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Options for Amounts Reasonably Necessary for Subsistence Uses of Deer: Game Management Unit 5

by

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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 the reports by the Division of Subsistence. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure 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

all commonly-accepted abbreviations e.g., Mr., Mrs., AM, PM, etc.	
all commonly-accepted professional titles e.g., Dr., Ph.D., R.N., etc.	
Alaska Administrative Code	AAC
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. state	use 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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ABSTRACT

Sitka black-tailed deer *(Odocoileus hemionus sitkensis)* occur throughout Southeast Alaska and are an important game species for area residents. This report details options for the Alaska Board of Game's consideration during deliberations on Proposal 16 during its January 2015 Southeast Region meeting. The proposal asks the board to consider revising the amount reasonably necessary for subsistence uses (ANS) for deer in Game Management Unit (GMU) 5, which is located in Southeast Alaska. The report provides information on the history of the customary and traditional (C&T) use finding for deer in Southeast Alaska. The report then provides options for revising the ANS based on the history of the C&T findings, and currently available harvest data.

Key words: Sitka black-tailed deer, Yakutat, Game Management Unit 5, Southeast Alaska deer

1. INTRODUCTION

This report is in response to Proposal 16 before the Alaska Board of Game (board) that asks the board to consider modifying the amount reasonably necessary for subsistence uses (ANS) of Sitka black-tailed deer (*Odocoileus hemionus sitkensis*) in Game Management Unit (GMU) 5 (Figure 1). The report provides subsistence use background for the board and options for revising the ANS. For deer in GMU 5 there is a positive customary and traditional (C&T) use finding and the ANS is 100% of the allowable harvest (5 AAC 99.025 (5)). Although the ANS is 100% of the allowable harvest there is currently a resident and nonresident hunt in GMU 5A for 1 buck from November 1–30. There is no state or federal open season in GMU 5B.

Under AS 16.05.258 (a), the board is tasked with identifying game populations, or portions of populations, outside of nonsubsistence areas that "are customarily and traditionally taken or used for subsistence" (a "C&T" finding). If a portion of these populations can be harvested consistent with sustained yield principles, "the board shall determine the amount of the harvestable portion that is reasonably necessary for subsistence uses" (AS 16.05.258 (b)). This is called the amount reasonably necessary for subsistence uses, or an "ANS finding."

In November 1992, the board reaffirmed that deer populations in GMU 5 (as well as GMUs 1A, 1B, 1C, 1D, 2, 3, and 4) are customarily and traditionally taken for subsistence. The finding was reviewed to ensure that the C&T finding was in compliance with the new 1992 state subsistence law, which included new provisions to establish nonsubsistence areas, as well as a new provision requiring ANS findings. At the same meeting, the board made the ANS range 100% of the allowable harvest since there were few deer in GMU 5. In addition, the hunt in GMU 5 had just been reestablished in 1991 after being closed from 1980–1990, so there were no recent data on which to base an ANS.

There are no nonsubsistence use areas in the GMU 5.

HARVEST ASSESSMENT OF DEER IN SOUTHEAST ALASKA

Deer were introduced into GMU 5 in 1934. Populations are small because they are subjected to heavy snowfall in the area, which decreases winter survivability. However, the population has supported small harvests over the years. In the 1970s, deer hunting was closed due to an abundance decline but populations rebounded in the 1980s and the board opened a limited hunt in GMU 5A in 1991, as noted above.

Sitka black-tailed deer occur mainly on islands and the eastern mainland of Yakutat Bay. According to Harper (2013) there is little potential for the herd to increase due to extreme weather conditions and limited deer habitat. A management goal for GMU 5A is to allow for a harvest of 1 buck during a 1-month season. Deer hunting is difficult in this area and hunter success rates are low, as shown in Figure 2. Population information for deer in the GMU is collected from spring pellet-group surveys and hunter surveys. Prior to 2010, annual harvests were estimated via annual hunter questionnaires mailed to a random sample of hunters who had been issued deer harvest tickets. Beginning in 2011, harvest tickets and associated reporting became required.

Table 1 shows the annual harvest of deer in GMU 5, by GMU residency of hunters, for Southeast Alaska for 1997–2012. The years 1997–2012 represent the years that data are available from the updated harvest database. As shown in the table, most of the harvests are by residents of GMU 5. Figure 3 presents the annual harvest of deer in GMU 5 by Alaska residents from 1997–2012. To get a better idea of which communities are represented in the hunt effort, Table 2 shows the residency of GMU 5 hunters for the most recent 6 years (2007–2012). As can be seen in the table, most harvests were by GMU 5 residents residing in Yakutat.

Figure 1.–Game Management Unit 5, Yakutat Area, Southeast Alaska.

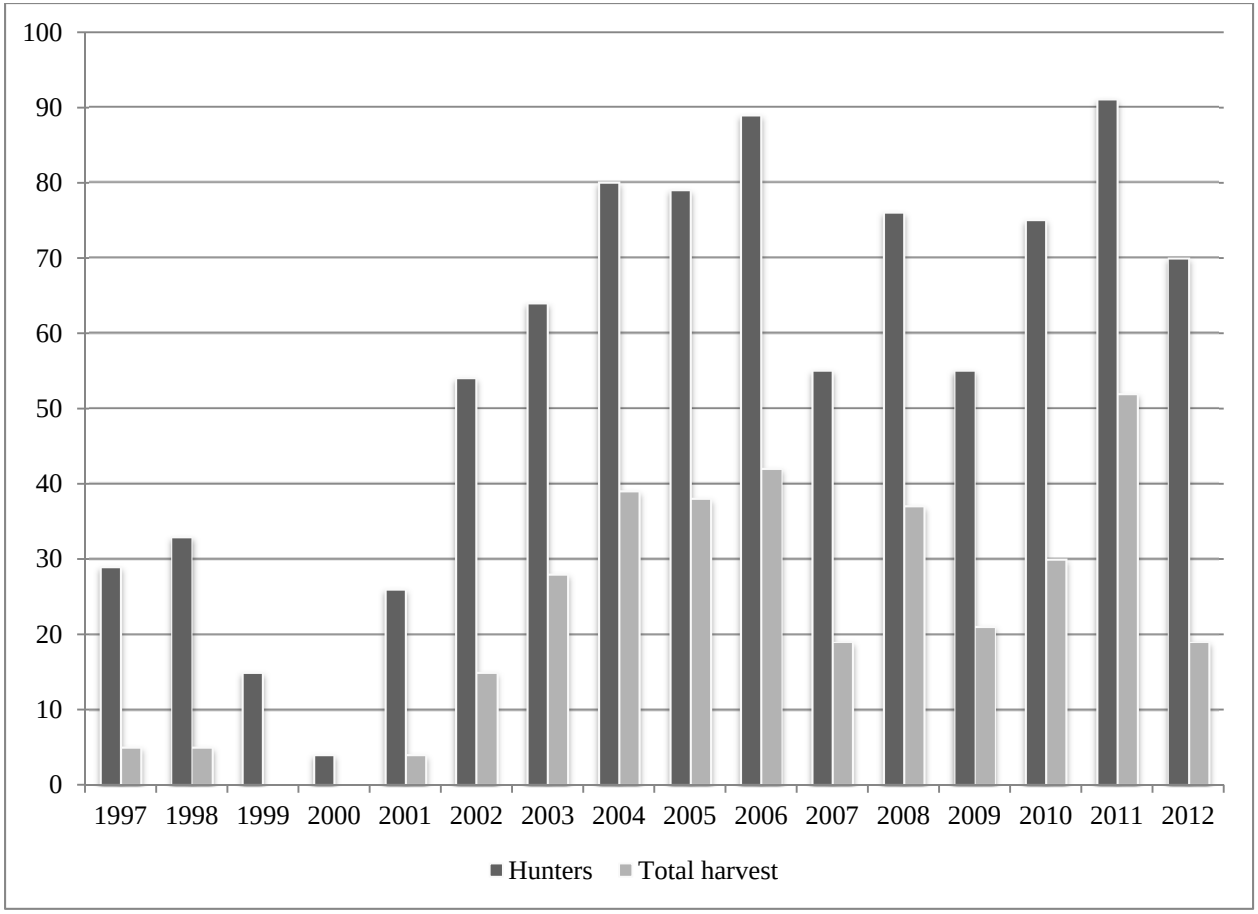

Figure 2.–Annual hunter effort and success in GMU 5, 1997–2012.

Table 1.–Annual estimated harvest of deer in GMU 5A by residency of hunters by GMU in Southeast Alaska and residency of hunters in other areas, 1997–2012.

	Harvest by GMU of residency					Other	**Alaska**	Outside	Residency	**Grand**
Regulatory year	GMU 1	GMU 2	GMU 4	GMU 5	*Subtotal*	Alaska	**subtotal**	Alaska	unknown	**total**
1997	0			0	*0*	5	**5**			**5**
1998				5	*5*	0	**5**			**5**
2001				4	*4*	0	**4**			**4**
2002				15	*15*	0	**15**			**15**
2003	0			28	*28*	0	**28**			**28**
2004	9		8	21	*38*	0	**38**			**38**
2005		6		22	*28*	6	**34**	5		**39**
2006	20	1		21	*42*	0	**42**			**42**
2007			6	13	*19*	0	**19**			**19**
2008				32	*32*	0	**32**	5		**37**
2009				21	*21*	0	**21**			**21**
2010	0			24	*24*	6	**30**			**30**
2011				49	*49*	2	**51**		2	**53**
2012				19	*19*	0	**19**		0	**19**

Source Alaska Department of Fish and Game, Division of Wildlife Conservation harvest ticket database 2014.

Note Blank cells indicate no harvest.

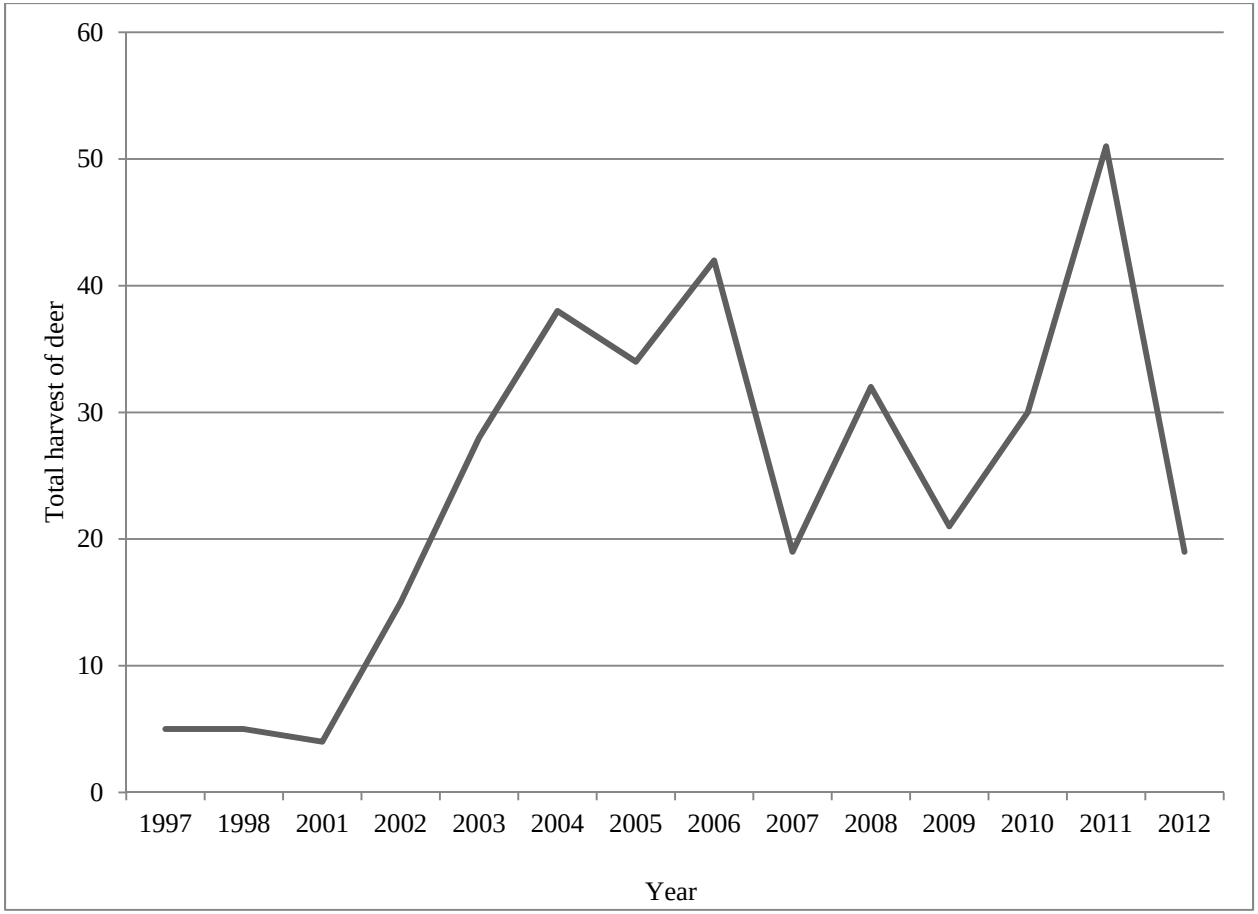

Figure 3.–Annual harvest of deer in GMU 5, all Alaska resident hunters, 1997–2012.

Table 2.–Harvest of deer in GMU 5, by community of residence, 2007–2012.

Community of residence	Regulatory year					
	2007	2008	2009	2010	2011	2012
Sitka	6					
Yakutat	13	32	21	24	49	19
Southeast Alaska subtotal	*19*	*32*	*21*	*24*	*49*	*19*
Other Alaska	0	0	0	6	2	0
Alaska subtotal	*19*	*32*	*21*	*30*	*51*	*19*
Outside Alaska		5				
Residency unknown					2	0
Grand total	**19**	**37**	**21**	**30**	**53**	**19**

Source Alaska Department of Fish and Game, Division of Wildlife Conservation harvest ticket database 2014.

Note Blank cells indicate no hunt or harvest.

2. ANS OPTIONS

Following are options for the board to consider should it choose to update the ANS finding for deer in GMU 5 and adopt new ANS ranges in regulation. There are a few considerations the board may want to take into account when reviewing its options. The 1992 C&T finding reported information for deer in GMU 5 for the community of Yakutat. The options below include harvests by all Alaska residents; however, most harvests are by Yakutat residents, as noted in Table 2, which is consistent with the original 1992 C&T finding.

As shown in Figure 1, GMU 5A is separated from GMU 5B by Yakutat Bay and GMU 5B mostly encompasses the Wrangell-St. Elias National Park and Preserve. There is no open season in GMU 5B and no expectation that one will occur since this area is not conducive to deer habitat. Therefore, although this ANS will apply to deer in all of GMU 5, there is an open season only in the GMU 5A area.

OPTIONS 1 AND 2: LOW AND HIGH HARVESTS, AND STANDARD DEVIATION OF HARVESTS, FROM 1997–2012

Table 3 shows the low and high harvest amounts over the time period 1997–2012 and an ANS range option based on these amounts (Option 1). Table 4 shows the standard deviation (SD) from the mean harvest amounts and an ANS range option based on these amounts (Option 2). These options are based on harvests by all Alaska residents (Table 1).

Option 1

Option 1 is based upon the low and high harvests by Alaska resident hunters from 1997–2012 in the area of GMU 5 (Table 1). Over this time period, harvests have ranged from a low of 4 to a high of 51.The ANS range for this option can be rounded to 5–50 deer (Table 3).

Table 3.–Option 1: range based on low and high harvests by all Alaska residents from 1997–2012.

Harvest		**ANS range option (rounded)**	
Low	High	**Low**	**High**
4	51	**5**	**50**

Option 2

Since low and high harvests may be extremes within a time series (there may have been unusual circumstances that increased or decreased harvest levels), calculating a standard deviation from the mean, or average harvest, may provide a more statistically accurate picture of harvest trends. Option 2 is based upon generation of a standard deviation of the average annual estimated harvest of deer by Alaska residents in GMU 5 between the years of 1997–2012, which is 25 deer, and then adding and subtracting the standard deviation. This approach produces an ANS option of 11–38 deer, which can be rounded to 10–40 deer (Table 4).

Table 4.–Option 2: range based on mean and standard deviation of harvests by all Alaska residents from 1997–2012.

Range of harvest					Mean ± SD			ANS range option (rounded)	
Low	High	Mean	SD	*Bounded by*	Low	High	*Equals*	**Low**	**High**
4	51	25	14		11	38		**10**	**40**

OPTION 3: LOW AND HIGH HARVESTS FROM 2008–2012

Option 3 is based upon the low and high harvests during the most recent 5-year period (2008–2012) in GMU 5 (Table 2). This option is based on harvests by all Alaska residents (Table 2). During this period there was a low estimated harvest of 19 deer and a high of 51 deer. The ANS range for this option can be rounded to 20–50 deer (Table 5).

Table 5.–Option 3: range based on low and high harvests by all Alaska residents from 2008–2012.

Harvest		ANS range option (rounded)	
Low	High	**Low**	**High**
19	51	**20**	**50**

OPTION 4: STANDARD DEVIATION FROM HARVESTS 2008–2012

Option 4 is based upon the average harvest of deer in GMU 5 from 2008–2012, plus or minus the standard deviation. This option is based on harvests by all Alaska residents (Table 2). The mean annual harvest was 31 deer with a standard deviation of 11 deer. This approach produces an option of 19–42 deer. The ANS range can be rounded to 20–40 deer for Option 4 (Table 6).

Table 6.–Option 4: range based on mean and standard deviation of harvests by all Alaska residents from 2008–2012.

Range of harvest					Mean ± SD			ANS range option (rounded)	
Low	High	Mean	SD	*Bounded by*	Low	High	*Equals*	**Low**	**High**
19	51	31	11		19	42		**20**	**40**

OPTION 5: NO CHANGE

Option 5 is to adopt no changes to the ANS for deer in GMU 5, which is currently 100% of the allowable surplus. Nonresident opportunities for deer hunting may not be in alignment with the subsistence law (AS 16.05.258).

REFERENCES CITED

Harper, P. editor.

2013. *Deer management report of survey-inventory activities 1 July 2010–30 June 2012*. Alaska Department of Fish and Game, Species Management Report ADF&G/DWC/SMR-2013-1: Juneau.