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Options for Amounts Reasonably Necessary for Subsistence Uses of Deer: Game Management Unit 1A

by

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and

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March 2013

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

Symbols and Abbreviations

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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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TABLE OF CONTENTS

Page

LIST OF TABLES II

LIST OF FIGURES II

ABSTRACT 1

INTRODUCTION 1

Nonsubsistence Use Areas 1
Harvest Assessment of Deer in Southeast Alaska 2

ANS OPTIONS IN 2013 5

Options 1 and 2: Low and High Harvests, and Standard Deviation of Harvests, from 1999–2011 8
Option 3: Low and High Harvests from 2007–2011 9
Option 4: Standard Deviation from Harvests 2007–2011 9
Option 5: No Change 9

LIST OF TABLES

Table **Page**

1.–Annual estimated harvest of deer in GMU 1A, by Southeast Alaska GMU of residency and other residency, 1999–2011. 4
2.–Harvest of deer in GMU 1A, by community of residence, 2007–2011. 5
3.–Harvests of deer outside the Ketchikan Nonsubsistence Use Area portion of GMU 1A, by all Alaska residents, 1999–2011. 7
4.–Option 1: range based on low and high harvests by all Alaska residents from 1999–2011. 8
5.–Option 2: range based on mean and standard deviation of harvests by all Alaska residents from 1999–2001. 8
6.– Option 3: range based on low and high harvests by all Alaska residents from 2007–2011. 9
7.–Option 4: range based on mean and standard deviation of harvests by all Alaska residents from 2007–2011. 9

LIST OF FIGURES

Figure **Page**

1.–Ketchikan Nonsubsistence Use Area, GMU 1A. 2
2.–Annual harvest of deer in GMU 1A, all hunters, 1999–2011. 3
3.–Harvest of deer in GMU 1A “subsistence” area, by all Alaska residents. 6

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 revising the amount reasonably necessary for subsistence (ANS) for deer in Game Management Unit (GMU) 1A, 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 and the establishment of the Ketchikan Nonsubsistence Use Area, which is also located within GMU 1A. The report then provides options for revising the ANS based on the history of the C&T findings, and current harvest data.

Key words: Sitka black-tailed deer, Ketchikan, Game Management Unit 1A, Southeast Alaska deer

INTRODUCTION

This report has been prepared for the Alaska Board of Game (board) for reference when considering Proposal 178A to adopt an intensive management plan for GMU 1A. This report details options for revising the amount reasonably necessary for subsistence uses (ANS) for deer in Game Management Unit (GMU) 1A. 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 1A (as well as GMUs 1B, 1C, 1D, 2, 3, 4, and 5) 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, discussed below, as well as a new provision requiring ANS findings. At the same meeting, the board made an ANS finding of 225–250 deer within GMU 1A.[1]

NONSUBSISTENCE USE AREAS

At a meeting held in November 1992, the Ketchikan Nonsubsistence Area, which encompasses part of GMU 1A, was created by the Joint Board of Fisheries and Game, under authority of AS 16.05.258(c) (Figure 1). A nonsubsistence use area is an area or community where dependence upon subsistence is not a principal characteristic of the economy, culture, and way of life of the area or community. The Ketchikan Nonsubsistence Area, which is described in regulation at 5 AAC 99.015(a)(1), was designated prior to the positive C&T finding, as mentioned above; therefore, the C&T finding and the ANS determination do not apply to harvests that occur within the nonsubsistence use area. In other words, the C&T finding and ANS apply only within that portion of GMU 1A that is outside of the nonsubsistence use area. Of note is that the nonsubsistence use area consists mainly of island environments, which are generally considered habitats where deer are more abundant, whereas the area outside of the nonsubsistence use area is composed largely of mainland habitat, in which deer are generally less abundant (see Figure 1).

1. It is uncertain if the harvest data upon which this ANS range was based pertains to the entire subunit or just the portion outside the nonsubsistence area. Review of the record of the November 1992 Board of Game meeting would be necessary for clarification.

State regulations concerning deer hunting in GMU 1A do not differentiate between the nonsubsistence use area and the area outside the nonsubsistence use area. Deer hunting regulations in GMU 1A specify a season of August 1–November 30, with a limit of 2 bucks for the area of Cleveland Peninsula south of the divide between Yes Bay and Santa Anna Inlet, and 4 bucks for the remainder of GMU 1A. A harvest ticket is required and in GMUs 1–6, deer harvest tickets must be used in sequential order and hunters must carry unused tickets while hunting.

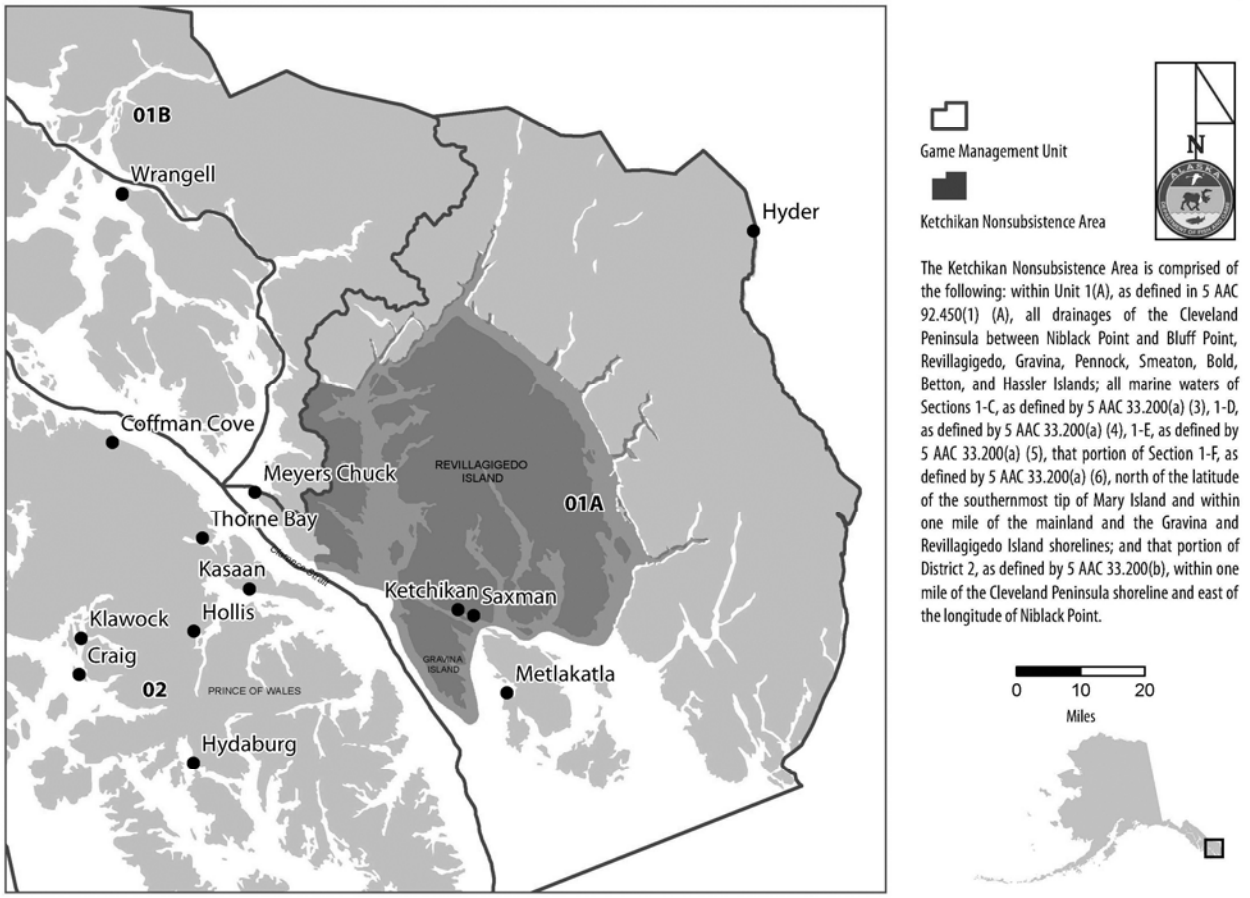

Figure 1.–Ketchikan Nonsubsistence Use Area, GMU 1A.

HARVEST ASSESSMENT OF DEER IN SOUTHEAST ALASKA

Sitka black-tailed deer occur throughout GMU 1A, although mainland densities are consistently lower than those on offshore islands. Weather conditions and population levels are major influences on deer harvest levels. A management goal for the entirety of GMU 1A has been set at a harvest of 700 deer. Population information for deer in the GMU is collected from spring pellet-group surveys, spring mortality surveys, field observations, and, to a lesser extent, hunters' verbal reports. Prior to 2010, harvest was estimated via annual hunter questionnaires mailed to a random sample of hunters who were issued deer harvest tickets. Beginning in 2010, harvest tickets and associated reporting became required. Total harvest in the unit is estimated based upon reported harvest in state and federal hunts, as well as estimated illegal and unreported

harvests. Table 1 shows the annual harvest of deer in GMU 1A, by GMU residency, for Southeast Alaska for 1999–2011 (it should be noted that the 2011 data presented in this report have not yet been finalized). This table includes the harvest of deer in all GMU 1A to provide a baseline by which to understand the total harvest in the GMU. The years 1999–2011 represent the years available from the updated harvest database. As shown in the table, most of the harvest is by residents of GMU 1A. Figure 2 presents the annual harvest of deer in all of GMU 1A by Alaska residents from 1999–2011.

Table 2 shows the residency of GMU 1A hunters for the most recent 5 years, from 2007–2011. As can be seen in the table, most harvests were again by Southeast Alaska residents. Recent harvest assessment data show a decline in deer harvest in GMU 1A since 2008 (Table 1 and Figure 2).

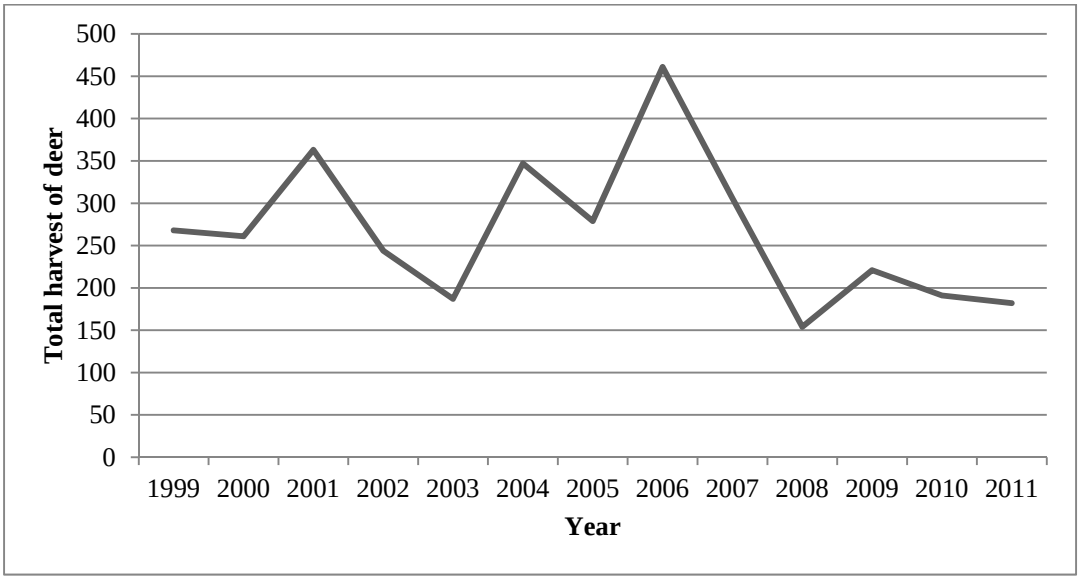

Figure 2.–Annual harvest of deer in GMU 1A, all hunters, 1999–2011.

Table 1.–Annual estimated harvest of deer in GMU 1A, by Southeast Alaska GMU of residency and other residency, 1999–2011.

	Hunters by GMU of residency							Other	Alaska	Outside	Residency	**Grand**
Year	Unit 1A	Unit 1C	Unit 2	Unit 3	Unit 4	Unit 5	Subtotal	Alaska	subtotal	Alaska	unknown	**total**
1999	225	10	0	12			247	21	268	0		**268**
2000	261						261	0	261			**261**
2001	334	0		29			363		363			**363**
2002	244						244	0	244			**244**
2003	187		0	0			187	0	187			**187**
2004	318	14		0			332	15	347			**347**
2005	245	3	0	4	8		260	14	274	5		**279**
2006	387	25		20	4		436	15	451	10	0	**461**
2007	281	0	17	0	0		298	2	300	6		**306**
2008	121	14	10	0	0	0	145	9	154	0		**154**
2009	190	0	9	1	6		206	6	212	9	0	**221**
2010	121	5	36	0	15		177	1	178	13	0	**191**
2011	149	0		7	12		168	4	172	7	3	**182**

Source ADF&G Division of Wildlife Conservation harvest ticket database, 2012.

Table 2.–Harvest of deer in GMU 1A, by community of residence, 2007–2011.

	Regulatory year				
Community of residence	2007	2008	2009	2010	2011
Coffman Cove				3	
Craig		6	4	19	
Gustavus			5		
Hollis		1		4	
Juneau	5	5		5	3
Ketchikan	400	346	421	371	301
Klawock	7		2		
Metlakatla	20	12	5	14	12
Naukati Bay			1		
Neets Bay			2		
Petersburg	2	1	1	4	4
Port Protection				1	
Sitka	12	18	7	7	8
Thorne Bay			5	4	
Wrangell			8		2
Yakutat		4			
Southeast Alaska subtotal	**446**	**393**	**461**	**432**	**330**
Other Alaska	13	35	11	2	18
Alaska subtotal	**459**	**428**	**472**	**434**	**348**
Outside Alaska	11	6	29	24	11
Residency unknown			7	1	4
Grand total	**470**	**434**	**508**	**459**	**363**

Source ADF&G Division of Wildlife Conservation harvest ticket database, 2012.

ANS OPTIONS IN 2013

Following are options for the board to consider should it choose to update the ANS finding in GMU 1A 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 from all Southeast Alaska residents who harvested deer in GMU 1A. The communities that were included in the harvest assessment were Coffman Cove, Craig, Hoonah, Juneau–Douglas, Ketchikan, Klawock, Loring, Margarita Bay, Metlakatla, Meyers Chuck, Neets Bay, Petersburg, Point Baker, Reville, Saxman, Shoal Cove, Sitka, Thorne Bay, Wrangell, and Yes Bay. The original ANS finding was made after the establishment of the nonsubsistence use area. Table 3 shows the harvest in the past 5 years, by residency, for GMU 1A outside the Ketchikan Nonsubsistence Use Area.

Options provided below only take into account the harvest of deer in GMU 1A outside the nonsubsistence area. Options do take into consideration harvest by all Alaska residents.

As can be seen in Figure 1, the majority of the GMU 1A area outside the nonsubsistence use area would be considered "mainland." As discussed above, mainland areas tend to have lower deer population densities than islands. In Southeast Alaska, GMUs 1B and 1C are primarily mainland systems. For comparison, the board found that the ANSs in those 2 areas were 40–50 deer in GMU 1B and 30–40 deer in GMU 1C.

Figure 3 presents the total annual estimated harvest of deer from 1999–2011 in GMU 1A outside the nonsubsistence use area (the "subsistence" area), by residency of hunter. This is the complete updated dataset that could be used for the ANS options. As can be seen, the majority of harvest in this area during this time period was taken by residents of Southeast Alaska; there were no reported harvests by nonlocal Alaska residents. There was harvest by nonresidents in 2010.

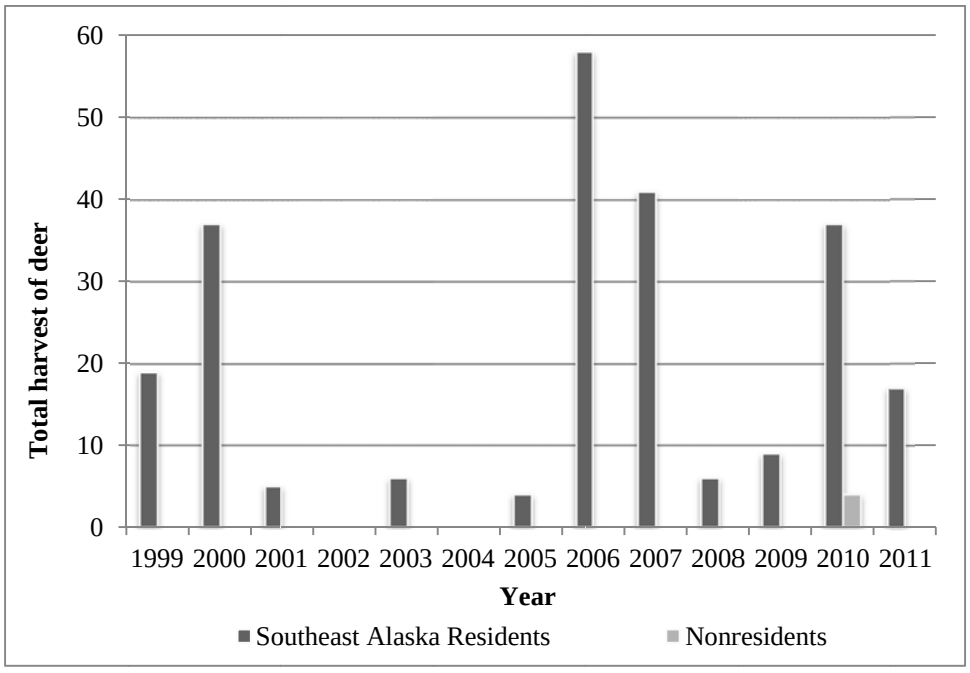

Figure 3.–Harvest of deer in GMU 1A "subsistence" area, by all Alaska residents.

Table 3.–Harvests of deer outside the Ketchikan Nonsubsistence Use Area portion of GMU 1A, by all Alaska residents, 1999–2011.

	Deer harvests by hunters residing in Southeast Alaska							Other	Alaska	Outside	Residency	**Grand**
Year	GMU 1A	GMU 1C	GMU 2	GMU 3	GMU 4	GMU 5A	**Subtotal**	Alaska	subtotal	Alaska	unknown	**total**
1999	19						**19**		19			**19**
2000	37						**37**		37			**37**
2001	5						**5**		5			**5**
2002	0						**0**		0			**0**
2003	6						**6**		6			**6**
2004	0						**0**		0			**0**
2005	0			4			**4**		4	0		**4**
2006	9	25		20	4		**58**		58			**58**
2007	25		16		0		**41**		41			**41**
2008	0		6	0	0	0	**6**		6			**6**
2009	3		6	0			**9**		9	0		**9**
2010	4	5	28	0			**37**		37	4		**41**
2011	12			5			**17**		17			**17**

Source ADF&G Division of Wildlife Conservation harvest ticket database, 2012.

OPTIONS 1 AND 2: LOW AND HIGH HARVESTS, AND STANDARD DEVIATION OF HARVESTS, FROM 1999–2011

Table 4 shows the low, mean, and high harvest amounts over the time period 1999–2011 and an ANS range option based on these amounts (Option 1). Table 5 shows the standard deviation (SD) of the harvest amounts and an ANS range option based on these amounts (Option 2). These options are based on harvests by Southeast Alaska residents because there were no harvests by nonlocal residents (Table 3).

Option 1

Option 1 is based upon the low and high harvests from 1999–2011 in the area of GMU 1A that is in the "subsistence" area (Table 3). Over this time period, harvests have ranged from a low of zero to a high of 58. For this option, the ANS range is rounded to 0–60 deer.

Table 4.–Option 1: range based on low and high harvests by all Alaska residents from 1999–2011.

Harvest		**ANS range option (rounded)**	
Low	High	**Low**	**High**
0	58	**0**	**60**

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 in the "subsistence" area of GMU 1A between the years of 1999–2011, which is 18 deer, and then adding and subtracting this standard deviation. This is an option of 0–36 deer, which has been rounded up to 0–40 deer.

Table 5.–Option 2: range based on mean and standard deviation of harvests by all Alaska residents from 1999–2001.

Range of harvest					Mean ± SD			**ANS range option (rounded)**	
Low	High	Mean	SD	*Bounded by*	Low	High	*Equals*	**Low**	**High**
0	58	18	18		0	36		**0**	**40**

OPTION 3: LOW AND HIGH HARVESTS FROM 2007–2011

Option 3 is based upon the low and high harvests during the most recent 5-year period (2007–2011) in that area of GMU 1A outside the nonsubsistence use area. During this period there was a low estimated harvest of 6 deer and a high of 41 deer. The ANS range for this option has then been rounded up to 10–45 deer (Table 6).

Table 6.– Option 3: range based on low and high harvests by all Alaska residents from 2007–2011.

Harvest		**ANS range option (rounded)**	
Low	High	**Low**	**High**
6	41	**10**	**45**

OPTION 4: STANDARD DEVIATION FROM HARVESTS 2007–2011

Option 4 is based upon the average harvest of deer in the area of GMU 1A outside the nonsubsistence use area from 2007–2011, plus or minus the standard deviation. The mean annual harvest was 22 deer with a standard deviation of 16 deer. The ANS range is rounded up to 10–40 deer for Option 4 (Table 7).

Table 7.–Option 4: range based on mean and standard deviation of harvests by all Alaska residents from 2007–2011.

Range of Harvest					Mean ± SD			**ANS range option (rounded)**	
Low	High	Mean	SD	*Bounded by*	Low	High	*Equals*	**Low**	**High**
6	41	22	16		6	38		**10**	**40**

OPTION 5: NO CHANGE

Option 5 is to adopt no changes to the ANS range for deer in GMU 1A, which is currently 225–250 deer. The board may wish to defer action until the regular-cycle Southeast board meeting in 2014–2015. As discussed above, the Division of Wildlife Conservation switched to a new harvest assessment method in 2010. Delaying action on amending the ANS to the next Southeast meeting will allow 4 or 5 years of data collected under the new system to be used in the ANS revision. In addition, this will give the department time to divide the harvest objective between the "subsistence" and nonsubsistence area so that the performance of the ANS can be measured in the future. As of now, the harvest objective is for the entirety of GMU 1A. Finally, delaying action until the next Southeast board meeting will ensure that the residents of Alaska affected by the proposed action will have more time to comment and present testimony.