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Customary and Traditional Use of Hares in Game Management Units 18, 22, 23, and 26A

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**Alaska Department of Fish and Game, Division of Subsistence
for the January 2020 Board of Game meeting**

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Alaska Department of Fish and Game

Division of Subsistence



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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

<i>all atomic symbols</i>	
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
mid-eye-to-fork	MEF
mid-eye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

<i>all standard mathematical signs, symbols and abbreviations</i>	
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 _z , etc.
minute (angular)	'
not significant	NS
null hypothesis	H ₀
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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MANAGEMENT UNITS 18, 22, AND 26A**

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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 Alaska hare *Lepus othus* and snowshoe hare *L. americanus* in Alaska's game management units 18, 22, 23, and 26A. 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 stocks that are customarily and traditionally taken or used by Alaska residents for subsistence.

Key words: Alaska hare, *Lepus othus*, snowshoe hare, *L. americanus*, Arctic Alaska, western Alaska, Board of Game.

INTRODUCTION

At their January 2020 meeting, the Alaska Board of Game (Board) will consider proposals 15 and 43 regarding the harvest of Alaska hares in western and Arctic Alaska. The Board has not made a determination as to whether there are customary and traditional uses (C&T) of hares in game management units (GMUs) 18, 22, 23, and 26A (Figure 1) pursuant to Alaska Statute 16.05.258. There are two species of hare in Alaska: Alaska hare *Lepus othus* and snowshoe hare *L. americanus*. Snowshoe hares occur throughout Alaska but are not found in the far northern coastal regions, on the lower Alaska Peninsula and Aleutian Islands, or on most islands of Southeast Alaska. Alaska hares occur in western portions of the state on the Bering Sea coast, Yukon-Kuskokwim Delta, Bristol Bay, and the Alaska Peninsula. In preparation for regulatory work on proposals 15 and 43, the department has prepared this C&T worksheet for the Board's consideration at its January 2020 meeting in Nome.

This customary and traditional use summary for hares in units 18, 22, 23, and 26A provides a description of customary and traditional harvest and use practices of Alaska and snowshoe hares from the ethnographic and ethnohistorical literature of Western and Arctic Alaska, including publications of department research. Much of the literature describes harvests and uses of Alaska hare and snowshoe hare collectively as "hares," and there are areas of overlap in the ranges of these two species in these GMUs. Whenever possible, information specific to Alaska hares is presented in this worksheet; however, patterns of harvest and use for both species overlap. Pursuant to 5 AAC 99.010, the Board will identify game populations that are customarily and traditionally taken or used by Alaska residents for subsistence. This worksheet is organized into information pertaining to the eight criteria in regulation to assist the board in determining the C&T finding.

THE EIGHT CRITERIA

CRITERION 1: LENGTH AND CONSISTENCY OF USE

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.

Alaska¹ and snowshoe hares have long played a significant role in the seasonal round of subsistence in the Western and Arctic regions of Alaska (Anderson et al. 1977; Burch Jr. 2006; Chance 1966; Fienup-Riordan 2007; Ingstad 1954; Nelson 1983rev.; Oswalt 1990; Ray 1975; 1984). Hares are available year-round and are harvested during every season; however, hares in the Yukon-Kuskokwim Delta region are typically

1. In the ethnohistorical literature and some early Division publications, Alaska hares were referred to as Arctic hares and differentiated from snowshoe hares as the only two hare populations in the study area. Arctic hares *Lepus arcticus* are not present in Alaska; however, Alaska hares are sometimes referred to as Arctic hares or tundra hares.

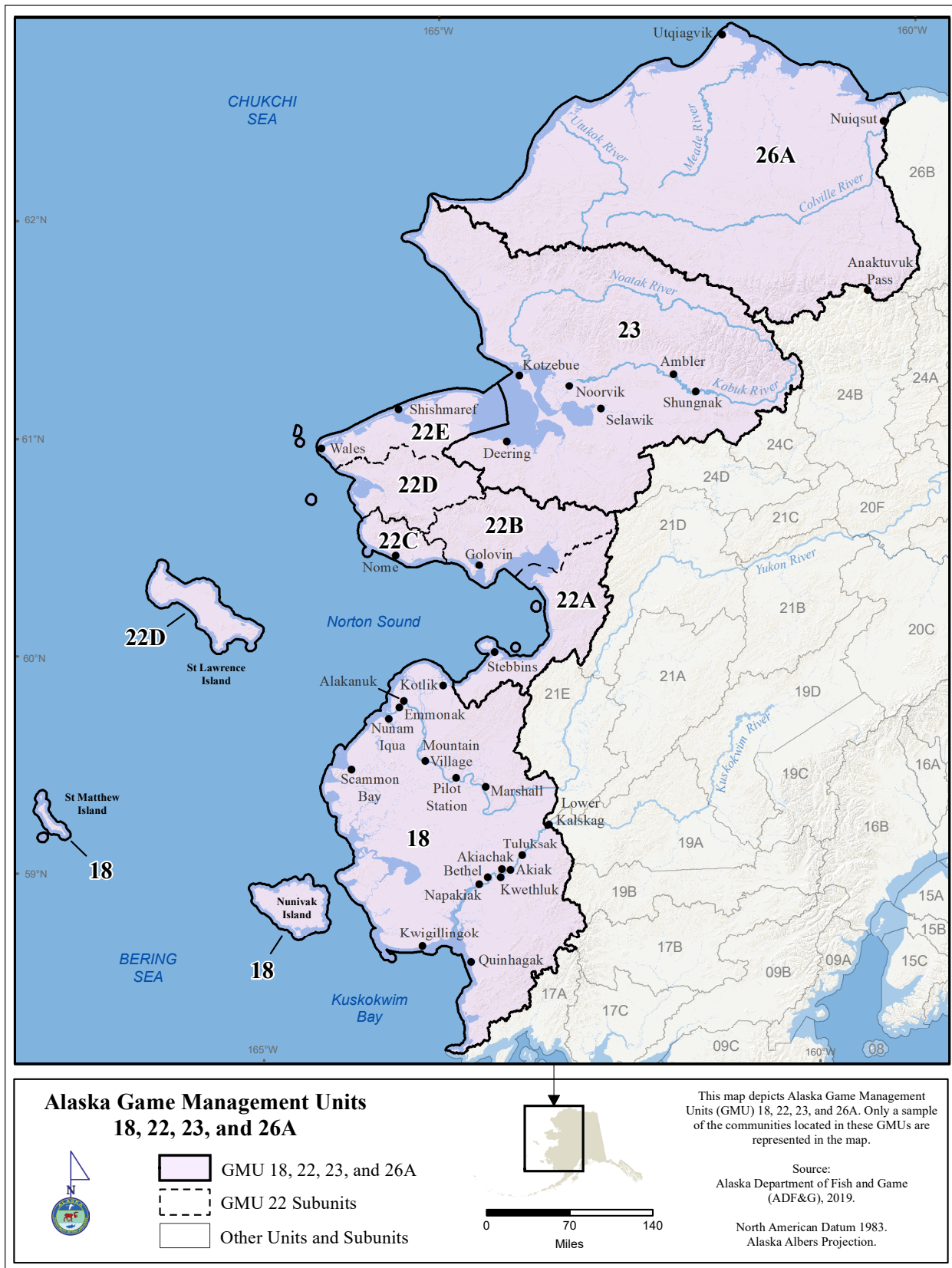


Figure 1.—Alaska game management units 18, 22, 23, and 26A.

harvested late winter through early spring when fur is of highest quality or when Alaska hares aggregate into larger groups of animals. They provided an important source of food, particularly in the winter months when food stores gathered during the summer and fall months were running low after holiday and ceremonial celebrations (Burch Jr. 2006). Inhabitants would often leave their fall settlements and strike out in household groups in pursuit of other food sources. They would make camp whenever they found populations of caribou, ptarmigans, hares, and fish, and would move on when populations were depleted (Burch Jr. 2006; Ray 1975).

Commonly used English names for hares throughout rural Alaska include *rabbit* as a general term for all hare species and *jackrabbit* as a name for Alaska hare. Names for various species in the region's indigenous languages indicate the presence, if not significance, of these animals in local cultures' knowledge and awareness of their ecological community. In the dialects of the Central Yup'ik language there are several names for both individual species of hares as well as for hares in general. Some examples include generic names for hares such as *nullutuuyak* or *uskaanaq*. Names for Alaska hares include *quyukegqliq* or *ugasek*, and *maqaruaq* for snowshoe hare. In the various dialects of Iñupiaq, snowshoe hares are referred to as *ukallaichiak* or *ukalliq*, and Alaska hares are referred to as *ukallisugruk*. Hare populations experience natural fluctuations on a multi-year cycle.^{2,3} Fluctuations in resource availability can result in low harvests during times of resource scarcity and variable harvest trends over time. When large land mammal and marine mammal populations are low or inaccessible, hares and other small mammals can be an important source of meat. Although the Koyukuk River region is outside of the units discussed here, inhabitants of these units share similar patterns of resource dependence as along the Koyukuk. Documentation shows that when other games species were unavailable, Koyukon Athabascans sometimes survived an entire winter season solely on hares, making them one of the most important subsistence animals (Nelson 1983). "A Huslia man recalled his mother bringing in catches of 40 hares from routine checks of her snare line. 'If it wasn't for rabbits', an elder told me, 'we wouldn't be alive today'" (Nelson 1983:215). Ray (1975) noted that an informant on the Seward Peninsula recalled large groups of Alaska hare in the early 20th century, and that "one could scarcely walk without stepping on them." In recent research conducted by the Division, respondents in the GMU 22 communities of Stebbins and Deering noted that the Alaska hare population had declined in their local regions; however, they were consistently harvested when available (Braem et al. 2017).

Hares continue to be an important and commonly harvested subsistence resource throughout Alaska. Due to the individual ranges of both Alaska and snowshoe hares, harvest rates differ between regions. Harvest history estimates from 1964 through 2014 in the communities within GMUs 18, 22, 23, and 26A surveyed by the Division of Subsistence, Stephen Braund and Associates, Kawerak, and the North Slope Borough Department of Wildlife Management appear in Table 1 and show a history of harvest and use throughout the GMUs.⁴

Division of Subsistence studies show that in the Bering Strait region, between 1% and 30% of households harvested hares on average across all study years (Table 1). In 1982, household surveys showed that 80% of Golovin households and 54% of Shishmaref households harvested hares. In 2005–2006, 34% of Stebbins households harvested an estimated 1,319 hares. Of those communities in Unit 23 that reported harvest of hares and are within the known range of hare species, between 1% and 15% of households reported harvesting hares on average across study years. In 2012, 30% of Noorvik households harvested 1,203 hares, and in 2011, 13% of Selawik households harvested 303 hares. Many of the Unit 26A communities are outside of the known range of both snowshoe and Alaska hares. Although household participation and spatial harvest data are not available, Utqiagvik (Barrow) hunters harvested between 21 and 160 snowshoe

2. ADF&G, n.d. "Alaska hare (*Lepus othus*) species profile." Accessed November 12, 2019.

<http://www.adfg.alaska.gov/index.cfm?adfg=alaskahare.main>

3. ADF&G, n.d. "Snowshoe hare (*Lepus americanus*) species profile." Accessed November 12, 2019.

<http://www.adfg.alaska.gov/index.cfm?adfg=snowshoehare.main>

4. Table 1 excludes the island communities of Diomedea, Gambell, and Savoonga: they have no resident hare populations.

Table 1.—Subsistence harvest and use of hares in surveyed communities, GMUs 18, 22, 23, and 26A, 1964–2014.

Community	Study year	Resource	Percentage of households					Estimated harvest (lb)			
			Using	Attempting harvest	Harvesting	Giving away	Receiving	Estimated total harvest	Units	Total	Per capita
Unit 18											
Akiachak	1998	Alaska hare	1.2	6.2	0.0	0.0	1.2	0.0 ind.	0.0	0.0	
		Snowshoe hare	81.5	70.4	69.1	49.4	28.4	2338.0 ind.	5802.0	11.1	
Akiak	2010	Alaska hare	3.2	3.2	3.2	0.0	1.6	17.0 ind.	42.0	0.1	
		Snowshoe hare	50.8	41.3	41.3	17.5	12.7	506.0 ind.	1264.0	3.3	
Alakanuk	1980	Alaska hare	-	-	61.9	-	-	669.0 ind.	3343.0	5.6	
		Snowshoe hare	-	-	76.2	-	-	2563.0 ind.	6407.0	10.8	
Bethel	2011	Snowshoe hare	0.2	0.2	0.2	0.2	0.0	15.9 ind.	39.8	0.0	
	2012	Alaska hare	2.8	2.8	1.9	0.6	1.1	173.0 ind.	466.0	0.1	
Eek	2013	Snowshoe hare	11.8	9.7	9.0	3.6	2.8	1224.0 ind.	1214.3	0.2	
		Alaska hare	1.6	3.1	1.6	0.0	0.0	7.0 ind.	21.1	0.1	
Emmonak	1980	Alaska hare	7.8	7.8	4.7	3.1	1.6	33.8 ind.	67.5	0.2	
		Snowshoe hare	-	-	50.0	-	-	806.0 ind.	4028.0	9.0	
	2008	Alaska hare	-	-	33.3	-	-	461.0 ind.	1153.0	2.6	
		Snowshoe hare	1.8	0.9	0.9	0.0	0.9	24.6 ind.	123.2	0.2	
Kotlik	1980	Alaska hare	25.7	26.6	21.1	13.8	9.2	252.9 ind.	632.4	0.8	
		Snowshoe hare	-	-	64.3	-	-	552.0 ind.	2760.0	7.3	
Kwethluk	1986	Hares	-	37.3	30.6	25.7	14.1	492.0 ind.	1229.0	2.4	
		Alaska hare	7.5	5.4	4.3	3.2	3.2	52.0 ind.	131.0	0.2	
Marshall	2010	Snowshoe hare	19.4	12.9	12.9	5.4	7.5	177.0 ind.	442.0	0.6	
		Alaska hare	32.6	21.7	21.7	13.0	13.0	99.8 ind.	138.6	0.4	
Mountain Village	1980	Alaska hare	-	-	25.0	-	-	66.0 ind.	330.0	0.6	
		Snowshoe hare	-	-	75.0	-	-	2742.0 ind.	6855.0	13.3	
	2010	Alaska hare	10.4	10.4	7.0	6.1	4.3	63.0 ind.	149.5	0.2	
		Snowshoe hare	27.0	19.1	18.3	9.6	12.2	263.6 ind.	515.5	0.7	
Napakiak	2011	Alaska hare	12.5	12.5	10.7	5.4	1.8	42.9 ind.	128.7	0.4	
		Snowshoe hare	35.7	25.0	23.2	10.7	16.1	306.7 ind.	896.4	2.8	
Napaskiak	2011	Alaska hare	8.9	7.1	5.4	3.6	5.4	20.6 ind.	37.7	0.1	
		Snowshoe hare	5.4	7.1	5.4	5.4	0.0	41.1 ind.	41.1	0.1	
Nunam Iqua (Sheldon Point)	1980	Alaska hare	-	-	71.4	-	-	92.0 ind.	460.0	3.3	
		Snowshoe hare	-	-	71.4	-	-	174.0 ind.	435.0	3.2	
Nunapitchuk	1983	Hares	-	-	58.8	-	-	301.0 ind.	1263.0	2.8	
Oscarville	2010	Alaska hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0	
		Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0	
Pilot Station	2013	Alaska hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0	
		Snowshoe hare	17.0	12.8	9.6	7.4	6.4	55.8 ind.	103.5	0.2	
Quinhagak	1982	Alaska hare	-	-	25.0	-	-	82.0 ind.	409.0	0.9	
		Snowshoe hare	-	-	41.7	-	-	180.0 ind.	449.0	1.0	
	2013	Alaska hare	6.4	6.4	4.6	0.0	0.9	14.9 ind.	29.7	0.0	
		Snowshoe hare	8.3	6.4	5.5	1.8	2.8	75.0 ind.	148.6	0.2	
Russian Mission	2011	Alaska hare	2.2	2.2	2.2	0.0	0.0	1.7 ind.	3.4	0.0	
Scammon Bay	2013	Snowshoe hare	34.8	34.8	34.8	10.9	2.2	217.7 ind.	412.2	1.0	
		Alaska hare	14.0	16.3	14.0	8.1	0.0	164.5 ind.	164.5	0.3	
		Snowshoe hare	8.1	10.5	8.1	3.5	0.0	40.0 ind.	48.6	0.1	

-continued-

Table 1.--Page 2 of 5.

Community	Study year	Resource	Percentage of households					Estimated harvest (lb)		
			Using	Attempting harvest	Harvesting	Giving away	Receiving	Estimated total harvest	Units	Total
Unit 18, continued										
Tuluksak	2010	Alaska hare	1.5	1.5	1.5	0.0	0.0	20.0 ind.	51.0	0.1
		Snowshoe hare	47.1	44.1	44.1	20.6	10.3	440.0 ind.	1099.0	2.4
Tuntutuliak	2013	Alaska hare	1.5	0.0	0.0	1.5	0.0	0.0 ind.	0.0	0.0
		Snowshoe hare	16.4	14.9	13.4	7.5	3.0	80.7 ind.	161.4	0.4
Tununak	1986	Hares	21.2	24.2	12.1	3.0	9.1	29.0 ind.	102.0	0.3
Unit 22A										
Saint Michael	2006	Unknown hares	3.6	3.6	3.6	0.0	0.0	26.9 ind.	0.0	0.0
Stebbins	1980	Alaska hare	-	-	50.0	-	-	110.0 ind.	550.0	1.5
		Snowshoe hare	-	-	50.0	-	-	855.0 ind.	2138.0	5.6
	2006	Unknown hares	34.0	34.0	34.0	19.1	14.9	1319.1 ind.	0.0	0.0
	2013	Alaska hare	1.1	1.1	1.1	0.0	0.0	1.6 ind.	9.8	0.0
		Snowshoe hare	16.1	11.5	10.3	10.3	5.7	108.6 ind.	271.6	0.5
Unalakleet	2006	Unknown hares	8.7	8.7	8.7	0.8	1.6	140.0 ind.	0.0	0.0
Unit 22B										
Elim	2006	Unknown hares	9.6	13.5	9.6	0.0	1.9	25.8 ind.	0.0	0.0
Golovin	1982	Hares	85.0	-	80.0	20.0	40.0	- ind.	-	-
	1989	Alaska hare	9.1	9.1	6.1	3.0	3.0	4.0 ind.	23.0	0.1
	2012	Snowshoe hare	54.5	51.5	45.5	15.2	21.2	163.0 ind.	407.0	2.4
		Alaska hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0
	2006	Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0
		Unknown hares	6.8	6.8	6.8	1.4	1.4	17.6 ind.	0.0	0.0
White Mountain	2006	Unknown hares	5.5	5.5	5.5	1.8	0.0	14.2 ind.	0.0	0.0
Unit 22D										
Brevig Mission	1984	Alaska hare	32.2	-	28.6	10.7	3.6	- ind.	-	-
		Snowshoe hare	28.6	-	21.4	21.4	7.1	- ind.	-	-
	1989	Alaska hare	6.7	6.7	6.7	6.7	0.0	6.0 ind.	36.0	0.2
		Snowshoe hare	6.7	0.0	0.0	0.0	6.7	0.0 ind.	0.0	0.0
Teller	2006	Unknown hares	3.2	3.2	3.2	1.6	0.0	2.3 ind.	0.0	0.0
		Unknown hare	1.9	1.9	1.9	0.0	0.0	2.3 ind.	0.0	0.0
Unit 22E										
Shishmaref	1982	Alaska hare	-	58.1	53.5	-	-	- ind.	-	-
	1989	Alaska hare	4.8	4.8	4.8	4.8	4.8	112.0 ind.	708.0	1.5
	1995	Snowshoe hare	4.8	0.0	0.0	0.0	4.8	0.0 ind.	0.0	0.0
		Alaska hare	20.0	22.2	20.0	13.3	2.2	62.0 ind.	392.0	0.7
	2006	Snowshoe hare	4.4	4.4	4.4	2.2	2.2	44.0 ind.	109.0	0.2
		Unknown hares	17.3	14.7	13.3	12.0	9.3	63.4 ind.	0.0	0.0
	2014	Alaska hare	9.3	4.7	4.7	2.3	4.7	16.3 ind.	92.2	0.1
		Snowshoe hare	3.5	4.7	3.5	2.3	1.2	13.0 ind.	32.6	0.1
Wales	1993	Alaska hare	2.4	2.4	2.4	2.4	0.0	1.0 ind.	8.0	0.1
		Snowshoe hare	2.4	2.4	2.4	2.4	0.0	12.0 ind.	30.0	0.2
	2006	Unknown hares	10.3	10.3	10.3	7.7	5.1	8.4 ind.	0.0	0.0
Unit 23										
Ambler	2012	Alaska hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0
		Snowshoe hare	15.0	11.3	9.4	9.4	7.5	53.0 ind.	132.6	0.5
Buckland	2003	Alaska hare	6.0	4.8	3.6	1.2	4.8	15.9 ind.	100.2	0.2
		Snowshoe hare	9.6	9.6	7.2	0.0	7.2	59.4 ind.	207.8	0.5
Deering	1994	Alaska hare	13.5	13.5	13.5	5.4	2.7	12.0 ind.	75.0	0.5
		Snowshoe hare	5.4	5.4	5.4	2.7	0.0	8.0 ind.	21.0	0.1
	2013	Alaska hare	3.1	6.3	3.1	0.0	0.0	2.8 ind.	17.3	0.1
		Snowshoe hare	9.4	9.4	9.4	3.1	3.1	64.6 ind.	161.6	1.3

-continued-

Table 1.--Page 3 of 5.

Community	Study year	Resource	Percentage of households					Estimated harvest (lb)		
			Using	Attempting harvest	Harvesting	Giving away	Receiving	Estimated total harvest	Units	Total
Unit 23, continued										
Kiana	2006	Alaska hare	0.0	2.6	0.0	-	-	0.0 ind.	0.0	0.0
		Snowshoe hare	6.5	7.8	5.2	-	-	25.0 ind.	64.0	0.2
Kivalina	1964	Alaska hare	-	-	-	-	-	0.0 ind.	0.0	0.0
	1965	Hare	-	-	-	-	-	0.0 ind.	0.0	0.0
	1982	Alaska hare	-	-	-	-	-	0.0 ind.	0.0	0.0
	1983	Alaska hare	-	-	-	-	-	0.0 ind.	0.0	0.0
Kivalina, continued	1992	Alaska hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0
		Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0
Kobuk	2009	Alaska hare	3.6	3.6	3.6	0.0	0.0	4.0 ind.	0.0	0.0
	2012	Alaska hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0
		Snowshoe hare	6.6	6.6	6.6	6.6	3.3	9.6 ind.	24.0	0.1
Kotzebue	1986	Alaska hare	2.6	7.7	1.9	0.8	0.7	64.0 ind.	400.0	0.2
		Snowshoe hare	0.8	4.3	0.8	0.4	0.0	34.0 ind.	84.0	0.0
	1991	Alaska hare	3.0	3.0	3.0	0.0	0.0	97.0 ind.	612.0	0.2
		Snowshoe hare	4.0	4.0	4.0	3.0	0.0	340.0 ind.	849.0	0.2
	2014	Alaska hare	0.5	0.0	0.0	0.5	0.5	0.0 ind.	0.0	0.0
		Snowshoe hare	4.7	3.7	3.3	0.5	2.8	92.6 ind.	221.9	0.1
Noatak	1994	Alaska hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0
		Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0
	2007	Snowshoe hare	2.2	2.2	2.2	2.2	1.1	12.0 ind.	0.0	0.0
Noorvik	2008	Alaska hare	0.0	0.8	0.0	0.0	0.0	0.0 ind.	0.0	0.0
	2012	Alaska hare	8.4	7.2	7.2	3.6	2.4	34.1 ind.	194.6	0.3
		Snowshoe hare	37.3	26.5	26.5	15.6	14.4	450.0 ind.	1008.4	1.7
Selawik	2011	Alaska hare	1.1	1.1	1.1	0.0	0.0	3.7 ind.	0.0	0.0
		Snowshoe hare	14.3	13.2	13.2	12.1	4.4	204.8 ind.	303.5	0.4
Shungnak	2002	Alaska hare	2.0	2.0	0.0	2.0	0.0	0.0 ind.	0.0	0.0
		Snowshoe hare	12.0	8.0	8.0	2.0	8.0	32.0 ind.	111.0	0.4
	2012	Alaska hare	2.1	0.0	0.0	0.0	2.1	0.0 ind.	0.0	0.0
		Snowshoe hare	8.6	4.3	4.3	4.3	4.3	15.0 ind.	37.5	0.1
Unit 26A										
Anaktuvuk Pass	1996	Snowshoe hare	-	-	-	-	-	7.9 ind.	11.9	0.0
	1998	Snowshoe hare	-	-	-	-	-	5.0 ind.	7.5	0.0
	2002	Snowshoe hare	-	-	-	-	-	8.9 ind.	13.4	0.0
	2011	Snowshoe hare	1.6	1.6	1.6	-	-	4.0 ind.	10.0	0.0
	2014	Snowshoe hare	3.8	5.7	3.8	1.9	0.0	11.2 ind.	23.3	0.1
Utqiagvik (Barrow)	1995	Snowshoe hare	-	-	-	-	-	20.9 ind.	31.4	0.0
	1996	Snowshoe hare	-	-	-	-	-	83.5 ind.	125.3	0.0
	2000	Snowshoe hare	-	-	-	-	-	159.5 ind.	239.3	0.1
	2014	Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0
Nuiqsut	2014	Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0
Point Lay	2012	Alaska hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0
		Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0 ind.	0.0	0.0

Source: ADF&G Division of Subsistence Community Subsistence Information System (CSIS).

Note: Community / Study years for which only "Hare" is provided as a resource are instances where species was not asked. Based on area, Note: - indicates that no data is available.

hares in 1995–1996 and 2000, and an average of 3% of Anaktuvuk Pass households harvested hares in 2011 and 2014.

In household surveys conducted by the department since 1980, residents of Yukon-Kuskokwim Delta communities have reported harvesting hares at varying levels over time. Department surveys in 1980 recorded harvests of Alaska hare that ranged from 66 hares by Mountain Village hunters to 806 animals by residents of Emmonak (Wolfe 1981). In the same study, Nunam Iqua hunters harvested 174 snowshoe hares and Stebbins residents took an estimated 855 hares. The Unit 18 communities with the greatest harvests of snowshoe hare in 1980 were Alakanuk (2,563 hares) and Mountain Village with (2,742; Wolfe 1981). More recent department studies have shown much lower harvests of hares: harvests range from as few as seven Alaska hares harvested by Eek residents in 2013 to 173 harvested in Bethel in 2012 (Ikuta et al. 2016; Runfola et al. 2017). Snowshoe hare harvests were similarly lower in recent department studies in comparison to earlier research. In Unit 18 communities surveyed between 2009 and 2014, snowshoe hare harvests ranged from 24 animals in Lower Kalskag to 506 in Akiak (Brown et al. 2012; Ikuta et al. 2014). In 2012, hunters from the large hub community of Bethel harvested an estimated 1,224 snowshoe hares (Runfola et al. 2017). Documented hare harvests were lowest in Emmonak in 2008 (only 1% of households harvested hares) and in Tuluksak in 2010 (1.5% of households harvested them; Table 1). Department research in 1980 showed significantly higher harvest rates: 86% of Alakanuk households and 93% of Kotlik households harvested hares.

For additional background on regional harvest data, including harvest timing, harvest areas, and ethnographic information, see also Ahmasuk and Trigg 2007; Bacon et al. 2011rev.; Braem et al. 2013; 2015, and 2017; Braund and Associates 1993; Brown et al. 2015 and 2016; Burch Jr. 1985; Conger and Magdanz 1990; Fall et al. 2012; Fienup-Riordan 2007; Fuller and George 1999rev.; Georgette and Loon 1993; Holen et al. 2012; Magdanz et al. 2002, 2004, and 2010; Sobelman 1985; and Wolfe 1981.

CRITERION 2: SEASONALITY

A use pattern recurring in specific seasons of each year.

Alaska and snowshoe hares are available throughout the year; however, they are generally harvested in winter months into the early spring (Anderson et al. 1977; Braem et al. 2017; Burch Jr. 2006; Nelson 1983rev.; Ray 1975; Wolfe 1981). Historically, small game like hares and ptarmigans were of particular importance during the winter for caribou-dependent groups during times of poor migration, and April and was often a “hungry” month for groups who depended on walrus and whales (Ray 1984). In the most recent comprehensive survey studies (2012–2014) including units 22, 23, and 26A, community harvests of both snowshoe and Alaska hares primarily occurred in the spring and winter months (Braem et al. 2015; 2017; Brown et al. 2016). Residents of both Stebbins (GMU 22) and Shungnak (GMU 23) explained that spring is the best time to harvest hares because they become snow-blind as the days lengthen and are easier to catch.

Hunters harvest both species of hares in early winter through spring in some areas throughout GMU 18 (Ikuta et al. 2014; 2016; Runfola et al. 2014; 2017). Key respondents in Scammon Bay and Bethel have described traveling by snowmachine at night to search for the nocturnal Alaska hare (Ikuta et al. 2016; Runfola et al. 2017). These respondents also explained that hunting Alaska hare in winter is aided by the species’ tendency to aggregate during those months. Both Alaska and snowshoe hares are also taken opportunistically in winter and spring while people travel overland.

CRITERION 3: MEANS AND METHODS OF HARVEST

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

Historically, residents of the Arctic and Western regions harvested hares by using snares, nets, and bows and arrows (Anderson et al. 1977; Burch Jr. 2006; Nelson 1983rev.; Oswald 1990; Ray 1975; 1984). Snares were often set by women and children in the willow thickets after a new camp was established (Fienup-Riordan

2007). In the mid-19th century, Russian Imperial Army Lieutenant L.A. Zagoskin described Kuskokwim River hunters harvesting hares with a snare tossed from the end of a long pole:

Rabbits, hares, and muskrats are taken with a tossing snare, a long pole balanced in such a way that an animal that chances to enter the noose dangling from the end of it upsets the balance and is hoisted into the air. (Zagoskin 1967)

Alaska hares were less commonly targeted by bow and arrow, often by younger boys learning to hunt (Burch Jr. 2006). Residents of the region would also employ sinew nets in the open areas between thickets in order to harvest Alaska hares (Nelson 1983rev.). Once the nets were set, hunters would lead an organized drive, slowly and loudly making their way through willow thickets to startle the hares (Burch Jr. 2006; Oswalt 1990). The hares would become entangled in the net, and hunters would dispatch them by either clubbing an animal or breaking its neck. Hare drives were recorded in the upper Kobuk River region as late as the 1970s; however, at that time the animals were dispatched by firearm after being flushed out of brushy vegetation (Anderson et al. 1977). Historically, hunters living in coastal tundra spent long periods of time tracking hares and other small land mammals through months with snow cover (Fienup-Riordan 2007).

Today, instead of using snares, nets, or bows, Alaska hares are harvested primarily with firearms. The animals are difficult to catch for unskilled individuals, and their distribution is patchy. Therefore, participation in harvests of the resource can be low depending on the number of skilled hunters in an area or the proximity of Alaska hare to human population centers.

CRITERION 4: GEOGRAPHIC AREAS

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.

Snowshoe hares are the most common and widespread species of hare in Alaska. They are distributed across the state except for portions of the lower Kuskokwim Delta, the Alaska Peninsula, and the much of the area north of the Brooks Range. Snowshoe hares are found in the vicinity of Umiat and appear to be expanding their range in the southern portions of the North Slope along the Colville River drainage.⁵ These hares are found in mixed spruce forests, wooded swamps, and brushy areas.⁶ Alaska hares prefer Arctic and maritime tundra habitat and can be found in flood plains with substantial shrub growth. They generally prefer open tundra but use brush as cover where it is available when they are not foraging.⁷

As mentioned previously, hares in units 22, 23, and 26A were historically targeted by net or snares in brushy vegetation. Traditionally, families foraging for food in the lean months of late winter and early spring would erect temporary camps if Alaska or snowshoe hare populations were found in abundance (Burch Jr. 2006; Ray 1975). Today, they are often taken opportunistically by hunters or trappers traveling across the landscape in pursuit of other prey. Although less common than in the past, some residents of the Arctic region still set snares for hare species in willows, alders, and other brushy vegetation (Braem et al. 2017).

Harvests of snowshoe hares in Units 18, 22, 23, and 26A occur mostly in locations where willows, alders, and other brushy plant species grow in abundance, such as riverbanks, hillsides, and the margins of tundra meadows. These areas are utilized by snowshoe hares both as a food source and for cover from predators. Lower Yukon River hunters harvest snowshoe hares opportunistically while traveling in winter in locations such as the area around Kusilvak Mountain in the Black River drainage and in the lower Kuskokwim River area along riverbanks and around lakes and meadows (Ikuta et al. 2014; 2016; Runfola et al. 2017). Historically, Alaska hares were hunted in late winter through early spring on tundra-covered hilltops and ridges throughout Unit 18.

5. C. Dagget, ADF&G Unit 26A Area Biologist, personal communication with E. Mikow, December 6, 2019.

6. ADF&G, n.d. "Snowshoe hare (*Lepus americanus*) species profile." Accessed November 12, 2019.
<http://www.adfg.alaska.gov/index.cfm?adfg=snowshoehare.main>

7. ADF&G, n.d. "Alaska hare (*Lepus othus*) species profile." Accessed November 12, 2019.
<http://www.adfg.alaska.gov/index.cfm?adfg=alaskahare.main>

Apparent changes in Alaska hare populations in the Yukon-Kuskokwim Delta have reduced the number of locations where hunters currently observe the species. For example, a Bethel resident described that as recently as the 1990s, lower Kuskokwim River hunters harvested Alaska hares each spring in the hills immediately north of the community of Napakiak; however, the species is no longer seen in abundance there (Runfola et al. 2017). A Scammon Bay resident explained that a portion of contemporary Alaska hare hunting in the Yukon-Kuskokwim Delta commonly occurs in the Askinuk Mountains; in the vicinity of large lakes in the Kashunak, Aphrawn, and Manokinak river drainages; and in the Ingakslugwat Hills (Ikuta et al. 2016). All of these areas are situated between Cape Romanzof to a point approximately 75 miles southeast of there. Lower Kuskokwim River hunters may also harvest hares opportunistically when traveling in winter and spring in mountains east of the Yukon-Kuskokwim Delta. For more complete descriptions of hare harvest areas see Fall et al. (2012), Brown et al. (2013), Ikuta et al. (2014), Brown et al. (2015), Braem et al. (2015), Brown et al. (2016), Ikuta et al. (2016), Braem et al. (2017), and Runfola et al. (2017).

CRITERION 5: MEANS OF HANDLING, PREPARING, PRESERVING, AND STORING

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

Alaska and snowshoe hares are primarily harvested for human consumption and are typically eaten fresh or frozen for future use. Traditionally, hares provided an important source of fresh meat during times of relative scarcity, and everything but the stomach and intestines were eaten (Burch Jr. 2006). When not eaten immediately, the meat was occasionally dried for future consumption. Additionally, Alaska hare hides were sometimes used to make soft clothing for children, socks, and mittens. The hides were sometimes cut into strips and woven to produce blankets (Anderson et al. 1977; Burch Jr. 2006; Ray 1975). Sharpened hare teeth were traditionally affixed to wooden or bone handles and used as carving tools, such as fine chisels or gouges (Fienup-Riordan 2007).

In department harvest surveys, units 18, 22, 23, and 26A residents reported using both Alaska and snowshoe hares as sources of food and fur (see Braem et al. 2015; 2017; Brown et al. 2016; Runfola et al. 2014; 2017). An Ambler elder described the use of snowshoe hare hides in the making of blankets and clothing for children (Braem et al. 2015). Her mother would dry the hides after the animals were snared and tan them the next year. Hides were used to make “warm and light” blankets for small children, and the hides were also used to make boots for infants. A Scammon Bay key respondent described the use of Alaska hare and snowshoe hare as fur for parkas, mittens, hats, and other garments⁸; these practices are also documented in ethnographic research (Fienup-Riordan 2007). Before tanning, hare hides are cleaned and dried. To prepare the hides for sewing, the tanner holds the fur side of the raw hide, folds the hide together so that the inside of the hare skin contacts itself, then gently rubs the skin against itself to abrade remnant unwanted tissues from the inside surface and interior of the skin. The same Scammon Bay key respondent also explained that because snowshoe hare fur will shed with use more quickly than fur from other species, it is typically used for mittens or children’s parkas. Children usually outgrow their parkas before the furs become unusable. To minimize shedding, snowshoe hares are harvested in early winter. Yup’ik skin sewers also used snowshoe hare fur for adult garments: people living on or near the mouth of the Yukon River were known to have used hare hide mittens as liners for waterproof seal skin mitts that men wore when paddling a kayak (Fienup-Riordan 2007).

Alaska hare can be used in garments for people of any age. Relative to other local terrestrial furbearers, Alaska hare fur is of the most superior insulating quality, possibly second only to Arctic fox. It was customarily the primary fur that Central Yup’ik skin sewers in some areas of the Yukon-Kuskokwim Delta used for parkas. If the parka is intended for use in very cold weather, a skin sewer will use Alaska hares as the only fur species in a parka. If the parka may also be worn in warmer seasons of the year, or a by a child, Alaska hare fur will be sewn only into areas covering the wearer’s sides, upper chest, or upper half of the back to minimize heat loss in those areas. Fur of lesser insulating ability from alternate species will be sewn into other parts of the parka where heat loss is less crucial. Alaska hare fur is also used as the innermost strip

8. R. Charlie-Runfola, Scammon Bay resident, personal communication, October 15, 2019.

of a parka ruff⁹ (Fienup-Riordan 2007; Nelson 1983rev.). Fur from both Arctic and snowshoe hares is also used for trim and decorative pieces on parkas and other articles of clothing.

CRITERION 6: INTERGENERATIONAL TRANSMISSION OF KNOWLEDGE, SKILLS, VALUES, AND LORE

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

There is very little specific documentation of the transmission of knowledge, skills, and lore relating specifically to hares in GMUs 18, 22, 23, and 26A. In many communities, hunting small game such as hares or ptarmigans is among the first subsistence activities children engage in. In the past, targeting hares with bow and arrow was common among young men in Northwest Alaska as they were learning to hunt (Burch Jr. 2006). Hunting knowledge in most regions of Alaska is typically taught from parent to child. Children follow their parents who are hunting, fishing, and gathering, and they learn by watching. A Division of Subsistence survey conducted in the GMU 22 community of Wales in 1994 included questions on this topic (Magdanz et al. 2011). The most commonly identified “teachers” were parents, grandparents, and older siblings, and the most commonly cited “students” were children, grandchildren, and younger siblings. Today, children learn hunting skills, such as how to shoot accurately, by first using small caliber rifles to hunt small game such as hares. Knowledge of small game was also passed from generation to generation through stories. The passing on of knowledge, skills, traditions, and lore is similar throughout the state. It is reasonable to assume, without specific reference to historical documentation for other communities in GMUs 18, 22, 23, and 26, that similar methods have been used over the years within these communities as well.

A Scammon Bay key respondent explained that in Central Yup’ik culture, elder women of families instructed girls and young women how to prepare and use snowshoe hare hides when teaching them the skills of skin sewing.¹⁰ First, they were taught how to skin the animals, clean the hides, and tan them, then they were instructed in the sewing techniques. When tanning is complete, the instructor helps the girl or young woman practice cutting and shaping the pieces of hide that are to be sewn into a garment. The novice also learns how to practice and master her techniques by sewing the hides together. Because they are very thin, snowshoe hare hides are easily tanned, cut, and sewn, which makes them an ideal tool for instruction. They are also small and less valuable relative to other larger, less abundant, and higher quality fur species. Thus, destruction of a fur while a child is learning how to sew may be considered a reasonable cost in the process of learning such a critical lifelong skill.

Key respondents in Western Alaska have also described the role of hares in the typical harvests of traditional Central Yup’ik people. A Kwigillingok key respondent discussed his family’s crest which included the stylized design of an eagle (Fienup-Riordan 2007). A family story held that the design symbolized the spirit of a long-dead ancestor who was well-known to his community as an expert hunter of Alaska hares and caribou. A Marshall elder admonished that people using small fish traps to harvest Alaska blackfish should never eat hares before eating burbot while their traps are in the water. His understanding was that if a fisher does this, the hares will run off with the fish caught in his trap (Fienup-Riordan 2007).

CRITERION 7: DISTRIBUTION AND EXCHANGE

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.

In communities across Alaska, Division of Subsistence researchers have documented the sharing and distribution of wild resources. The majority of surveyed communities in GMUs 18, 22, 23, and 26A that have access to the range of snowshoe or Alaska hares reported sharing hares (Table 1). Table 1 lists

9. R. Charlie-Runfola, Scammon Bay resident, personal communication, October 15, 2019.

10. R. Charlie-Runfola, Scammon Bay resident, personal communication, October 15, 2019.

the percentages of households in surveyed communities within the GMUs that use, harvest, give, and receive hares and documents the extent of sharing of this particular resource over time. Most communities that reported harvesting hares also reported giving and/or receiving this resource. In most communities, households use wild foods harvested by others through sharing networks, so the percentages of households harvesting wild foods are often lower than the percentages of households using them. In 19 of the 26 communities in units 22, 23, and 26A, households reported either receiving or giving away hares (Table 1). Some communities that reported no harvests still received and used hares. For example, 5% of households in the community of Shishmaref (Unit 22) reported using hares in 1989 even though the community reported no harvests. In Unit 18, 49% of households in Akiachak reported giving hares to others in 1998 (Coffing et al. 2001), and 26% of Kwethluk households did so in 1986 (Coffing 1991). In other years, households in 17 Yukon-Kuskokwim Delta communities reported either receiving or giving away hares (Table 1; Brown et al. 2013; 2015; Fall et al. 2012; Ikuta et al. 2014; 2016).

CRITERION 8: DIVERSITY OF RESOURCES IN AN AREA; ECONOMIC, CULTURAL, SOCIAL, AND NUTRITIONAL ELEMENTS

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

Arctic and Western Alaskan communities harvest, use, and rely upon a wide diversity of fish and game resources. High levels of subsistence harvest and use of wild foods is a hallmark of Arctic communities. According to Fall (2018), Arctic households harvested 402 lb of wild foods per person in 2017. Harvest and use levels were also high on average: 78% of households harvested fish resources, and 96% reported using them. Department research conducted in communities in GMUs 22, 23, and 26A from 2012 to 2014 documented average per capita harvests of wild foods that ranged from 203 lb in Kotzebue to 896 lb in Nuiqsut (Braem et al. 2015; 2017; Brown et al. 2016). Western Alaska households harvested an average of 379 lb of wild foods per person in 2017 (Fall 2018). On average, 98% of households in Western Alaska communities harvested fish and 100% of households used fish resources; 70% of households harvested wild game resources, and 90% reported using them. From 2009 through 2014, the department has conducted comprehensive household harvest surveys in 16 Unit 18 communities and in three communities bordering the unit. Among these communities, subsistence harvest amounts ranged from 158 lb per capita in Pilot Station to 616 lb per capita in Akiak (Brown et al. 2013; 2015; Fall et al. 2012; Ikuta et al. 2014; 2016; Runfola et al. 2017).

The mix of resources harvested and used depends on species availability in each community's harvest and use area. In the coastal communities of Arctic Alaska, marine mammal resources can compose more than one-half of the total estimated harvest. Those communities located within the range of the Western Arctic caribou herd show higher harvests of large land mammals, and salmon and nonsalmon fish species are heavily harvested throughout Arctic Alaska (Braem et al. 2015; 2017; 2018; Brown et al. 2016). In many Western Alaska communities, marine mammals as well as salmon and nonsalmon fish compose the majority of subsistence harvests (Fall et al. 2012; Ikuta et al. 2016). Small game, such as hares, is harvested throughout many months each year in GMUs 18, 22, 23, and 26A. Hares are commonly available during the winter and spring months when other wild resources may be limited or unavailable. Although harvest amounts of hares may be small in these units because of their relatively low abundance and patchy distribution, residents also appreciate them as an occasional or seasonal delicacy.

The harvest of wild foods in Units 18, 22, 23, and 26A 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 Alaskan 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 11.9% in the Bethel census area, 10.6% in the Nome census area, 12.6% in the Northwest Arctic Borough, and 7.5% in the North Slope Borough.¹¹ The five-year average median household income was \$53,853 in the Bethel census area, \$53,821 in the Nome census area, \$63,533 in the Northwest Arctic Borough, and \$77,266 in the North Slope Borough. With the exception of the North Slope Borough, median income amounts are lower than the 2013–2017 five-year average median household income for the state of Alaska, which was \$76,114 per year. At the same time, costs of store-bought food items, especially meat, fish, fruits, and vegetables, transported into communities in GMUs 18, 22, 23, and 26A are unaffordable to most residents. One Stebbins respondent explained the importance of subsistence foods to their community: “Subsistence is a vital part of my lifestyle ever since I can remember. I pray that it will always be maintained and sustained. The stores are not going to fill our freezers” (Braem et al. 2017).

11. U.S. Census Bureau, Washington, D.C., n.d. “American FactFinder.” Accessed October 17, 2019. http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml

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