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Customary and Traditional Use of Black Bear in Game Management Unit 18

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for the January 2020 Board of Game meeting

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Alaska Department of Fish and Game **Division of Subsistence**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in Division of Subsistence reports. All others, including deviations from definitions listed below, are noted in the text at first mention, in the titles or footnotes of tables, and in figures or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly-accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly-accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures)	first three letters (Jan,...,Dec)
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. states	two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance:	
population	Var
sample	var

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The Division of Subsistence Technical Paper Series was established in 1979 and represents the most complete collection of information about customary and traditional uses of fish and wildlife resources in Alaska. The papers cover all regions of the state. Some papers were written in response to specific fish and game management issues. Others provide detailed, basic information on the subsistence uses of particular communities which pertain to a large number of scientific and policy questions.

Technical Paper series reports are available through the Alaska Resources Library and Information Services (ARLIS), the Alaska State Library and on the Internet: http://www.adfg.alaska.gov/sf/publications/. This publication has undergone editorial and professional review.

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ABSTRACT

This worksheet was prepared for the Alaska Board of Game (Board) as background for consideration of changes to the harvest regulations for black bear (*Ursus americanus*) in Alaska's Game Management Unit 18. This worksheet presents the eight criteria that the Board is required to consider under Joint Board of Fisheries and Game regulations (5 AAC 99.010) in order to identify wildlife populations that are customarily and traditionally taken or used by Alaska residents for subsistence.

Key words: Black bear, *Ursus americanus*, western Alaska, Board of Game.

INTRODUCTION

Under the Alaska subsistence law (AS 16.05.258(a)), the Alaska Board of Game (Board) is required to identify the game populations or portions of populations that are customarily and traditionally taken or used for subsistence ("C&T finding"). The Board has not made a determination as to whether there are C&T uses of black bear in Game Management Unit 18 (GMU 18; Figure 1). This worksheet provides background information on noncommercial harvests and uses of black bear in GMU 18. The information is organized according to the eight criteria for identifying customary and traditional uses as defined in the Joint Board of Fisheries and Game Subsistence Procedures (5 AAC 99.010). This information may be supplemented during public testimony and board deliberations. Table 1 presents black bear harvest and use data derived from systematic household surveys conducted in several Yukon-Kuskokwim Delta communities by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence since 1980.

THE EIGHT CRITERIA

Criterion 1.

A long-term, consistent pattern of noncommercial taking, use, and reliance on the fish stock or game population that has been established over a reasonable period of time of not less than one generation, excluding interruption by circumstances beyond the user's control, such as unavailability of the fish or game caused by migratory patterns.

Historically, residents of western Alaska have harvested black bear as a source of meat, fat, and fur. Today, black bear remains an important subsistence resource. Households in 22 communities surveyed by ADF&G Division of Subsistence since 1980 reported that they used black bear, and hunters from 13 communities harvested the resource (Table 1). For more information regarding data from these household surveys see Wolfe (1981), Andrews (1989), Coffing (1991), Coffing et al. (2001), Brown et al. (2012), Brown et al. (2013), Ikuta et al. (2014), Brown et al. (2015), Ikuta et al. (2016), Krauthoefer et al. (2015), Runfola et al. (2017), and Runfola et al. (2014). Since 1980, other data sources include ADF&G harvest ticket reports (regulatory years 2009–2018) and bear sealing records (regulatory years 1980, 1992, and 2002–2018) which have documented black bear harvests in GMU 18 by residents of four Yukon-Kuskokwim Delta communities and residents from seven Alaska communities outside the unit.[1] The greatest harvest number in a single year by a GMU 18 community recorded in ADF&G subsistence household surveys was an estimated 36 black bears by Akiachak hunters in 1998 (Table 1; Coffing et al. 2001). Bethel hunters harvested an estimated 24 black bears in 2011 (Runfola et al. 2014) and 21 black bears in 2012 (Runfola et

1. WinfoNet, accessed November 19, 2019. WinfoNet is the ADF&G Division of Wildlife Conservation's intranet website. The site provides a wide variety of tools to allow users to access, update, and download different kinds of data, including large land mammal harvest data.

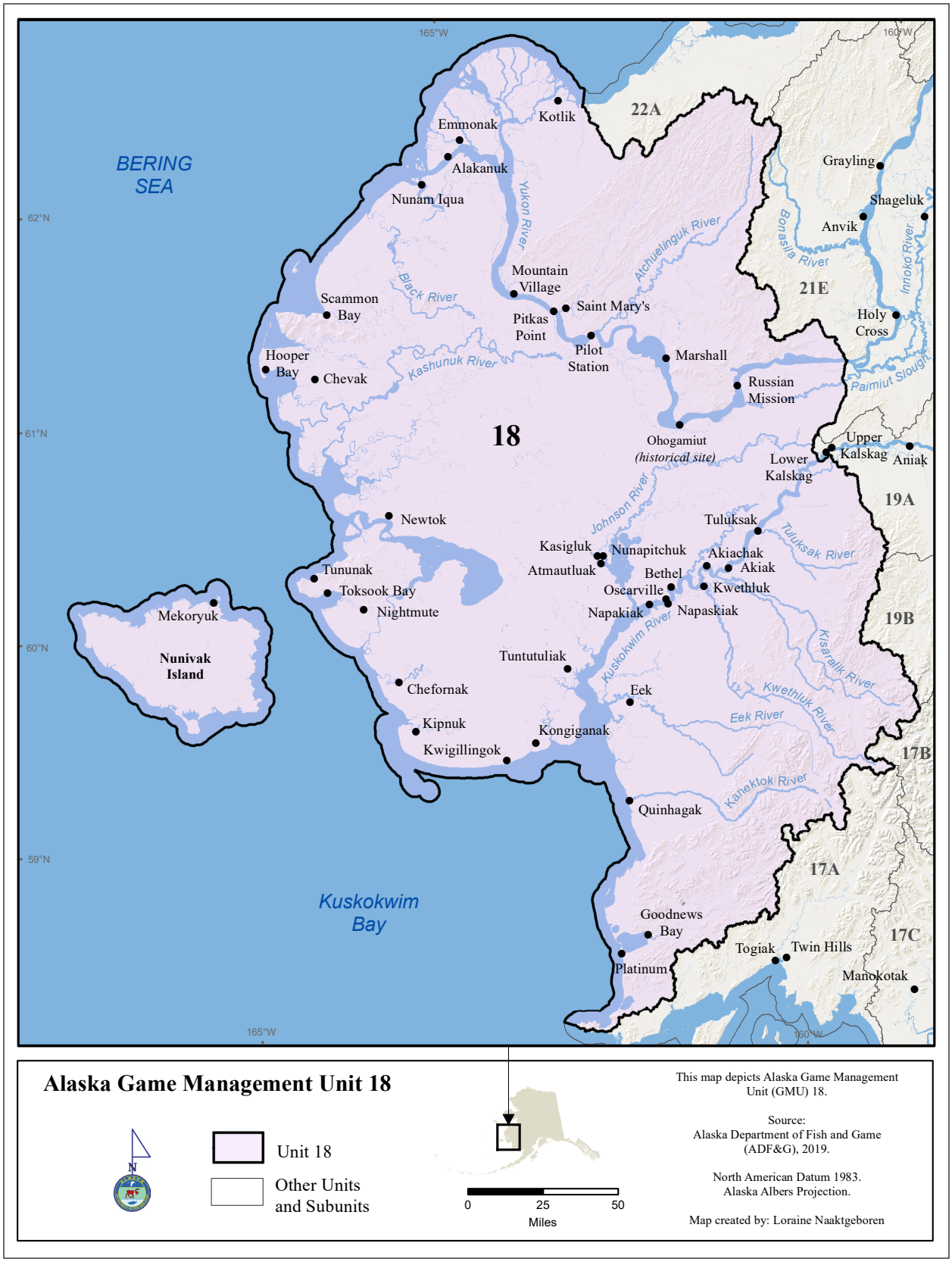

Figure 1.–Alaska Game Management Unit 18.

Table 1.–Subsistence harvest and use of black bear in surveyed communities within and adjacent to GMU 18, 1980–2013.

Community	Study year	Percentage of households					Estimated total harvest	Units	Estimated harvest (lb)	
		Using	Attempting harvest	Harvesting	Giving away	Receiving			Total	Per capita
Akiachak	1998	40.7	45.7	25.9	13.6	27.2	36.0	ind.	5,463.0	10.5
Akiak	2010	11.1	4.8	4.8	3.2	6.3	4.0	ind.	424.0	1.1
Alakanuk	1980	-	-	0.0	-	-	0.0	ind.	0.0	0.0
Bethel	2011	2.1	2.1	1.3	0.6	0.8	23.9	ind.	2,388.6	0.4
	2012	3.2	2.4	1.3	1.3	2.4	21.2	ind.	2,118.0	0.4
Eek	2013	3.1	0.0	0.0	1.6	3.1	0.0	ind.	0.0	0.0
Emmonak	1980	-	-	0.0	-	-	0.0	ind.	0.0	0.0
	2008	0.0	0.0	0.0	0.0	0.0	0.0	ind.	0.0	0.0
Kotlik	1980	-	-	0.0	-	-	0.0	ind.	0.0	0.0
Kwethluk	1986	-	15.5	3.4	3.4	37.3	4.0	ind.	567.0	1.1
	2010	16.1	8.6	5.4	6.5	11.8	8.0	ind.	833.0	1.2
Lower Kalskag	2003	9.0	9.0	3.0	3.0	6.0	2.0	ind.	212.0	0.7
	2004	8.0	5.0	5.0	0.0	5.0	3.0	ind.	371.0	1.4
	2005	17.0	7.0	3.0	3.0	13.0	2.0	ind.	280.0	0.8
	2009	12.7	12.7	1.6	0.0	11.1	1.0	ind.	119.0	0.4
Marshall	2010	21.7	15.2	8.7	8.7	15.2	9.2	ind.	923.9	2.7
Mountain Village	1980	-	-	6.3	-	-	6.0	ind.	1,200.0	2.3
	2010	1.7	0.9	0.0	1.7	1.7	0.0	ind.	0.0	0.0
Napakiak	2011	1.8	1.8	0.0	0.0	1.8	0.0	ind.	0.0	0.0
Napaskiak	2011	7.1	0.0	0.0	1.8	7.1	0.0	ind.	0.0	0.0
Nunam Iqua (Sheldon Point)	1980	-	-	0.0	-	-	0.0	ind.	0.0	0.0
Nunapitchuk	1983	-	-	11.8	-	-	8.0	ind.	1,030.0	2.3
Oscarville	2010	0.0	0.0	0.0	0.0	0.0	0.0	ind.	0.0	0.0
Pilot Station	2013	12.8	6.4	6.4	5.3	6.4	10.9	ind.	1,089.4	1.7
Quinhagak	2013	0.9	0.0	0.0	0.0	0.9	0.0	ind.	0.0	0.0
Russian Mission	2011	19.6	13.0	8.7	6.5	10.9	8.6	ind.	1,288.0	3.2
Scammon Bay	2013	5.8	8.1	4.7	3.5	1.2	5.7	ind.	572.1	0.9
Tuluksak	2010	14.7	10.3	7.4	7.4	8.8	8.0	ind.	759.0	1.7
Tuntutuliak	2013	0.0	0.0	0.0	0.0	0.0	0.0	ind.	0.0	0.0
Upper Kalskag	2003	15.0	24.0	9.0	9.0	6.0	5.0	ind.	521.0	2.1
	2004	6.0	16.0	6.0	6.0	0.0	4.0	ind.	416.0	2.1
	2005	12.0	18.0	6.0	3.0	6.0	8.0	ind.	800.0	3.0
	2009	12.5	12.5	8.3	8.3	4.2	11.0	ind.	1,125.0	5.6

Source ADF&G Division of Subsistence Community Subsistence Information System.
Note "-" indicates that no data are available.

al. 2017). Other harvests recorded in household surveys include 11 black bears in 2009 by hunters in Upper Kalskag (Brown et al. 2012), and 11 animals in Pilot Station and 9 in Russian Mission in 2013 (Ikuta et al. 2016). Since 2009, Alaska resident hunters have submitted black bear harvest tickets to report 16 animals killed. Bear sealing records from 1980 to the present have recorded 18 black bears killed in GMU 18. Unlike in several game management units throughout the state, hunters who kill a black bear in GMU 18 are not required to submit a harvest ticket report or obtain a seal on a skull, hide, or claws. Thus, harvest reports from these sources are voluntary and provide an incomplete record of actual Alaska resident hunter harvests over time. Although black bear harvest tickets and sealing records from GMU 18 cannot show an accurate estimate of harvests, they can be regarded as documentative of the harvest and use of black bears in the region.

Hunting and uses of black bears are well-established traditional practices for many residents of GMU 18, particularly in communities of the lower Kuskokwim and Yukon rivers. These communities include, but are not limited to, Tuluksak, Akiak, Akiachak, and Kwethluk in the lower Kuskokwim River, and Russian Mission, Marshall, and Mountain Village in the lower Yukon River (Andrews and Peterson 1983; Brown et al. 2013; 2015; Coffing 1991; Coffing et al. 2001; Fienup-Riordan 1986; Ikuta et al. 2014). In other communities, black bears are most often taken opportunistically when targeting other animals, such as moose or small game, but their use is common. Most residents familiar with the uses of black bears report that they have harvested them in regularly-hunted areas as long as elders in their communities can recall, and can recount stories of uses by previous generations (e.g., Andrews and Peterson 1983; Coffing et al. 2001; Fienup-Riordan 2007). Historical sources from the 19th century describe uses of bears by residents of this region (e.g., Nelson 1976rev.; Petroff 1900).

Criterion 2.

A pattern of taking or use recurring in specific seasons of each year.

Historically, black bears were hunted in the fall as they began hibernation and in the early spring before they began feeding on carcasses (Fienup-Riordan 2007). Coffing (1991) describes that as recently as the 1980s Kwethluk residents harvested black bears primarily during August, September, and October. They also harvested them as early as April and as late as November, often in conjunction with moose hunting (see also Andrews 1989) or with the harvest of other resources including beavers, muskrats, spruce grouse, ducks, geese, salmon, several species of freshwater fish, berries, and wood.

In the fall, from late August through October, black bear is hunted in conjunction with or incidental to moose and caribou. Fienup-Riordan (1986) reported that residents of Alakanuk, Nunam Iqua, and Mountain Village regularly hunted black bear in late September to mid-October during moose hunting trips. The quality of black bear flesh is often mentioned as a factor in the timing of targeted hunting. Black bear flesh is considered best, fat and palatable, in the fall and early winter, when the bears have been feeding primarily on berries. However, food stores are often diminished in the spring, and any fresh meat is welcome. Also, immediately after hibernation in the spring, black bears have some fat for a short period of time.

Oswalt (1963) notes that historically, Napaskiak hunters returned to their winter camps by October and groups of men would make hunting trips for moose, caribou, and sometimes black bears and brown bears (see also Ikuta et al. 2014). Rearden and Fienup-Riordan (2013) record that Quinhagak residents would hunt the upper Kanektok River for bears, caribou, birds, beavers, and moose in September and October. Around Pilot Station, respondents noted that the best time to hunt black bears is in spring or fall when they are fat (Ikuta et al. 2016). In Russian Mission, "Bears are also taken in the spring as they emerge from their dens, particularly in the months of April and May" (Ikuta et al. 2014; Pete 1991). Fienup-Riordan (2007) also describes black bear hunting beginning in late March among residents of lower Kuskokwim River communities. She cites an elderly GMU 18 resident who described the traditional methods of spring black bear hunting in the lower Kuskokwim River area: "They went up to the mountains in spring without boats, but their plan was to come back down after breakup. While they were up there hunting, they tried to catch enough caribou or bears to make a boat with their skins."

Criterion 3.

A pattern of taking or use consisting of methods and means of harvest that are characterized by efficiency and economy of effort and cost.

Historically, Yukon River delta hunters used bow and arrow or spear to hunt black bear (Fienup-Riordan 2007). Bow hunters needed to approach a bear to a close distance in order to successfully kill it. Bears were also killed with spears at very close range, particularly when hunters crouched and waited for an agitated bear to approach. When a bear reached the hunter it would attack, and the hunter would impale the bear, usually in the mouth, with his spear. Hunters developed skills to remain safe around bears at close range. Fienup-Riordan (2007) cites two elder key respondents, one from Tuluksak and the other from Marshall, who both describe how to avoid a swipe from a bear's forefoot by stepping toward the bear and brushing past it under its outstretched foreleg. The elders advised trying to do this under the bear's left foreleg if possible, because bears tended to lead their attacks from the left. Not all bear hunting with spears was so treacherous for the hunter. Oswalt (1990) also recorded that hunters historically used spears to kill black bears hibernating in their dens in the lower Kuskokwim River area.

Contemporary hunters usually shoot black bears with a rifle; however, as recently as the 1980s some hunters used snares to successfully harvest black bears during the fall (Coffing 1991; Fienup-Riordan 2007). Contemporary hunters either specifically target black bears or harvest them incidentally to other activities such as hunting for moose or waterfowl, as mentioned under Criterion 2. A small number of hunters in GMU 18 establish bait stations to harvest black bears. Hunters typically access hunting areas by river boat in the summer and fall, and by snowmachine in the winter.

Criterion 4.

The area in which the noncommercial, long-term, and consistent pattern of taking, use, and reliance upon the fish stock or game population has been established.

Hunters from each community typically hunt black bear in areas known to be productive, typically the wooded lowlands within the riparian areas of the lower Kuskokwim River (Coffing 1991). In many cases, areas used to hunt black bear are similar to those used to hunt moose, and both activities often occur together. Information specific to black bear hunting areas does not exist for most communities: depiction of black bear hunting areas is often combined with brown bear or moose hunting areas.

Lower Kuskokwim River residents hunt black bears primarily in the Kwethluk, Kisaralik, and Tuluksak river drainages (Fienup-Riordan 2007). Tuluksak residents hunt black bears in the Tuluksak River drainage, in the Johnson River drainage, and in various small streams that flow into the Kuskokwim River within five to ten miles of the community (Andrews and Peterson 1983; Brown et al. 2013). Tuluksak black bear hunters historically also traveled long distances from their community to hunt in other Kuskokwim River tributaries such as the Aniak, Kolmakof, Holokuk, and Holitna river drainages (Andrews and Peterson 1983). Nunapitchuk residents hunt black bears at the same time as moose. They hunt north and east of their community upstream to the headwaters of the Johnson River, including adjacent lakes and tributaries. They sometimes portage from the Johnson River to the Yukon River and hunt along the Yukon River as far upstream as Paimiut Slough. They have also hunted along the Kuskokwim River as far upriver as the Stony River, over 300 miles distant (Andrews 1989).

Fienup-Riordan (1986) recorded that residents of Alakanuk, Nunam Iqua, and Mountain Village historically hunted for black bears in the Yukon River and its tributaries as far upstream as Holy Cross. Fienup-Riordan's key respondents also reported hunting in the Black River drainage. Black bear hunting areas used by Russian Mission residents include the Yukon River corridor from Ohogamiut upstream and into the Bonasila River as well as in the Innoko River drainage. Northern and eastern hills along the north bank of the Yukon River were hunted as well. Areas along the lower Atchuelinguk River are recent additions to regular black bear hunting areas, and Russian Mission hunters are active in that area while community residents are at their fish camps. Scammon Bay hunters reported searching for and harvesting black bear in the Black and Kashunuk river drainages in 2013 (Ikuta et al. 2016).

Criterion 5.

A means of handling, preparing, preserving, and storing fish or game which has been traditionally used by past generations, but not excluding recent technological advances where appropriate.

Black bears provide an important source of meat, fat, and fur for many GMU 18 residents. Coffing (1991) and Fienup-Riordan (2007) both provide detailed descriptions of the means by which Kwethluk hunters have customarily processed and used black bear. When field-dressing a bear, hunters removed the head, skinned it, and buried it in the hunting area facing east in order to show proper respect for the animal. Hunters from other communities also practiced this custom of burying the head. An Akiak key respondent explained, "When we hunt bear…we don't bring the head back to the village. We bury it up in the mountains where we got it."[2] An elder Marshall key respondent also described this practice and its relationship to hunters' success in harvesting bears:

> They told us back then when we caught those, not to keep the head where we butchered it but to bring it up and place it facing the direction of the sunrise and leave it there. Since we don't practice that [today], even though there are many residents in our village, we don't catch a lot. (Fienup-Riordan 2007)

Hides and meat were often butchered at or near the site of a kill by cutting and drying the meat to reduce its weight for easier transport (Coffing 1991; Fienup-Riordan 2007). If a kill occurred close to a camp or permanent settlement, the meat could be transported there where it would be processed. Hunters active in the Kilbuck and Kuskokwim mountains constructed boats in the field that were made from bear hides stretched over a frame of willow branches. Hunters and their families used the boats to transport fish, meat, hides, gear, and dogs from spring camps in the headwaters of lower Kuskokwim River tributaries (Coffing 1991; Fienup-Riordan 2007).

Black bear meat is shared with relatives, especially if fresh meat has been scarce. Some sources report patterns of butchering and sharing that are dependent upon the number in the hunting party, who made the kill, and the age of the hunters. The meat is prepared in many ways: frozen, dried, jarred for later use, or cooked by boiling, baking, or roasting (Coffing 1991). The bones were often boiled so that all of the meat could easily be removed from them. The marrow was only occasionally used because the bones are very thick and not easily broken. The liver was considered to be too rich and was not eaten.

Bear hides are used for mattresses or cabin bedding and also as trimmings on boots or mukluks (Coffing 1991; Fienup-Riordan 2007). People who lived distant from the coast with limited access to marine mammals cleaned and dried bear intestines, then used them to make waterproof garments and bags (Fienup-Riordan 2007; Nelson 1976rev.).

Criterion 6.

A pattern of taking or use that includes the handing down of knowledge of fishing or hunting skills, values, and lore from generation to generation.

In some families and communities, Central Yup'ik tradition attributes great spiritual power to the bear. Some individuals hold specific beliefs and values surrounding bear harvest and use. For example, a Scammon Bay key respondent described her understanding of how she is expected to behave to show respect for bears. She explained that, "We don't talk about them. We don't say their name because they might hear us and they'll come around. We call them 'big animal' in English or we use their Yup'ik name."[3] Nelson (1976rev.) also described this belief of a bear's supernatural power among lower Yukon River area residents in the 19th century:

2. D. Runfola, Alaska Department of Fish and Game Subsistence Resource Specialist, field notes, Akiak, November 14, 2019.
3. D. Runfola, Alaska Department of Fish and Game Subsistence Resource Specialist, field notes, Scammon Bay, November 30, 2019.

> It is also believed that many animals have supernatural powers of hearing, it being claimed that if they are spoken of, although far away, they will know it. In this respect [brown] and black bears are much feared, and it is said that if a man makes sport of bears or calls them by any disrespectful name or epithet, no matter where he is, the bears will hear him and will watch for him and kill him the next time he enters the mountains.

The Scammon Bay key respondent also explained that as a woman she is prohibited from eating bear meat, and that some of her ancestors did not feel that young men in the family should hunt bears.[4] She related a story of her brother being admonished by their grandmother when he killed a black bear. The grandmother warned that although some men are allowed to hunt black bears, her family members were prohibited from doing so. The key respondent explained that,

> [My grandmother] told [my brother] that the reason why the bear came to him was because the bear was looking for him. It wanted to trade its soul with [my brother]. In other words, my brother would have died because his soul would've been looking for another human to live in, but it would've just found the dead bear. That really upset him and that's why he doesn't hunt bears.

Some communities ascribe other manifestations of power to black bears. A Bethel resident described how his father-in-law, originally from Kwethluk, had tied a small band of black bear gut around the key respondent's daughter's wrist when she was an infant. The purpose of the bracelet was to ensure that she become a strong person.[5] Fienup-Riordan (2007) also records the practice of tying a bracelet made of bear sinew around an infant boy's wrist "to enhance their strength and stamina." Fienup-Rordan (2007) describes several traditions in the Central Yup'ik culture related to the use of bears to impart strength and power to children. One practice was to lay a child on the back of a dying bear and hold the child in place until the animal expired. In another practice, boys were instructed by a hunter to place their arm into a freshly killed bear's mouth and reach to the back of its throat, then to rub the bear's saliva on their face and hair. Sometimes infant boys were smeared with bear grease and bear blood to receive the strength of the bear.

As with many subsistence activities, people teach young men how to track, hunt, and butcher black bears, and young women how to process and preserve bear meat and other products, through participant observation. Hunting black bears is often a multi-family, intergenerational activity where rules regarding the distribution of the meat follow family and age relationships. Further, processing tasks, such as strategies for field butchering and drying, are taught at hunting camps depending on how far away from the community the harvest occurs (Coffing 1991). Children are included in many activities and are expected to show interest and eventually participate in the activities depending upon their ages and skills. Most hunting is done in family-based groups, so learning and proficiency are observed and monitored.

Criterion 7.

A pattern of taking, use, and reliance where the harvest effort or products of that harvest are distributed or shared, including customary trade, barter, and gift-giving.

Household surveys that the department has conducted in GMU 18 communities since 1980 show that households in most communities have reported either giving away black bears to other households or receiving them from someone else (Table 1). Black bear meat is widely shared within and between communities, particularly when it is the only fresh meat available during lean times, such as late winter. For example, Fienup-Riordan (1986) described the 1982 harvest of a black bear by a Mountain Village hunter who harvested the animal in the Black River drainage. The author explained that, "the news of his kill, as well as the meat, traveled throughout the delta." In a 1985 study in Kwethluk, community households shared black bear meat with other households in their community and received it from households in Bethel,

4. R. Charlie-Runfola, Scammon Bay resident, personal communication, November 30, 2019.

5. D. Runfola, Alaska Department of Fish and Game Subsistence Resource Specialist, field notes, Bethel, November 14, 2019.

Chuathbaluk, and Napakiak (Coffing 1991). Certain parts, such as the hindquarters, heart, intestines, and kidneys, are normally given to elders. A Kwethluk key respondent explained that when a boy harvested his first bear, the family distributed most of the meat and the hide to the community. The heart, brisket, tongue, and kidneys were saved to be shared during a feast (Fienup-Riordan 2007).

A common pattern in Alaska Natives' use of black bear meat is that only the men and the elder women should eat it. This pattern is perhaps less observed in the Kuskokwim River area than in communities in other areas of the Yukon-Kuskokwim Delta. Coffing (1991) provides a detailed description of the rules governing the distribution of black bears that were based on the number of hunters involved and their ages and relationships to one another.

> When the hunting group was comprised [sic] of two hunters from two different households, the hunter making the kill usually kept the hide and the assisting hunter received the meat from the neck. The two hunters then usually divided the animal longitudinally, so that each received a front quarter, a hindquarter, and a rib section. In instances when hunters from several households helped in harvesting, butchering, and packing the bear, the individual making the kill usually kept the hide, elders received the "choicest" parts, such as the hindquarters and internal organs, and the younger men received the front quarters. When hunters were of the same generation, the remaining meat was generally divided evenly.

Criterion 8.

A pattern that includes taking, use, and reliance for subsistence purposes upon a wide variety of the fish and game resources and that provides substantial economic, cultural, social, and nutritional elements of the subsistence way of life.

Black bear is one of several large game species used for food by residents of GMU 18. Although the edible weight harvested annually is less than that of moose or salmon, black bear is an important food source, particularly in spring and fall each year. Residents of GMU 18 communities harvest a large variety and considerable amounts of local fish and game resources, including all species of Pacific salmon (*Oncorhynchus* spp.); whitefishes (*Coregonus* spp.); sheefish (*Stenodus leucichthys*); northern pike (*Esox lucius*); burbot (*Lota lota*); Alaska blackfish (*Dallia pectoralis*); rainbow smelt (*Osmerus mordax*); rainbow trout (*O. mykiss*); chars (*Salveliuns* spp); Arctic lamprey (*Lampetra camtschatica*); moose (*Alces alces*); caribou (*Rangifer tarandus*); black bear; brown bear (*U. arctos*); bearded seal (*Erignathus barbatus*); ringed seal (*Pusa hispida*); spotted seal (*Phoca largha*); beluga whale (*Delphinapterus leucas*); Pacific walrus (*Odobenus rosmarus*); hares (*Lepus* spp.); ptarmigans (*Lagopus* spp.); porcupine (*Erethizon dorsatum*); grouse (various spp.); numerous species of waterfowl; furbearers, such as beaver (*Castor canadensis*), mink (*Mustela vison*), river otter (*Lutra canadensis*), muskrat (*Ondatra zibethicus*), wolverine (*Gulo gulo*), gray wolf (*Canis lupus*), red fox (*Vulpes vulpes*), Arctic fox (*Vulpes lagopus*), lynx (*Lynx canadensis*), and marten (*Martes americana*); as well as many plants and berries.

Wild food resources have typically included black bear in many communities in the Yukon-Kuskokwim Delta (Table 1). For example, 41% of Akiachak households harvested an estimated total of 36 black bears in 1998 for an average of 10.4 lb per capita for the community (Coffing et al. 2001). In that study year, Akiachak households used 24 species of fish, 4 species of large land mammals, 16 species of furbearers, 7 marine mammal species, 32 species of birds, including eggs, and numerous species of plants. Pilot Station hunters harvested an estimated 11 black bears in 2013, when large land mammals, including black bears, contributed 39% to the total community harvest by weight (Ikuta et al. 2016). Pilot Station residents harvested 76 different types of fish, mammals, birds, and plants during that study year, and they used 96 species of wild food resources.

In GMU 18, nonlocal foods and equipment are often very costly, and the means of generating cash are not widely available. The harvest of wild foods in GMU 18 communities and throughout rural Alaska supports the physical health and wellbeing of subsistence resource users. Hunting, fishing, and gathering also help residents maintain essential connections with their diverse sociocultural and linguistic heritage

while providing critical economic support for communities. Although subsistence harvest and use activities are not primarily of monetary importance, residents consider wild foods as possessing great value. This value represents a critical sector of the rural Alaska economy. Additionally, the amount of cash available in many rural Alaska communities is limited relative to urban parts of the state. The U.S. Census Bureau American Community Survey reports an unemployment rate of 19.3% in the Bethel Census Area, which comprises all all GMU 18 communities.[6] The five-year average median household income from 2013–2017 was $53,853 per year in the Bethel Census Area, significantly lower than the 2013–2017 five-year average median household income in Alaska as a whole, which was $76,114 per year. At the same time, costs of store-bought food items, especially meat, fish, fruits, and vegetables, transported into GMU 18 communities are unaffordable to most residents. Residents of GMU 18 use and rely upon virtually all the edible wild food resources available in their region. Black bear represents a small but important portion of these resources.

6. U.S. Census Bureau, Washington, D.C., n.d. "American FactFinder: Bethel, Alaska." Accessed December 5, 2019. http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml

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