that wolves were usually only intentionally pursued when obvious wolf sign was present in an area. When wolf sign is discovered near Fort Yukon and Beaver, trappers will usually set traps and/or snares in an attempt to harvest the wolves. For example, a Beaver trapper reported that he does not usually place direct effort on harvesting wolves but: “If there’s wolf tracks, yeah, we put up snare.” Similarly, a Fort Yukon trapper stated: “If we find a wolf-kill, moose carcass, we will set snares around it and try to get some wolves.” An elder from Beaver reported that she had only caught 1 wolf over the course of her entire life: “I know where he keep crossing and I set a trap there and I got it.”

Nelson (1973) reported that Chalkyitsik trappers also used the cubby set method to trap wolves. According to Nelson (1973), wolves are best caught with a double spring #3 size trap. A Beaver trapper during this study reported that he targets wolf with #4 size traps. Nelson (1973) reported that approximately one-half of the wolves caught by Chalkyitsik residents were caught by traps and the other half was caught by snares. According to Nelson (1973), wolves were considered to be more susceptible to snaring and wolves find snares much more difficult to escape from than traps. Similarly, a trapper from Fort Yukon reported snares, not traps, are the most effective means of trapping wolves.

Several trappers from the participating communities reported that the motivation to trap wolves was greater in Yukon Flats communities during the time when a government-funded wolf pelt incentive program was in place. In 1915, the Alaska Territorial Legislature began sanctioning a \$10 bounty on wolves. In 1927, the U.S. Department of Agriculture Bureau of Biological Survey and the Alaska Territorial Legislature began a cooperative predator control program which paid Alaskans up to \$20 per harvested wolf (Sherwood 1981). Wolf bounties in the Yukon Flats were discontinued in 1968 (USDOI

1974). Trappers interviewed during this study consistently stated that if there was “a bounty” for wolf pelts, more effort would be made to harvest wolves in the region.

McKenna (1965) reported that Venetie residents considered the human consumption of wolves to be taboo. Nelson (1973) reported that wolf fur was often used for parka ruffs by Chalkyitsik residents. Several respondents from the participating communities during this research reported using wolf fur for parka ruffs. A Beaver trapper reported that he “traps wolves more for predator control than for profit,” but that he did sell his harvested wolf pelts on the market.

Other Land Mammal Harvest and Uses

Yukon Flats residents use other small land mammals, including snowshoe hares, beavers, foxes, mink, and muskrats. Sumida (1989) reported that in March, Beaver residents normally directed their trapping effort towards the harvest of beavers and muskrats. Muskrats once made up one of the most heavily harvested furbearing species of Stevens Village residents (Sumida 1988). An elder from Fort Yukon reported that, for several seasons of his trapping career, his primary species of target were beavers and muskrats. A Fort Yukon trapper stated: “The lakes are drying up so bad all over the flats and this is why there are not many muskrats anymore, but sometimes it seems like are coming back.” A Fort Yukon trapper reported that mink are “late to prime” and that foxes will only be caught in October.

Several respondents from the participating communities reported snaring or shooting (with a .22 caliber rifle) snowshoe hares for food during winter. A Chalkyitsik trapper reported a high dependence on snowshoe hares for food during the winter season. Similarly, a Beaver trapper stated: “Get lots of rabbits in the fall when they are fat. Then hang them up and when we need 1 in the winter we bring it in.” An elder from Fort Yukon stated: “Never skin rabbits when you are storing them outside, always keep it frozen whole and then gut it and skin it when you are going to use it, otherwise your meat will go bad.”

CHAPTER 8: ETHNOGRAPHIC FINDINGS: PREDATION AND TRADITIONAL PREDATOR MANAGEMENT PRACTICES ON THE YUKON FLATS

Research has found bear and wolf predation to be causes of moose mortality in the Yukon Flats region, especially for calves (ADF&G 2002; Bertram and Vivion 2002; Bertram 2005; Stephenson and Thomas 2005). A 2002 study showed that, in GMU 25D West, bears were primarily responsible for mortality of radio collared moose calves (Bertram and Vivion 2002). While wolf predation accounted for only 3% of the mortality, 84% of the mortality was attributed to predation by bears (black bears 45% and brown bears 39%) (Bertram and Vivion 2002). The remaining mortality was attributed to drowning (8%) and “other” causes (5%).

Increasing harvest of bears and wolves has been suggested by management agencies and local hunters as a tool to reduce predation on moose and thereby increase moose populations in the region (ADF&G 2002; Bertram 2005; Caikoski 2008). Predation is thus a topic of central discussion in Yukon Flats subsistence issues, receiving widespread attention from local residents, tribal governments, and state and federal agencies. Respondents from the participating communities during key respondent interviews for this study generally expressed mixed views regarding the intricacies of predation. In agreement with the Bertram and Vivion’s (2002) findings, most felt that bears, rather than wolves, were generally more responsible for high moose mortality rates and declines in local moose populations. Few agreed on how much predation affected moose populations on the Yukon Flats.

Respondents consistently voiced an opinion that heavy wolf predation on moose in the area is a relatively new phenomenon, and that wolf predation has steadily increased over the last decade, after the study cited above was completed. Respondents also noted that wolf predation has always been a factor in Yukon Flats ecological processes. Fort Yukon hunters said that the Porcupine River area was especially active with wolves and that wolf predation on moose was extensive in that drainage. An elder from Fort Yukon said that the wolf population had greatly increased in the Porcupine River drainage and that predation in the area was more severe recently than during the latter half of the 20th century. Other respondents said that an increasing number of wolves in the area have recently affected moose behavior, causing the moose to migrate away from the region in an effort to avoid interaction with wolves. As a result, these respondents felt that community-initiated predator management efforts focused on wolves in the Yukon Flats should be increased.

In contrast, several respondents from the participating communities expressed a belief that wolf predation in the Yukon Flats, while present, was not as significant of a factor in moose population declines as others made it out to be. An elder from Fort Yukon, and a long-term user of the Black River drainage, observed that predation levels have been relatively stable within normal fluctuations. He suggested that the wolf population and predation activities in that location had remained the same over the course of his lifetime but that, during times when wolf activities increase, moose can be heavily hit. Many respondents believed that the decline in the moose population was more likely due to factors other than wolf predation, such as wildfire, habitat changes, or moose migrating away from the area. A Chalkyitsik hunter observed that wolf predation on moose was infrequent due to a small wolf population, and when predation did occur, it was usually during winter. A Fort Yukon hunter expressed a belief that wolf populations in the Yukon Flats were not made up of large wolf packs, but of small packs of 1–5 wolves, or solitary wolves. The respondent said that wolf predation on moose becomes a greater factor in upland environments. A Beaver hunter expressed a belief that wolf and moose populations in the area exist in a balanced relationship: “I see places where they get moose, they eat the whole thing, but there are not that many wolves, enough wolves for enough moose.”

Both research and the observations of local residents suggest that bears are responsible for the majority of predator-caused moose mortality in the Yukon Flats region, and thus increased bear harvests have also been suggested as a management action to improve local moose numbers (ADF&G 2002, Bertram 2005,

Caikoski 2008). Respondents discussed bears preying specifically on moose calves during spring. For example, a Venetie hunter stated: “Bears kill a lot of calves. Black bears will follow a cow [moose] around until she drops her calf and then they make a move for the calf.” A Beaver hunter stated that the majority of bear predation occurs during early spring, “while calves are still young and the bears are hungry; bears really try to get the calves when they are the youngest and easiest to catch.” Another Beaver hunter stated: “The bears, sometimes they kill moose, but they get the calf, they don’t get the big moose; they can’t, because they are not fast enough to get the big ones. They just get the little baby, the 1 that they could catch.” Some of these respondents made specific reference to a USFWS moose collaring survey that reported the majority of moose calf mortality in the Beaver area was caused by black bears (Bertram and Vivion 2002).

While most respondents agreed that bears were more responsible for predation on moose than wolves, there was less agreement about which species of bear—brown or black—is more responsible. Several Beaver hunters expressed a view that brown bears are becoming prevalent and prey heavily on moose near the Yukon River. A Beaver hunter stated: “The brown bears, the grizzly bears, they come down from the mountains, you know.” However, others respondents said that brown bears were more prevalent in uplands and tundra areas than in the lower river drainages. A Fort Yukon hunter stated: “Grizzlies do most of it [predation on moose] on the upper Porcupine and there are many grizzly bears up there. Fort Yukon is not grizzly country, it is black bear country.”

Respondents also had different observations about brown bear populations. While some respondents from the participating communities believed that brown bear populations in the region had remained constant over their lifetimes, others said that brown bear populations increased over the recent decade. An elder from Fort Yukon who uses the Black River drainage stated: “Years ago, to see a grizzly bear track was something! You know, they’re very few. Now they’re more than common.” A Chalkyitsik hunter also believed that brown bear activity had increased in the Black River area: “I’ve shot a couple of moose with big paw marks on their back hindquarter legs, grizzly marks.” He also said that brown bears can often show up at a moose-kill site and become a nuisance: “Sometimes brown bear will steal your moose from you, sometimes when you shoot ‘em, if there’s a brown bear around he’ll sit around there, you probably got to shoot, otherwise it wouldn’t leave.”

Historically, according to some respondents, local predator management was based on traditional ecological knowledge of predator–prey relationships. For example, an elder from Beaver stated: “Now they find out that bears are one of the big predator for cow and calf, but we knew this long time ago.” The elder said that bear spearing was an often practiced traditional method of predator management. Regarding wolves, an elder from Fort Yukon stated: “As long as I could remember, people have always been concerned about wolves killing too many moose,” but that wolves were never killed in abundance by local residents in the past. However, another elder from Fort Yukon said that, traditionally, Gwich’in people would “go after pups in dens” as a means of predator control. Similarly, another elder from Fort Yukon related: “Back then they could find the wolf dens, and they did.” The elder said that they would only do this when the wolf numbers grew large and the impact on moose became obvious. When asked about the existence of pre-contact predator control practices, an elder from Beaver stated:

Absolutely, yeah, they set snares and they know where all the wolf dens are; every spring they go there and dig them out and kill them. There’s people around who can do that, they know how to do it with the right kind of medicine, but we don’t have that kind of medicine no more.

The elder recalled that during the 1940s, the killing of wolf pups in their dens was an organized event which would be planned for and executed through a meeting of the band councils during times when the local wolf population became excessive:

They know by their [wolves] numbers, they used to have meeting, they go down there in Tanana....that’s how they know about management, because lived on the land and they

report to one chief. Same thing in Fort Yukon, where the Porcupine meet the Yukon, that's where they meet every year, from Arctic Village, Venetie, Chalkyitsik, Salmon Village, Circle, Eagle, Birch Creek, even Beaver people go up; they paddle, you know. And they meet up there for management and report on their land. Even back in the early 40s they were doing it, I remember. They talk in the evening. They got a council fire...a lot of people come from all over and, remember, they talk every night.

On the other hand, the view that active control of wolves was a traditional activity is not completely agreed upon by area residents. A Beaver hunter pointed out that intensive predator management practices by residents is not something that people had practiced until recently. The hunter said that people have been influenced by “the research coming out about it,” and that “killing just for the sake of killing was not something we ever did.”

While the research question directed at respondents was meant to inquire about the existence of traditional predator control practices, it is also probable that some of the respondents who discussed local efforts at predator control in the past were not speaking of pre-contact times but were instead speaking about local efforts at wolf control during the territorial and federal government sponsored predator control programs, which occurred in Alaska from 1915–1968 (Sherwood 1981; USDOJ 1974). During the 1930s, many Alaska trappers were paid a \$15–\$20 bounty for each wolf pelt they harvested and this was highly welcome income. As Sherwood noted:

In this period of national depression, bounty hunting was an occupation. Income from trapping furbearing animals was down, and trappers begrudged every pelt and every moose steak lost to a predator. To certain Natives the income from bounties was especially important during these years. (1981:891)

Contemporary predator management at the local level occurs mostly as an opportunistic practice, according to respondents—if and when a bear or wolf is encountered, it is shot by residents. For example, a Chalkyitsik hunter stated: “If we see a wolf, we’ll probably shoot it, or a bear. Elders always say ‘if you see a bear, shoot it, ‘cause it kills moose calves.’” Several respondents said that if a black bear is encountered, it will be shot for predator management reasons and not necessarily to be consumed. Local predator management is also practiced through trapping for wolves.

While a majority of respondents expressed a need for predator management efforts by local residents to be more persistent, some desired the implementation of a formal intensive management program to control bear and wolf populations. Respondents expressed concern that local predator management efforts would remain primarily opportunistic and insufficient unless incentives of some type were provided to residents. For example, a Chalkyitsik trapper explained that trapping requires money for fuel and supplies and thus if he is to trap wolves, he needs to make sure he can earn money doing so. Two elders from Fort Yukon recalled the territorial and federal government sponsored wolf bounty of 1915–1968. The elders said that when such an incentive was available, the local effort to harvest wolves greatly increased.

In 2007, the Beaver Village Council initiated a “Bear Derby” as part of their commitment to the predator management objectives of the YFCMMP. The Bear Derby is a contest held annually in which the contestant who enters the largest bear skull wins \$1,000. Hunters who participated in the event believed that it was helping to increase bear harvests in the region and that it would ultimately help to increase moose populations. Because it is illegal to sell the hides of bears harvested in Alaska, a Beaver hunter suggested that having a legal ability to sell bear hides would also help to increase local predator control efforts. In 2009, the BOG classified black bears as a “furbearer,” which would legalize bear trapping and allow the sale of black bear hides. However, no regulations to permit this practice in GMU 25 have since been authorized.

Even though most Yukon Flats respondents were in favor of increased predator management activities, they also understood and valued the role of wolves and bears in the ecosystem. Despite Nelson’s

(1973:240) argument that wolves “are much maligned as predatory killers of valuable wildlife, and unfortunately many people (the Kutchin among them) do not understand the crucial role of predators in maintaining a balanced and healthy population of prey species,” a majority of respondents voiced an opinion that wolves and bears do have value and thus should not be entirely eliminated. For example, a Beaver resident stated: “Leave a little bit, but not let them [predators] overrun our country.” Regarding predator management on bears, the resident stated “Some of them [should be killed], not all of them, because we eat bears, too.” Another Beaver hunter said: “I think it’s [predator control] a good idea as long as you don’t overdo it, totally exterminate them.”

According to Nelson (1983) it is a traditional view of Koyukon people that wolves have spirits and have a role in the function of a healthy Interior Alaska ecosystem. Similarly, several respondents expressed a view of the ecosystem in which predators are seen as having a natural role to play in the animal communities on the Yukon Flats. For example, a Fort Yukon hunter stated:

They are part of the land because...wolves, you know, they take down a sick bull or something like that and it serves its purpose, I think, when you have predators in any area, you know, it’s like having ravens, they serve a purpose here. That’s the way we have to look at it and I think it’s just that we’ve got to control the numbers so that no one population really drives the other one out and knocks the number down so bad that it takes years for it to rebound.

Similarly, a Beaver hunter stated:

In a way you know, they are animals [wolves], they have rights, they get hungry, but they’re getting our meat away from us too you know. You could keep it down you know. Can’t kill them all. If you going to kill them all what you going to do with the crippled moose, crippled bears? You know when animals are crippled, they take that.

And an elder from Fort Yukon stated:

That’s wrong [eliminating wolves]. There’s got to be wolves. It’s the natural balance. When people talk like that, that’s stupid. They don’t know. They’ve never watched it long enough. People long ago never believed that they should shoot all the wolves to save the moose. That’s all B.S. You can’t save the moose from the wolves by hunting them. But you can control them in your area. I really believe that they [governmental managers] got to take another look on that predator control with wolves. Wolves is going to kill old game. That’s how they going to survive. Human kills game, that’s how they survive.

Clark (1981) reported that Koyukon people formerly practiced taboos designed to please the spirits of harvested wolves. An elder from Beaver said that spiritual beliefs also sometimes prevent Gwich’in people from participating in and accepting predator control measures.

The white people, they don’t know that a lot of people, they don’t want to shoot bear because of the belief of the clan member that it belonged to; not allowed, you know, Indian, you know, they don’t bother other people or any other animal that they sleep to [experience in dreams],²¹ don’t bother with it, ‘cause if they do, they certainly will die; of course that’s a medicine, bad medicine.

Another theme that became apparent in the interviews was an observation by some respondents that the high level of local concern regarding wolf and bear predation in the Yukon Flats region was a relatively new phenomenon. Some hunters suspected that contemporary concern with predators and their effects on moose populations was a result of government agencies promoting predator control to local people. Other

21. The respondent’s use of the language “animal that they sleep to” is possibly in reference to the traditional Gwich’in belief in the ability to communicate with animal spirits while dreaming (Slobodin 1981:527).

hunters expressed the observation that predation has become an issue of extreme concern because of an increasingly high local demand for moose harvests. These respondents said that natural predation activity by wolves and bears, combined with increasingly heavy hunting pressure by humans, is creating a hazardous situation for moose. For example, a Fort Yukon hunter said that while predation had increased over recent years, “everybody’s still out there shooting moose, so it’s kind of a double negative for the moose.” Additionally, the hunter expressed an opinion that there are more wolves and bears today because local people no longer take up seasonal residence at fishing and trapping camps, as they formerly did, where encounters with and harvesting of predators were more frequent. While the hunter believes that local hunters need to put more solid effort into predator management, he also believes that moose are being overhunted in the area and that predators have become the scapegoats. “I just kind of find it hard to believe that they’re out there gobbling up calves that quick,” stated the hunter.

When questioned about the role of predation, other respondents were adamant that increasing moose populations in the Yukon Flats will ultimately require a mix of both predator management and conscious restraint by moose hunters. For example, an elder from Beaver observed that recent predator management efforts, in combination with hunters consistently refraining from harvesting cow moose, had produced positive preliminary results:

Since we stopped killing cow moose and killing more bears and wolves, we see the moose; the numbers—the bulls, and the cows, and the calves—seem to be a difference, you know. So maybe the numbers will come up, hopefully.

DISCUSSION: PREDATION AND PREDATOR MANAGEMENT

The relationship between predators (both human and animal) and prey on the Yukon Flats is dynamic and complicated. While all respondents desired a healthy and abundant moose population for subsistence uses, perceptions differed regarding how to get there. Some hunters desired an intensive effort to reduce the animals that prey on moose, and others maintain a view in which a healthy socio-ecological system can be achieved only through balancing management objectives equally toward both predator management actions and the development of a conscious hunting ethos that values stringent conservation of cow moose.

Some respondent perspectives on predators and predation are contradictory. Most respondents expressed disinterest in the consumption of bears for food. However, while several of them advocated that bears encountered be disposed of in order to reduce predation on moose, several other respondents expressed aversion to be the idea of harvesting bears when they are not to be used for food. This aversion is rooted in traditional core values of respect and proper treatment of animals, especially bears (Nelson 1983). It is necessary to gain a deeper understanding of these dynamics and how they affect bear harvests on the Yukon Flats through future research.

CHAPTER 9: ETHNOGRAPHIC FINDINGS: RESPONDENT CONCERNS REGARDING SOCIO-ECONOMIC VULNERABILITY, YOUTH EDUCATION, AND THE MAINTENANCE OF A TRADITIONAL HUNTING ETHOS ON THE YUKON FLATS

A DESIRE FOR LOCAL SELF-SUFFICIENCY

The local effort to maintain and enhance healthy wild land mammal populations for subsistence uses into the future is intertwined with a traditional cultural emphasis on community self-sufficiency. Respondent comments consistently emphasized a belief that local people's immersion into traditional subsistence life ways represents resiliency for the future. For example, a Beaver hunter stated, "The only solution to the economic crisis, to the money problems the Native people face, is to go back to the land." While some elders reflected on how difficult less developed times were, several elders expressed an opinion that it was the demanding subsistence environment of the past that created a resilient and hardworking character in traditional Yukon Flats culture. These elders expressed an opinion that a subsistence way of life is ultimately preferable to life in a modern, centralized community. These elders suggested that the general welfare of the people was superior during the earlier period of greater material dependence on subsistence hunting, fishing, and gathering.

We only lived off the land up there because those days they didn't get energy assistance, food stamps, [or welfare], but we had to work hard for our food and stuff, we lived off the land. We kill our moose fall time, and usually there was caribou around, and we do our fishing, we get our rabbits, muskrat in the spring, and we do all those sort of outdoor life stuff. That's how I grew up. We had nothing, 11 kids with little food, but we made it with berries, rabbits, ground squirrel, fish, caribou, moose meat. We could do everything to moose meat: grind it up, make soup bone, half-smoke it. I mean that's the way we grew up. That's the way I'm trying to teach my little ones to eat the Native food, you know, instead of chicken, hamburger. We never grew up on stuff like that. Out in the woods it's harder. But I like that livin' better once we get settled down.

Some respondents expressed deep concerns about the effects modern dependence upon the outside world has had on local people's ability to adapt to economic and ecological change. From mechanized transport, to food security, to education systems, elders described a history of evolving dependence on outside goods and services and a loss of dependency on the land. Some elders suggested that dependence on outside goods and services had shifted Yukon Flats residents' focus away from traditional knowledge, leaving them vulnerable in the current mixed economic system. For example, a Fort Yukon elder stated:

Living only off the store really scares me, because there's so little jobs and the prices are so high. Press a button and get this little Quest card²² and buy all you want. I always wonder how my grandchildren will be. I always did worry about that part. How they'll get their moose like we do. Things change so fast year after year, you know, and jobs are getting scarce and the climate is changing...I always think we are getting in a crisis yet to come.

A lot of time I sit home and think about my grandson. He's 3-years old. He always say "When I grow big I'm going to hunt moose" and I always say "Poor thing." I wonder if

22. The State of Alaska Department of Health and Human Services, Division of Public Assistance issues food stamps and other benefits to low-income households through the Alaska Quest card. The Quest card is an Electronic Benefits Transfer (EBT) card that can be used to purchase eligible food and other items at authorized grocery stores statewide.

he'll have boat and motor when he gets big. I wonder there'll be moose around. I wonder there'll be caribou. I wonder he'll know what to do.

Some elders expressed a belief that dependence upon motor boats for moose harvests has created deleterious side effects including a loss of the ability to harvest if fuel were to become unaffordable or unavailable; a loss in skill and awareness associated with slower paced traditional hunting practices; and unprecedented wildlife disturbances resulting from the loud noises produced by powerful outboard engines. A Fort Yukon elder explained that, "Bigger motors, they make louder noise, so the animals stay further back."

Hunters also said that constantly rising fuel costs for motorboat transportation have constrained the pursuit of subsistence resources. Subsistence research across Alaska has established that the highest income earning households often harvest more subsistence resources than households with lower incomes (Wolfe and Walker 1987; Wolfe et al. 2010), which they share with lower harvesters. One reason for this phenomenon is believed to be due to the fact that the higher a household's income, the more equipment and fuel it can purchase for use in harvest pursuits (Wolfe et al. 2010). This understanding lends credence to the apprehension expressed by some respondents about possible future economic changes and how such changes might affect subsistence pursuits on the Yukon Flats. Some hunters from the participating communities expressed concern about fuel becoming unaffordable in the future. Because of this, these hunters felt that dependence on motorized transport to and from subsistence activities had created a situation of increasing vulnerability. A Venetie hunter said:

Everybody's really dependent on machines...it takes away the value of, you know, when you go out hunting. When you go out hunting, they're going out because they're hungry; but I mean you're not seeing the whole aspect of the picture of, you know, the healthy way of living, which is the way we call subsistence living; but, you know, what is subsistence?... My values, you know, were taught from my grandfather...and he gave me, the values of "what would happen if there was no fuel?" Would people be able to survive? I know I would be able to 'cause I know how to, I know where to go and where to hunt and where to fish; but I mean some of these other people they just get in a boat and, you know, drive around 'til they see a moose.

Other respondents pointed out that the opportunities created by involvement in the market economy have been of great benefit to the Yukon Flats people. For example, recollecting on the times of his grandparents, a Fort Yukon elder said "Way back in 1800, they live on straight meat, moose skin pants, moose skin moccasin, no rubber shoes; in the winter colder, 65 below [zero]." The elder explained that people should not forget how hard life had been before access to modern goods and services and hoped for a stable economic future on the Yukon Flats.

RAISING AND EDUCATING THE NEXT GENERATIONS

Several elders expressed a belief that teaching young people to value hard work and teaching them the skills to live from the land, without complete dependence on the dominant socio-economic system, are critical objectives towards a resilient future for Yukon Flats communities. For example, a Beaver elder stated:

The hope is in the kids, yeah. I always talk to the kids. You've got to wait for the next generation, go back to the school and talk to the young kids you know...

Local concerns about a lack of knowledge and skill being transmitted to young people, and a resulting sense of community vulnerability in the face of future changes, are not new sentiments on the Yukon Flats. Caulfield (1983) reported that Yukon Flats elders were concerned that young people were not learning adequate subsistence skills. Describing life in Chalkyitsik, Fort Yukon, and Venetie, Caulfield (1983:197-198) reported that "Elders in the participating communities express the belief that knowledge of use of the land and wild resources must be passed on to younger generations to ensure economic and

cultural survival in the future.” Similarly, elders from the participating communities during this research consistently emphasized the importance of educating youth in traditional subsistence skills and activities. For example, an elder from Fort Yukon stated: “Got to keep teaching them to live off the land.” Another elder from Fort Yukon told of her motivation for directing her grandchildren toward a pursuit of subsistence lifestyles. The elder reminded her grandson:

You’re going to be eighteen in May so you got to learn how to go hunting. You got to learn how to make fish wheel or put in fish net. You got to do all this by yourself. What if me and grandpa’s gone? Who’s going to take over? I tell him]: “You’re not going to learn nothing walking around the street or sitting around.”

Several key respondents pointed out that some young people are learning traditional skills and are showing a great passion for pursuing subsistence activities, especially moose hunting. Respondents from Beaver mentioned particular parents and elders taking on a responsibility for teaching the young people traditional skills and for instilling motivation in youth to participate in subsistence activities.

In spite of these examples, other respondents expressed a belief that young people were not acquiring the appropriate skills and motivation needed to maintain a traditional subsistence way of life. These respondents portrayed an evolving situation of generational disconnect from subsistence activities. For example, an elder from Fort Yukon stated: “Kids really don’t learn anything about subsistence life because their parents are not pursuing a subsistence life.” The elder went on to explain a belief that the establishment of the modern education system ultimately initiated a process of alienation from the land in families and children. “It’s a good thing that kids get schooling, but I think that was what broke up most of the families, you know, because when you’re out there [pursuing subsistence activities] all kids they had their own work to do.” Another elder from Fort Yukon observed that even though many youth from the community actively pursue subsistence activities, the traditional values and ethical approach to pursuing such activities is often missing:

Parents today are not willing to instill the work ethic and etiquette in their kids like they used to do traditionally, you know. Families are hunting but it’s just not done with the same ideals. If some parent sets a bad example by shooting cow, or over killing, or not taking care of the meat, the kids will learn that, do the same thing, you know, and that is a problem today. Nobody is teaching them the right ways to hunt as well as to protect the land, you know, and to protect the animals on it...if we teach people to say “hey, if you want moose to be there fifty years from now, when you’re older, you need to start watching how you hunt right now, you know, if you start killing everything that moves there ain’t going to be nothing left.”

Similarly, a Beaver hunter stated: “[The] future depends on the kids, and we need to do something about passing on the traditional skills...The school needs to focus more on educating kids about subsistence and having programs where they can participate in subsistence as a part of their education.” An elder from Beaver explained that he had begun to facilitate a “traditional knowledge camp” for Yukon Flats youth on his Native allotment each summer.²³ The camp is designed to educate youth in traditional subsistence skills and values, which many elders view as keys to a sustainable and positive future on the Yukon Flats. An article published in a local newspaper, written by a resident of Beaver, clearly articulates the goals behind these local grassroots efforts at youth education:

Traditional subsistence education for young people would benefit us most here in the Yukon Flats...We can create programs that build dignity and self-respect through teaching our children skills they don’t have to leave home to get, such as cabin-building, hunting, hunter safety, fishing, fish-wheel building, trapping and taking care of raw furs

23. The 1906 Alaska Native Allotment Act permitted individual Alaska Natives to acquire up to 160 acres of land.

etc. The list is endless of the wealth of knowledge we possess to pass onto our children (Adams 2006).

The comments above and the majority of responses received regarding the future of subsistence on the Yukon Flats, lend support to already existing efforts by CATG and the participating communities to develop formal educational programs focusing on immersing local youth in traditional skills and traditional methods of resource stewardship. Yukon Flats residents envision such programs being implemented by tribal governments involved with local natural resource management and through participatory programs with the USFWS and other YFCMMP partners.

RULES, RESPECT, SPIRIT, AND CEREMONY

Traditional Yukon Flats hunting rules, cultural values of respect for wild animals, and deliberate efforts at moose conservation are core components of the educational message to be brought forth in the formal education systems envisioned by community members and the CATG Natural Resources Department.

Caulfield (1983) reported observations during his fieldwork confirming respondents' adherence to the traditional Gwich'in decree against the waste of any wild meat or animal parts. This decree was said to be enforced by social pressures; in the past, violators had been forced to leave certain communities. Respondents during this research also discussed traditional values regarding the proper use and care of subsistence resources. The general theme that emerged from these respondents was an articulation of traditional values dictating that animals should never be killed unless they are to be used. Some respondents said that if the parts from harvested animals are wasted, bad hunting luck may develop in the future. Therefore, maintaining a respect for animals and their parts was viewed by these respondents as an important, practical and, oftentimes, spiritual value. For example, a Fort Yukon hunter explained that when he was young his grandfather told him to "respect the land, keep the land clean, and respect your meat, take care of it and don't let it spoil. He said if you do all that, you will have good luck the next time you hunt." A Beaver hunter stated:

"Don't waste food," that's what they [elders] tell us all the time. You get a moose, you know, you got to take care of it. You don't just shoot a moose for nothing, you got to take care of it no matter what. No matter how far back it is. It's a lot of work but that's the way it is.

An elder from Fort Yukon related:

Kill just enough to feed your family. Don't shoot everything that moves. They [elders] say when you kill everything that moves and you're shooting at everything, they said after that you're going to have bad luck, I guess that's a way of just telling you to take only what you need.

The prevalence of specific taboos, rituals, and ceremonies centered on ideals of proper etiquette for wild resource use has been widely established within Athabascan cultures. For traditional Athabascans, including the Gwich'in, animal spirits possess immense power and avoiding offending these spirits is a fundamental part of day-to-day life (Hadleigh-West 1963; McKennan 1965; VanStone 1974; Clark 1981; Nelson 1983). According to VanStone (1974:65): "all Athapaskans had numerous taboos...that applied to food and hunting. Nearly all of these were designed to prevent the animals' spirits from being offended and to make sure that important game remained plentiful." For the Koyukon, "unusable remains or uneaten portions [of animals] must be disposed of in respectful ways...this shows deference, avoids contact with alienating or contaminating influences, and encourages regeneration and reincarnation" (Nelson 1983:230). As such, respect in both Koyukon and Gwich'in culture is shown by processing animals in specific ways and sometimes placing the parts not consumed by humans in locations where scavengers might eat them (McKennan 1965; Clark 1981; Caulfield 1983; Nelson 1983). As Nelson (1983:22) reported, "[the Koyukon] are especially watchful for irreverent, insulting, or wasteful behavior

toward living things. The spirits are not offended when people kill animals and use them, but they insist that these beings (or their remains) be treated with deference owed to the source of human life.”

A comment by an elder from Beaver reflects these traditional beliefs about proper treatment and uses of fish and animals. The elder said that using as much of a harvested animal as possible and always sharing it with others, including other animals, is an important traditional Gwich'in practice of respect. The elder explained that during earlier times it was considered very important to approach the harvest and uses of animals in a certain way:

Whenever I catch fish, to be happy I would give it away. That's the first thing Indian does is give it away, you don't keep that first fish, you know. Maybe you did it for yourself and that's the reason you feel bad about it? You've got to give it away, or part of it away. My father says "You go out and get that bear but you pray first and you talk, make it in your mind that you need to harvest that bear." The [bear] fat, you got to render it with moose fat, make 10 of these cans so we could use it for winter, mix it with moose fat, and that way you don't have to buy Crisco or Wesson oil. That's another way to look at it, for a purpose. You know you can't just go out and kill a bear and let it rot you know...it will be no good, and you could feel bad about it, taking a life and not really call or make plan to do what you're going to do...Some of it you give back to the land, some to the water, set some aside for the wolf, and camp robber [gray jay]...Put some back in the river, even just a little piece of fat put in that water. But a lot of people don't know this—it's what you do with what you take for harvest. But you're in a strange territory too, you know, people who watch TV too much. If you live like long time ago you take the hide, take the ribs, take all of it, you know, and still you have enough to give back to the land, and the water, to the animals. They do this through prayers and dances and making songs.

Elders from Beaver asserted that, aside from people of Koyukon cultural background residing in Stevens Village, strict traditional ideals about hunting protocol, spiritual practice, and obtaining luck had somewhat diminished among the Yukon Flats groups during their lifetimes. Elders from Beaver and Fort Yukon said that to further the goals of moose conservation a revival of the traditional Gwich'in ideals about hunting protocol taught to them by their parents and grandparents is greatly needed today.

The potlatch ceremonies which continue today on the Yukon Flats are a traditional institution that serves to instill values of sharing and using as many parts of animals as possible. Potlatches are occasions for sharing wild food, distributing gifts, and honoring a deceased community member. The potlatch ceremony has also long served more subtle functional purposes in Athabascan cultures (VanStone 1974; Simeone 1995; Moncrieff et al. 2005). The articulation of social relationships is one important aspect of the potlatch (Simeone 1995). Reporting on the Upper Tanana Athabascan potlatch, Simeone (1995:136) observed that, "moose meat [used in the ceremony] especially symbolizes rights to land and the management of local resources based on cultural imperatives." At potlatches, young people are counseled by elders to follow traditional ways (Simeone 1995). Potlatch oratories given by Athabascan elders often concern cultural connection to place and have an underlying purpose of solidifying relationships between people and land (Simeone 1995).

Caulfield (1983) described the occurrence of a "first moose potlatch" ceremony held in Venetie in 1982 to celebrate a 19-year-old man's first moose harvest. Caulfield (1983) reported that the hunter kept none of the meat for himself and the Venetie residents participating in the event believed that the hunter would receive good hunting luck in the future by sharing the moose with the community (Caulfield 1983).

The ritual distribution of wild foods in the hunting and fishing culture of Alaska Natives can serve a purpose of solidifying reciprocal relationships between animals and humans, relationships seen as critical to the maintenance of harvestable populations of wild food resources (Fienup-Riordan 1994). Maintaining relationships between animals and humans is one function of the traditional Koyukon potlatch ceremony

(Nelson 1983). The Koyukon are even known to perform a ceremony for harvested wolverines, and also for bears that “is essentially a memorial potlatch held to honor the killed animal, much like the ones given for departed persons” (Nelson 1983:181). McKennan (1965) reported that the Neets’aii Gwich’in also performed a traditional ceremony to honor harvested bears.

In summary, elder respondents believe that teaching traditional values of sharing, respect for animals, and the use of all their parts is important to the long-term stability of the both the local moose population and the local hunting culture. Potlatches, fish camps, moose hunting camps, school classrooms, social events, and community meetings are formal and informal venues to facilitate the transmission of these values. CATG staff foresees that development of formal educational institutions embedded into efforts at local resource management would greatly strengthen these efforts.

CHAPTER 10: DISCUSSION AND RECOMMENDATIONS— LOCAL PARTICIPATION IN WILDLIFE MANAGEMENT ON THE YUKON FLATS

The results of this research provide useful information for improving current local resource management efforts on the Yukon Flats—particularly for reaching ADF&G management goals in GMUs 25B and 25D, for improving the successful implementation of the YFCMMP, and for realizing local aspirations to maintain an economy and way of life based upon subsistence hunting and fishing (ADF&G 2002; Caikoski 2010). By establishing a cooperative body among state, federal, and tribal stakeholders, the YFCMMP provides the foundation for improving moose conservation efforts in an area with low moose densities and high local demand for subsistence harvest. The results of the ethnographic research conducted during this project suggest that enhanced local participation, outreach, and education as part of a cooperative system such as the YFCMMP will provide a necessary contribution to future management efforts.

Examples of enhanced community participation in large land mammal management systems leading to effective local stewardship come from studies conducted in other locations in North America. One such system was implemented in subarctic Canada, where the James Bay Cree use practical knowledge of the most experienced hunters to “manage information feedbacks, provide leadership for collective decision making, and enforce the rules and ethical norms of the community” (Berkes 1998:120). Similarly, the Waswanipi band of Cree applies knowledge gained from constant local monitoring of moose populations. Monitoring information informs a system whereby hunting territories are rotated and harvests deliberately limited during periods of low moose abundance (Feit 1987).

The examples above are cited to highlight the positive contribution that community participation has made to wildlife management in other boreal forest, subsistence-oriented, socio-ecological systems. However, there are also legal constraints of relying on Canadian models based on Indian treaties. In Alaska, there are no treaty relationships with Alaska Natives that govern wildlife management. With respect to game management on federal lands, ANILCA mandates a priority to rural subsistence uses, and federal agencies must consult with tribes. With respect to state and private lands, under state law all Alaska residents (both Alaska Natives and non-Natives), with 12 consecutive months of residency, may participate in subsistence fisheries and hunts (except for marine mammals). The development of regulations for subsistence hunting on federal lands, which are a large portion of the lands within the Yukon Flats region, is the responsibility of the Federal Subsistence Board (FSB) and are implemented by the federal agency responsible for the affected federal conservation unit (the USFWS in the Yukon Flats). State subsistence hunting regulations are adopted by the Alaska BOG, and implemented by ADF&G. The FSB’s advisory body in the Yukon Flats is the EIRAC. The state’s advisory body in the Yukon Flats is the Yukon Flats Fish and Game Advisory Committee (YFFGAC).

All stakeholders in the Yukon Flats area must support the YFCMMP in order to enhance community participation in local moose management. Stakeholders include traditional users, tribal governments, federal and state agencies, the FSB, the EIRAC, the YFFGAC, and the general public. The YFCMMP establishes state and federal management agencies and tribal governments as legitimate partners in management. In addition to the YFCMMP, the CATG AFA with the USFWS has also demonstrated continuing local efforts at active participation in management. The success documented by the Canadian examples demonstrates that adequate and meaningful local hunter participation in the YFCMMP is highly likely to make an important contribution to the long-term success of the plan. Increased active participation by local residents, tribal governments, and tribal organizations in their local advisory committees, councils, and the YFCMMP would enhance the current regulatory decision-making process and provide for a sense of local ownership of the management system. For success, Yukon Flats community members must take responsibility for their own efforts at participation in these bodies.

Based upon what has been learned from the results of this research, the following recommendations are made for future cooperative moose management efforts in the Yukon Flats:

1. Implement the YFCMMP as a model for local participation in wildlife management and as a model for the integration of local traditional knowledge into wildlife management.

The YFCMMP provides a foundation for local participation in wildlife management on the Yukon Flats and presents a unique opportunity in Alaska to develop a model for integrating traditional knowledge into wildlife management. Elder observations in this study demonstrate their complex knowledge of how landscapes, wildlife populations, hunting practices, and economics have changed over time on the Yukon Flats. Local interest in increased involvement was most recently confirmed at an interagency Moose Management Planning meeting in Beaver in October 2010 (see Appendix D). However, according to the observations of CATG staff, long-term success of the plan has been affected by a lack of implementation. The YFCMMP identifies local knowledge as a Management Information Need (ADF&G 2002), but there is no clear methodology presented in the plan for integration of traditional knowledge into management. Prior to further implementation, the YFCMMP should be made more robust by developing and including a framework for increasing local participation and integrating traditional knowledge. This framework can be cooperatively developed and adopted in partnership by tribal governments and state and federal management agencies.

2. Establish educational programs to increase youth awareness of traditional values and facilitate the intergenerational transmission of traditional knowledge.

The elders participating in this research expressed concern that the knowledge gained from their life experiences is not being adequately passed down to their younger generations. For example, they asserted that families staying in town in order for their children to attend school is one reason for what is seen as an increasing disconnect from practical subsistence knowledge for young people. Also, local residents may provide inaccurate harvest data during household surveys because of a fear of criminalization when a harvest occurs outside of established state and federal regulations, and local residents may distrust the regulatory process where their harvest data are used (Andersen and Alexander 1992; Thomas and Fleener 2005). In the 2008–2009 survey data specific examples of under reporting are evident. For example, no households reported any harvests of moose outside of the 2008–2009 regulatory hunting seasons. However, traditional and contemporary practice in the region mandates, and regulations allow, the harvest of ceremonial moose for funerals and potlatches. Because multiple funerals occurred in these communities during the 2008–2009 study year, during times outside the open hunting seasons, it is likely that moose were harvested for these purposes, yet none were reported in the household survey results. Proactive educational programming with youth may help offset these misconceptions related to the purpose and use of household harvest surveys within the future generations and create a greater understanding of the need for accurate harvest reporting.

The YFCMMP calls for presentations on moose management to be conducted in local schools. However, implementation of these efforts has been limited and fragmented over time. Robust programs for youth education in traditional skills, traditional values, as well as the concepts of Western resource management may greatly enhance local participation in wildlife management and can improve the long-term effectiveness of conservation efforts. Structuring YFCMMP driven educational programs into formal schooling is one method to allow for the transmission of traditional and Western scientific knowledge. These activities would need to be pursued cooperatively among local users and wildlife management agencies and local school administrators and teachers. The development of YFCMMP-sponsored youth workshops where elders, hunters, governmental managers, and youth talk together about the importance of moose conservation could also be an effective method of collaboration.

3. Establish community-based resource monitoring systems to further document and understand the complex socio-ecological system of wildlife, environment, and harvesters on the Yukon Flats.

The YFCMMP calls for local involvement in moose management through the development of “cooperative management programs that increase user involvement in management and support local efforts to increase moose numbers” (ADF&G 2002:15). In 2010, ADF&G emphasized its desire to develop moose management programs for GMU 25 in cooperation with state, federal, and tribal management organizations (Caikoski 2010). The cooperative efforts between ADF&G, USFWS, and CATG to fund, conduct, and report the results of the current research in this report are a confirmation of this commitment among the stakeholders.

Community-based monitoring systems would intensify user involvement by enlisting local stewards to actively catalogue biological and social conditions on the ground. In such a system, local stewards volunteer their efforts to record environmental observations and wildlife observations year-round at specific locations; and to record hunting conditions, hunter participation, and harvest numbers during the annual hunting season (Ross et al. 2010). Stewards then report their information back to local bodies, such as hunter councils, where it is catalogued and used to inform management and future harvest practices (Ross et al. 2010). On the Yukon Flats, local stewards would make direct contributions to the YFCMMP. Local stewards could participate in youth education events and youth in training could also be enlisted as participants in monitoring activities. Local stewards could also play a role in developing and implementing a functioning wildlife violations enforcement system at the local level, which was recently called for at the interagency Moose Management Planning meeting in Beaver in October 2010 (see Appendix D). These are examples, and detailed specifics of community-based resource monitoring programs would need to be tailored to local circumstances and developed cooperatively by all members of the YFCMMP. Monitoring programs can be implemented wherever impetus and funding opportunities are developed, whether on federal, state, tribal, or Native corporation lands. Partnerships between local hunters and the Yukon Flats National Wildlife Refuge focusing on accessible refuge lands is one viable option for initializing an experimental local monitoring program.²⁴

Community-based monitoring has a foundation in the Yukon Flats; community-based monitoring of household harvest levels currently occurs as conducted by local research assistants for this wildlife survey and the Alaska Migratory Bird Co-management Council’s subsistence waterfowl surveys. Data collection methods utilized by CATG since 1993 include household surveys, individual hunter interviews, and harvest reports. This study represents the first year CATG utilized a standard household survey method to establish community harvest estimates. This design allows for standardized data to be collected and compared across communities and potentially across regions.

As referenced above there are opportunities to improve data collection. Future research should develop a method to more accurately document funeral and potlatch moose harvests. For example, questions designed specifically to document funeral or potlatch harvests could be included. Additionally, the survey findings showed that sharing of moose and other subsistence foods is central to the economy and way of life of Yukon Flats communities, but details of sharing networks are lacking. Future research can explore sharing patterns both inside and outside the communities by more in-depth documentation of sharing networks.

The historical results of this community-based monitoring (1994–2010) suggest that moose harvests in the Yukon Flats have fluctuated drastically. However, differences that occur across study years may be the result of hunters’ under-reporting harvests, low moose populations, sample methods, and/or deficiencies in survey methods. Further review of the historical data should occur to make the results

24. For an example of how local monitoring systems have been successfully initiated on tribal lands see “The Indigenous Stewardship Model” in Ross et al. 2010.

more useful for comparative purposes and for management information needs. In addition, changes in estimated moose populations across years should be compared with harvest estimates to discern relationships between low population density and reports of low harvests.

4. Maintain and enhance regulations that accommodate traditional harvest methods and that allow for sustained yield harvest opportunities, and improve education and outreach to actively promote local participation in these opportunities.

The YFCMMP calls for the exploration of “opportunities to alter hunting seasons to match traditional use patterns, while keeping harvest within sustained yield and meeting moose population objectives” (ADF&G 2002:12). The ethnographic findings of this study show that a communal hunting practice in which wildlife is harvested by skilled hunters and other who are being trained, and then distributed to community members who did not hunt or who were not successful in harvesting, is traditional on the Yukon Flats. This practice also seems to be the most resource efficient and effective means of obtaining moose meat for Yukon Flats households and families. To some extent, these communal hunting practices are accounted for within current regulations: Yukon Flats residents hunting on federal lands can use the designated harvest permit and ADF&G manages a community hunt system. However, both the federal and state opportunities remain under-used by local hunters (Caikoski 2010). Although many of the hunters interviewed in this study described pursuing communal hunting strategies, none discussed use of the federal designated harvest permit opportunity. The state community hunt for the Chalkyitsik area is underutilized and has not been used since 2004 (Caikoski 2010). The results of the ethnographic component of this research point toward the need for management agencies, tribal governments, and tribal organizations to more actively engage residents about these opportunities and to promote their use by local hunters.

According to the observations of CATG staff, local hunters are not always well versed in the sometimes complex permit application procedures required for participation in these hunts. There is a perception that the paperwork required by individual hunters for the federal hunts and by the participating community and hunters in the state hunts is too complicated and is a hindrance to local participation in these hunts. Some hunters do not even know where to find information about such opportunities. These difficulties should be addressed for widespread use of these hunting opportunities to occur.

The results of this study suggest that local hunters often hunt in a communal fashion regardless of whether or not they are registered in a state-sanctioned community hunt. In this circumstance, some traditional use practices are inconsistent with state and federal regulations. Knowledgeable and active hunters who worry about breaking the law are unlikely to share information needed for harvest monitoring and resource population monitoring. Cooperative efforts at outreach involving all partners are needed to address these concerns. An additional consideration would be for members of the YFCMMP, such as designated community-based resource monitors, to play active role in both facilitating the permitting process for these hunts and monitoring these hunts for proper reporting procedures.

CONCLUSION

The continued importance of the harvest of large land mammals, furbearers, and small game to residents of Yukon Flats communities has been clearly documented by this research. The intent of this report has been to assist Yukon Flats communities in working toward their goal of maintaining healthy wildlife populations and generating sustainable hunting practices that will allow them to maintain a way of life highly dependent upon local wild resources. Respondent statements brought forth an emergent theme focused on integrating traditional skills, traditional ecological knowledge, and youth conservation education programs, into management. Lasting traditional values such as those discussed by elders, hunters, and youth alike and highlighted throughout the ethnographic findings of this study, namely self-sufficiency, respect, and intergenerational pedagogy, serve to instill within Yukon Flats culture an idea of

dependency upon the health of local wild resources for long-term survival. Such recognition of dependency within a society has a great capacity to generate an enduring stewardship ethic if given the opportunity to prosper (Berkes 1998; Alcorn and Toledo 1998; Berkes 1999; Berkes and Davidson-Hunt 2003; Folke et al. 2003).

ACKNOWLEDGMENTS

The authors would like to thank the following tribal governments and organizations for approving this project and for identifying tribal natural resource technician candidates; without them, this work would not be possible: Gwichyaa Zhee Gwich'in Tribal Government (Fort Yukon) and Tamara Henry, Venetie Village Council, Circle Village Council, Beaver Village Council, Chalkyitsik Village Council, Stevens Village Council, and Denduu Gwich'in Tribal Council (Birch Creek); the Council of Athabaskan Tribal Governments Department of Natural Resources staff: Andrew Firmin, James Kelly, Jay Stevens, and Gary Lawrence; and local surveyors who completed the work: Deb George, Delma Fields, Stanley Phillip Jonas, Phillip Solomon, Amanda Alexander, Wally Solomon, Chris James, Danny Sam, Donald Carrol, Albert Carroll Jr., Wilma Pitka, Steven Flitt, Herb George, and Mary Y. James. The authors would also like to thank Hishinlai' (Kathy R. Sikorski) of the Alaska Native Language Center and Paul Williams Jr. for their assistance with Gwich'in language verification; Tom Paragi and Bob Hunter of the Alaska Department of Fish and Game Division of Wildlife Conservation, and Robert Jess, Mark Bertram, Vince Mathews, and Wennona Brown of the U. S. Fish and Wildlife Service for the constructive comments they provided in their review of draft versions of this report.

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APPENDICES

APPENDIX A: SURVEY INSTRUMENT, 2008–2009

LARGE GAME & TRAPPING SUBSISTENCE SURVEY

VENETIE, ALASKA

April to March, 2008-2009

This survey is used to estimate subsistence harvests and to describe community subsistence economies. We will publish a summary report, and send it to all households in your community. We share this information with the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service and the National Park Service. We work with the Federal Regional Advisory Councils and with local Fish and Game Advisory Committees to better manage subsistence, and to implement federal and state subsistence priorities.

We will NOT identify your household. We will NOT use this information for enforcement. Participation in this survey is voluntary. Even if you agree to be surveyed, you may stop at any time.

HOUSEHOLD ID:		
COMMUNITY ID:	VENETIE	363
RESPONDENT ID:		
INTERVIEWER:		
INTERVIEW DATE:		
START TIME:		
STOP TIME:		
DATA CODED BY:		
DATA ENTERED BY:		
SUPERVISOR:		



drawing by Michael Williams, Beaver

COOPERATING ORGANIZATIONS

US FISH AND WILDLIFE SERVICE
YUKON FLATS REFUGE
101 12TH AVE., ROOM 264 MS 575
FAIRBANKS, AK 99701

907-456-0440

CATG
NATURAL RESOURCES
PO BOX 283
FORT YUKON, AK 99740

907-662-2667

ADF&G
DIVISION OF SUBSISTENCE
1300 COLLEGE RD
FAIRBANKS, AK 99701

907-459-7319

BEAVER TRIBAL COUNCIL
TWG PROGRAM
PO BOX 24029
BEAVER, AK 99724

907-628-6126

HOUSEHOLD MEMBERS

HOUSEHOLD ID

Between April 2008 and March 2009...
 ...how many: April to March, 2008-2009

ID#	IS THIS PERSON ANSWERING QUESTIONS ON THIS SURVEY?		MALE OR FEMALE?		ALASKA NATIVE?		HUNTER EFFORT	
	(circle)	(circle)	(circle)	(circle)	(circle)	(circle)	IN 2008-2009, DID THIS PERSON HUNT FOR MOOSE?	IN 2008-2009, HOW MANY DAYS DID THIS PERSON SPEND HUNTING MOOSE?
HEAD 1	N	Y	M	F	N	Y	Y	N
01								
HEAD 2	N	Y	M	F	N	Y	Y	N
02								
03	N	Y	M	F	N	Y	Y	N
04	N	Y	M	F	N	Y	Y	N
05	N	Y	M	F	N	Y	Y	N
06	N	Y	M	F	N	Y	Y	N
07	N	Y	M	F	N	Y	Y	N
08	N	Y	M	F	N	Y	Y	N
09	N	Y	M	F	N	Y	Y	N
10	N	Y	M	F	N	Y	Y	N
11	N	Y	M	F	N	Y	Y	N
12	N	Y	M	F	N	Y	Y	N
13	N	Y	M	F	N	Y	Y	N
14	N	Y	M	F	N	Y	Y	N

PERMANENT HH MEMBERS: 01

APPENDIX B: SURVEY INSTRUMENT, 2009–2010

LARGE GAME & TRAPPING SUBSISTENCE SURVEY

VENETIE, ALASKA

April to March, 2009-2010

This survey is used to estimate subsistence harvests and to describe community subsistence economies. We will publish a summary report, and send it to all households in your community. We share this information with the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service and the National Park Service. We work with the Federal Regional Advisory Councils and with local Fish and Game Advisory Committees to better manage subsistence, and to implement federal and state subsistence priorities.

We will NOT identify your household. We will NOT use this information for enforcement. Participation in this survey is voluntary. Even if you agree to be surveyed, you may stop at any time.

HOUSEHOLD ID:		
COMMUNITY ID:	VENETIE	363
RESPONDENT ID:		
INTERVIEWER:		
INTERVIEW DATE:		
START TIME:		
STOP TIME:		
DATA CODED BY:		
DATA ENTERED BY:		
SUPERVISOR:		



drawing by Michael Williams, Beaver

COOPERATING ORGANIZATIONS

US FISH AND WILDLIFE SERVICE
YUKON FLATS REFUGE
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907-662-2667

ADF&G
DIVISION OF SUBSISTENCE
1300 COLLEGE RD
FAIRBANKS, AK 99701

907-459-7319

HOUSEHOLD MEMBERS

HOUSEHOLD ID

Between April 2009 and March 2010...
 ...how many people lived in your household?

ID#	IS THIS PERSON ANSWERING QUESTIONS ON THIS SURVEY?		MALE OR FEMALE?		ALASKA NATIVE?		HUNTER EFFORT	
	(circle)	(circle)	(circle)	(circle)	(circle)	(circle)	(circle)	IN 2009-2010, HOW MANY DAYS DID THIS PERSON SPEND HUNTING MOOSE? (number days)
HEAD 1	N	Y	M	F	N	Y	Y	N
01								
HEAD 2	N	Y	M	F	N	Y	Y	N
02								
03	N	Y	M	F	N	Y	Y	N
04	N	Y	M	F	N	Y	Y	N
05	N	Y	M	F	N	Y	Y	N
06	N	Y	M	F	N	Y	Y	N
07	N	Y	M	F	N	Y	Y	N
08	N	Y	M	F	N	Y	Y	N
09	N	Y	M	F	N	Y	Y	N
10	N	Y	M	F	N	Y	Y	N
11	N	Y	M	F	N	Y	Y	N
12	N	Y	M	F	N	Y	Y	N
13	N	Y	M	F	N	Y	Y	N
14	N	Y	M	F	N	Y	Y	N

PERMANENT HH MEMBERS: 01

APPENDIX C: ETHNOGRAPHIC INTERVIEW GUIDE

Yukon Flats Big-Game/Small-Game Ethnographic Interview Guide

Where and when were you born?

Moose

Can you please share with me a brief history of your family moose hunting?

Where do you usually hunt for moose? (Mapping)

What time of the year do you normally hunt?

How much time do you usually spend hunting moose?

How do you usually hunt for moose?

Who with?

What do you look for? (young, old, condition of hide, rack size, etc.)

What do you consider to be a prime moose?

How do you decide which moose to harvest? (sex, size)

Can you describe any changes in your moose hunting methods over the years?

Can you describe any changes or similarities in the population of the moose you hunt?

Are there more or less moose in your area than in the past?

Can you describe any changes or similarities in geographic distribution of the moose you hunt?

Have you notice any changes or concerns about the health of moose in your area?

How do you use the meat and other parts of the moose you harvest?

(use of hides/sinew/bones/entrails etc.?)

Is the meat from the moose you harvest shared within your family?

Is the meat shared within your community?

Please describe how is moose usually distributed?

(who do you share with?)

(how do you decide to share?)

(do people share with you?)

Can you describe any use of moose by your family or community for potlatch or other important religious or cultural events?

Over the years, do you feel that the number of community members hunting moose is more, less, or stayed the same?

Do you usually get the moose meat you need?

What are your observations regarding predators, such as wolves and bears, pursuing moose in your area?

Has the level of predation on moose increased, decreased, or stayed the same over time?

Have you or your family members observed carcasses/kill sites of moose killed by bears or wolves?

What is your opinion regarding predator control?

Can you think of any other reasons why the local Moose population is abundant or not abundant?

Do you have any comments regarding the current ADF+G/federal regulations/seasons for the harvest of moose in your area?

Caribou

Can you please share with me a brief history of your family and community caribou hunting?

Where do you usually hunt for caribou? (Mapping)

What time of the year do you normally hunt?

How much time do you usually spend hunting caribou?

How do you usually hunt for caribou?

Who with?

What do you look for? (young, old, condition of hide, rack size, etc.)

What do you consider to be a prime caribou?

How do you decide which caribou to harvest? (sex, size)

Can you describe any changes in your caribou hunting methods over the years?

Can you describe any changes in the population of the caribou you hunt?

Are there more or less caribou in your area than in the past?

Can you describe any changes in geographic distribution of the caribou you hunt?

Have you notice any changes or concerns about the health of caribou in your area?

How do you use the meat and other parts of the caribou you harvest?

(use of hides/sinew/bones/hooves/entrails etc.?)

Is the meat from the caribou you harvest shared within your family?

Is the meat shared within your community?

Please describe how is caribou usually distributed?

(who do you share with?)

(how do you decide to share?)

(do people share with you?)

Can you describe use of caribou by your family or community for potlatch or other important religious or cultural events?

Over the years, do you feel that the number of community members hunting caribou is more, less, or stayed the same?

Do you usually get the caribou meat you need?

What are your observations regarding predators, such as wolves and bears, pursuing caribou in your area?

Has the level of predation on caribou increased, decreased, or stayed the same over time?

Have you or your family members observed carcasses/kill sites of caribou killed by bears or wolves?

Can you think of any other reasons why the local caribou population is abundant or not abundant?

Do you have any comments regarding the current ADF+G/federal regulations/seasons for the harvest of caribou in your area?

Black Bear

Can you please share with me a brief history of your family black bear hunting?

Where do you usually hunt for black bear?

What time of the year do you normally hunt?

How much time do you usually spend hunting black bear?

How do you usually hunt for black bear?

Who with?

What do you look for?

Do you hunt bears in dens? If so, please describe the process

How do you decide which black bear to harvest? (sex, size, old, young, hide condition)

Can you describe any changes in your black bear hunting methods over the years?

Can you describe any changes in the population of the black bear you hunt?

Are there more or less black bear in your area than in the past?

Can you describe any changes in the geographic distribution of the black bear you hunt?

Have you notice any changes or concerns about the health of black bear in your area?

How do you use the meat and other parts of the black bear you harvest?

(use of hides/sinew/bones/claws/entrails etc.?)

Is the meat from the black bear you harvest shared within your family?

Is the meat shared within your community?

Please describe how is black bear usually distributed?

(who do you share with?)

(how do you decide to share?)

(do people share with you?)

Can you describe any use of black bear by your family or community for potlatch or other important religious or cultural events?

Did you ever hear any stories about black bear hunting from elders?

Did you ever hear any stories from elders about controlling predatory black bears in the past?

Over the years, do you feel that the number of community members hunting black bear is more, less, or stayed the same?

Do you hunt black bear to obtain meat/hides, for predator control or both?

Some have suggested that Yukon Flats residents increase their hunting efforts towards the pursuit of black bears, both as a community method of predator control and as an additional food resource. What is your opinion of this suggestion?

Have you observed black bears preying upon moose or caribou in your area?

Do you usually get the black bear meat you need?

Brown Bear

Can you please share with me a brief history of your family brown bear hunting?

Where do you usually hunt for brown bear?

What time of the year do you normally hunt?

How much time do you usually spend hunting brown bear?

How do you usually hunt for brown bear?

Who with?

What do you look for?

How do you decide which brown bear to harvest? (sex, size, old, young, hide condition)

Do you hunt for brown bears in their dens?

If so, can you please describe this process?

Can you describe any changes in your brown bear hunting methods over the years?

Can you describe any changes in the population of the brown bear you hunt?

Are there more or less brown bear in your area than in the past?

Can you describe any changes in geographic distribution of the brown bear you hunt?

Have you notice any changes or concerns about the health of brown bear in your area?

How do you use the meat and other parts of the brown bear you harvest?

(use of hides/sinew/bones/claws/entrails etc.?)

Is the meat from the brown bear you harvest shared within your family?

Is the meat shared within your community?

Please describe how brown bear is usually distributed?

(who do you share with?)

(how do you decide to share?)

(do people share with you?)

Can you describe any use of brown bear by your family or community for potlatch or other important religious or cultural events?

Did you ever hear any stories about brown bear hunting from elders?

Over the years, do you feel that the number of community members hunting brown bear is more, less, or stayed the same?

Do you hunt brown bear to obtain meat/hides, for predator control or both?

Some have suggested that Yukon Flats residents increase their hunting efforts towards the pursuit of brown bears, both as a community method of predator control and as an additional subsistence resource. What is your opinion of this suggestion?

Did you ever hear any stories from elders about controlling predatory brown bears in the past?

Have you observed brown bears preying upon moose or caribou in your area?

Do you have any comments regarding the current ADF+G/federal regulations/seasons for the subsistence harvest of brown bears in your area?

Wolf

Can you please share with me a brief history of your family and community wolf trapping and hunting?

Where do you usually hunt/trap for wolves?

What time of the year do you normally hunt/trap?

How much time do you usually spend hunting/trapping wolves?

How do you usually hunt/trap for wolves?

Who with?

What do you look for?

What methods? (traps, snares, rifles etc.)

How do you decide which wolf to harvest? (sex, size)

Can you describe any changes in your wolf hunting methods over the years?

Can you describe any changes or similarities in the population of wolf in your area?

Are there more or less wolf in your area than in the past?

Can you describe any changes or similarities in geographic distribution of wolves in your area?

How do you use the wolves you harvest?

(use of hides/meat/sinew/bones/claws/entrails etc.?)

Is the wolf you harvest shared?

Over the years, do you feel that the number of community members hunting/trapping wolves is more, less, or stayed the same?

Have you observed wolves preying upon moose or caribou in your area?

What is your predator control on wolves in your area?

Do you hunt/trap wolves to obtain hides, for predator control or both?

What role, if any, do you feel wolves have in the Yukon Flats ecosystem?

Did you ever hear any stories about wolf hunting/trapping from elders?

Did you ever hear any stories from elders about controlling predatory wolves in the past?

Lynx

Can you please share with me a brief history of your individual or family lynx trapping?

Where do you usually trap for lynx? Or what country does your trap line cover?

What time of the year do you normally trap? Or when are they considered prime? Is this when you target them?

How much time do you usually spend trapping lynx?

How do you usually trap for lynx?

Who with? Do you share a trap line? Do you work together?

What do you look for?

What methods (traps, snares, rifles etc.)

Can you describe any changes in your lynx trapping methods or gear over the years?

Can you describe any changes or similarities in the population of lynx in your area?

Are there more or less lynx in your area than in the past?

Can you describe any changes or similarities in geographic distribution of lynx in your area?

How do you use the lynx you harvest?

(use of hides/meat/sinew/bones/claws/entrails etc.?)

Is the lynx you harvest shared?

How has the price for Lynx fur changed over the years? Does this influence your harvest effort?

Over the years, do you feel that the number of community members trapping lynx is more, less, or stayed the same?

Did you ever hear any stories about lynx trapping from elders?

Marten

Can you please share with me a brief history of your family and community marten trapping?

Where do you usually trap for marten?

What time of the year do you normally trap?

How much time do you usually spend trapping marten?

How do you usually trap for marten?

Who with? Do you share a trap line? Do you work together?

What do you look for?

What methods (traps, snares etc.)

Can you describe any changes in your marten trapping methods and gear over the years?

Can you describe any changes or in the population of marten in your area?

Are there more or less marten in your area than in the past?

Can you describe any changes or in geographic distribution of marten in your area?

How do you use the marten you harvest?

(use of hides/meat/sinew/bones/claws/entrails etc.?)

How has the price for marten fur changed over the years? Does this influence your harvest effort?

Is the marten you harvest shared?

Over the years, do you feel that the number of community members trapping marten is more, less, or stayed the same?

Did you ever hear any stories about marten trapping from elders?

Other Small Game

Would you like to comment about the hunting and use of other small game in your area?

The Future

How do you envision the future of subsistence hunting for large and small game in your community?

Any other comments?

**APPENDIX D: YUKON FLATS COOPERATIVE MOOSE
MANAGEMENT PLANNING UPDATE**



Drawing by Michael Williams

YUKON FLATS COOPERATIVE MOOSE MANAGEMENT PLANNING UPDATE

PROTECT, MAINTAIN, & ENHANCE THE
YUKON FLATS MOOSE POPULATION &
HABITAT, MAINTAIN TRADITIONAL LIFE-
STYLES & PROVIDE OPPORTUNITIES FOR USE
OF THE MOOSE RESOURCES.

~ Yukon Flats Cooperative Moose Management Plan, 2002 ~

The low moose population on the Yukon Flats is of great concern to local residents. The low numbers of moose prompted the formation of the Yukon Flats Moose Management Committee, who together developed the Yukon Flats Moose Management Cooperative Moose Management Plan in 2002. The Plan's Goals :



Tribal Representatives Michael Joseph, Art Henry Jr., Solomon John, Sonny Jonas, Paul Williams Sr. and MacArthur Tritt in Beaver, October 2010.

1. **Increase the harvestable surplus of bull moose in key hunting areas near local communities by reducing mortality from bear & wolf predation.**
2. **Double the size of the moose population in key hunting areas &, if possible within the entire planning area, in the next ten years.**
3. **Develop cooperative management programs involving state, federal, & tribal management organization to help improve local harvest monitoring & reporting.**

In an effort to meet these Management Goals, the Planning Committee recognized that "increasing the moose population can only be accomplished with the support of elders, tribal councils, and hunters." The Plan outlines the following strategies to promote an increase the moose population:

1. **Reduce predation on moose.**
2. **Minimize illegal cow harvest & reduce cow harvest for ceremonial purposes.**
3. **Inform & educate hunters on low population & ways individuals can make a difference.**
4. **Improve harvest reporting to document traditional & customary needs.**
5. **Use of both traditional knowledge & scientific information.**



COUNCIL OF ATHABASCAN
TRIBAL GOVERNMENTS



BEAVER VILLAGE COUNCIL



U.S. FISH & WILDLIFE
SERVICE



ALASKA DEPARTMENT OF
FISH & GAME

CONTINUING THEME:

TRIBAL GOVERNMENT PARTICIPATION IN MOOSE MANAGEMENT

A reoccurring theme in the Yukon Flats Cooperative Moose Management Planning Committee meetings is **LOCAL CONTROL OF MOOSE MANAGEMENT**. What exactly does this mean? What exactly does this look like in operation? It is apparent that the Tribal Governments in the Yukon Flats seek locally-based systems of resource management, protection, & conservation education to increase the moose population.

During the most recent Yukon Flats Moose Management Meeting in Beaver, October 11th & 12th, this discussion focused on **encouraging each Tribal Government to hold public meetings on local cow moose harvest & development of a local justice structure to address the illegal harvest of cow moose**.

Yukon Flats National Wildlife Refuge Manager Rob Jess, and newly hired enforcement officer Mimi Thomas, were both in support of an effort that encouraged local Tribal Government measures to increase the moose population thru local action. This will be a primary discussion topic at **the next Yukon Flats Moose Management Meeting in the Spring of 2011**. Alternatives for local management options, as well as existing models from around the state will be highlighted & explored, giving the Yukon Flats Tribal Governments an opportunity to develop a system that is as unique as the region.

**YUKON FLATS MOOSE MANAGEMENT MEETING ATTENDEES
BEAVER, ALASKA OCTOBER 11TH & 12TH, 2010**

TRIBAL REPRESENTATIVES

BEAVER-Wilma Pitka, Paul Williams Sr. & Community
ARCTIC VILLAGE -Tiffany Yatlin
BIRCH CREEK - Vincent Williams
CANYON VILLAGE-John "Sonny" Jones Jr.
CHALKYITSIK-Michael Joseph
CIRCLE- Solomon John
FORT YUKON- Walter Peter 2nd
STEVENS VILLAGE-Harold Simon
VENETIE-MacArthur Tritt

ERAC & YFAC

ERAC CHAIR Sue Entsminger
ERAC MEMBER Andrew Firmin, Fort Yukon
YFAC MEMBER Craig Edwards, Beaver

CATG

Andrew Firmin, Natural Resources Technician
Carrie Stevens, Special Projects

ADF&G

Jamie Van Lanen, Subsistence Division
Beth Lenart, Wildlife Division
Randy Rogers, Wildlife Division

USF&WS

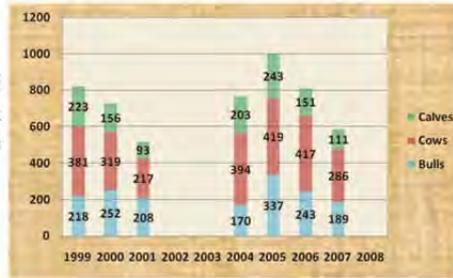
Rob Jess, Refuge Manager, Yukon Flats NWR
Mark Bertram, Wildlife Biologist, Yukon Flats NWR
Vince Matthews, Subsistence Cord, Yukon Flats NWR
Mimi Thomas, Enforcement, Yukon Flats NWR
Spencer Rearden, OSM Representative



*Wilma Pitka, Randy Rogers, Tiffany Yatlin, & Walter Peter Jr.
in Beaver October 2010.*

GMU 25D MOOSE POPULATION STATUS

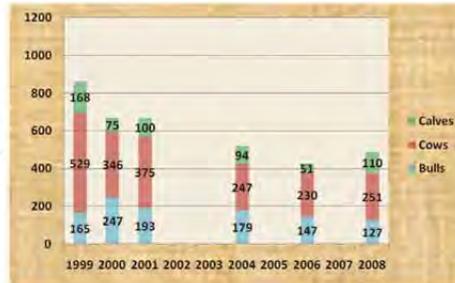
EASTERN
Fort Yukon, Chalkyitisk
Circle, Venetie



2007 ESTIMATE

585 total moose
1 moose: 5 sq miles
64 Bulls: 100 Cows
15 Yrl Bulls: 100 Cows
39 Calves: 100 Cows

WESTERN
Birch Creek, Beaver,
Stevens Village

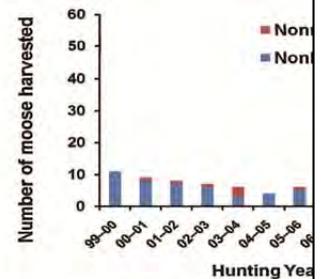


2008 ESTIMATE

490 total moose
1 moose: 5 sq miles
51 Bulls: 100 Cows
3 Yrl Bulls: 100 Cows
44 Calves: 100 Cows

Stats & Graphs courtesy of Mark Bertram, USF&W'S YF&WR

NON-LOCAL/NOI MOOSE HARVEST



Alaska Department of Fish & Game Wildlife

YUKON FLATS MOOSE & PREDATOR HARVEST & USE 2008-2009

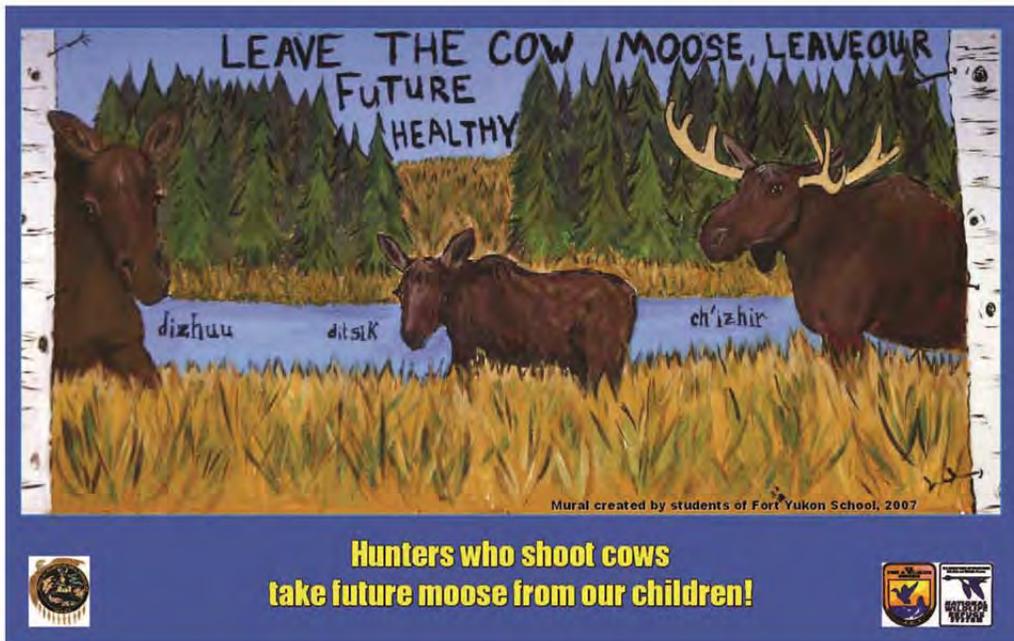
Species	PARTICIPATION OF HOUSEHOLDS					ESTIMATED HARVEST LEVELS		
	Use (%)	Attempt (%)	Harvest (%)	Receive (%)	Gave (%)	Total	HH	Person
MOOSE	81	49	27	42	78	104	0.20	0.10
BLACK BEAR	22	19	7	6	16	26	0.10	
BROWN BEAR	1	2	1	0	0	2	0.01	
WOLF						45		

Source Alaska Department of Fish & Game Subsistence Division 2010



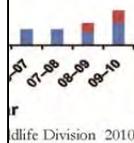
**TRADITIONAL & CUSTOMARY USE:
COMMUNITY HARVEST ESTIMATES SURVEY FINDINGS
2008-2009**

Stats & Graph courtesy of
ADF&G Subsistence Division & CATG NR



**NON-RESIDENT
IN GMU 25D**

resident
local AK resident



Stats & Graph courtesy of Beth Lenart ADF&G

GAME UNIT 25 MOOSE SEASON

UNIT	BAG LIMIT	SEASON STATE/ PRIVATE LANDS	SEASON FEDERAL LANDS (REFUGE)
25D West (Beaver, Birch Creek, Stevens)	1 Bull	Aug 25-Feb 28	Aug 25- Feb 28
25D East (Fort Yukon, Chalkyitsik, Circle, Venetie)	1 Bull or Community Harvest	Sept 10-20 Feb 18-28	Aug 25-Oct 1 Dec 1-Dec 20

WHY DOES CATG IMPLEMENT HOUSEHOLD SURVEYS TO DOCUMENT TRADITIONAL & CUSTOMARY HARVEST USE?

TO PROTECT & SUSTAIN TRADITIONAL & CUSTOMARY USE

- 1.To provide accurate harvest numbers to demonstrate real subsistence need in the Yukon Flats; (harvest ticket systems substantially underestimate harvests);
- 2.To produce scientifically sound data accepted by management & regulatory decision makers;
- 3.To impact regulations & management decisions to protect & allow Traditional & Customary use in the Yukon Flats.

YUKON FLATS MOOSE MANAGEMENT MEETING OUTCOMES BEAVER, ALASKA OCTOBER 11TH & 12TH, 2010

LET BURN POLICY

- Research Alaska Fire Service back burning policies on Native Allotments & communicate findings to villages.
USFWS YFNWR, Rob Jess
- Conduct government to government meetings with all Flats Villages to discuss Fire Management Policies.
USFWS YFNWR, Rob Jess
- Summarize fire season information yearly & distribute to the Yukon flats villages via a news letter.
USFWS YFNWR, Rob Jess

INCREASE PREDATOR CONTROL

- Continue Bear Derby
CATG NR, Andrew Firmin
- Submit Proposal to change Black Bear harvest limit from 3 to 5
ADF&G Wildlife Division, Beth Lenart w/ YFAC & ERAC
- Submit Proposal to change Brown Bear regulations to include Community Hunt
ADF&G Wildlife Division, Beth Lenart w/ YFAC & ERAC
- Implement aerial wolf location identification by kill site
ADF&G Wildlife Division, Beth Lenart w/ Tribal Governments & Local Trappers
- Review of Proposal to change Wolf Trapping season to open one month earlier
ADF&G Wildlife Division, Beth Lenart & USFWS YFNWR Mark Bertram
- Implement local wolf trapping clinics
CATG NR, Andrew Firmin & USFWS YFNWR Rob Jess

MINIMIZE LOCAL COW MOOSE HARVEST

- Continue to implement Education & Outreach in the YFSD Schools w/ an ELDER
USFWS YFNWR Outreach Coordinator
- Develop & use bi-lingual PSA for use on KZPA
CATG NR, Carrie Stevens
- Develop Moose Management Mailing which includes encouraging each Tribal Government to hold public meetings on local cow moose harvest & development of local codes & ordinances
CATG NR, Carrie Stevens

MINIMIZE TRESPASS & OUTSIDE HUNTER IMPACT

- Conduct a community meeting in Circle to create a plan to minimize trespass & outside hunter impact, including land ownership identification, for the 2011 Moose Hunting Season
CVC, Solomon John & USFWS YFNWR Rob Jess
- Post Public Notice of Native Lands prior to 2011 Moose Hunting Season in Fairbanks Daily News Miner & TCC Council w/ link to website
BVC, Wilma Pitka & USFWS YFNWR Vince Matthews
- Ensure LOCAL APPLICATIONS are submitted for 75 available Tier 2 hunting permits in 25 D West
ADF&G Wildlife Division Beth Lenart, CATG NR Andrew Firmin, BVC Wilma Pitka, Birch Creek Martin Balaam, SVS Harold Simon

MOOSE SEASON REGULATORY CHANGES

- Resubmittal of Proposal requiring meat left on the bone in GMU 25
SPONSOR: CATG NR, Andrew Firmin
- Investigate the requirement of guides for outside moose hunts to minimize air taxi problem
USFWS YFNWR, Rob Jess

INCREASED COMMUNICATION

- Increase Village Visits by YFNWR staff
USFWS YFNWR, Rob Jess
- Increase regularity of Moose Management Meetings to every six months
USFWS YFNWR Rob Jess, CATG NR Carrie Stevens
- Develop & disseminate Moose Management Mailing
CATG NR, Carrie Stevens

MOBILIZE AVAILABLE RESOURCES

- Invite more potential partners to attend future planning meetings & disseminate Moose Management Newsletter
USFWS OSM/ Tribal Wildlife Grants/809 Agreements
USFWS YFNWR/AFA
DOYON LTD.
Tribal Governments/ 638 Self-Governance Funds
Village Corporations/ 7 (i) funds
TCC Forestry & other pertinent departments
CATG NR, Carrie Stevens



COUNCIL OF ATHABASCAN TRIBAL GOVERNMENTS
NATURAL RESOURCES DEPARTMENT
PO Box 283
Fort Yukon, AK 99740
800-478-2667



DINJIK DAAJII?

Where's the Moose?

KEY TO LIST OF ABBREVIATIONS

CATG

Council of Athabaskan Tribal Governments

USFWS

United States Fish & Wildlife Service

YFNWR

Yukon Flats National Wildlife Refuge

ADF&G

Alaska Department of Fish & Game

ERAC

Eastern Interior Advisory Council
(to the Federal Subsistence Board)

YFAC

Yukon Flats Advisory Council
(to the State Board of Game)

YFCMMP

Yukon Flats Cooperative Moose Management Plan