

Deer Management Report

of survey-inventory activities
1 July 2008–30 June 2010

Patricia Harper, Editor
Alaska Department of Fish and Game
Division of Wildlife Conservation



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Funded through
Federal Aid in Wildlife Restoration
Grants W-33-7 and W-33-8, Project 9.0
2011

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If this report is used in its entirety, please reference as: Alaska Department of Fish and Game. 2011. Deer management report of survey-inventory activities 1 July 2008–30 June 2010. P. Harper, editor. Juneau, Alaska.

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Acknowledgment: The editor thanks Tom Paul for his excellent editing assistance with this report.

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Cover Photo: A buck and doe Sitka black-tailed deer on Camp Island in Karluk Lake, Kodiak in November 2011. ©2011 Matthew Van Daele. Photo used courtesy of the photographer.

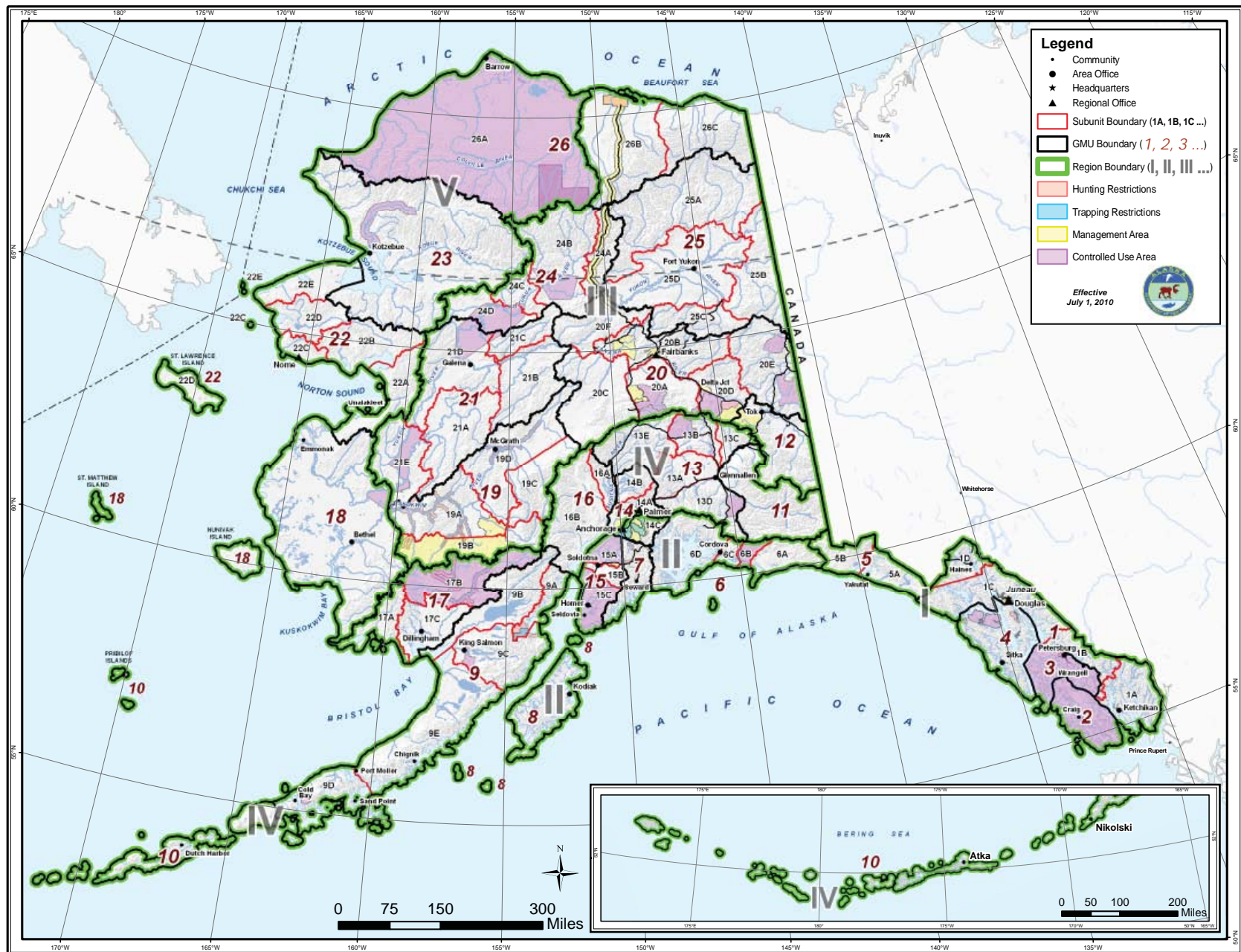
DEER MANAGEMENT REPORT

From: 1 July 2008

To: 30 June 2010

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WILDLIFE
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 115526
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DEER MANAGEMENT REPORT

From: 1 July 2008
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 1A (5,300 mi²)

GEOGRAPHIC DESCRIPTION: Unit 1 south of Lemesurier Point, including all drainages into Behm Canal and excluding all drainages into Ernest Sound

BACKGROUND

Sitka black-tailed deer live throughout Unit 1A, although mainland densities are consistently lower than those on maritime-influenced offshore islands. Deer populations tend to fluctuate seasonally, primarily in response to winter weather and wolf and bear predation. Deer numbers are currently at very low levels throughout most of Unit 1A.

Weather conditions and population levels influence deer harvests. Unit 1A harvests have ranged widely from a low of 75 in 2008 to a high of 914 in 1995. Hunting was open each year from August through December. Limited hunting of antlerless deer was allowed before 1978, but since then only bucks have been legal in Unit 1A. As clearcut logging continues to reduce old-growth habitat in portions of the unit, previously logged stands no longer support deer, and local deer populations are expected to decline. Population models predict declines in deer carrying capacity of 50–60% by the end of the logging rotation in 2054 (USFS 1989).

MANAGEMENT DIRECTION

MANAGEMENT GOALS

Under 5 AAC 92.108 we have established a Unit 1A population goal of 15,000 deer and an annual hunter harvest of 700 deer, based on high consumptive use of the deer population in this subunit.

MANAGEMENT OBJECTIVES

- Maintain populations in excess of 45 deer per mi² of winter range, as determined by mean densities of 1.4 pellet groups per plot (Kirchhoff 1990).

METHODS

We collected population information from spring pellet-group surveys, spring mortality surveys, field observations and to a lesser degree from hunters' anecdotal reports. We gathered harvest data from an annual hunter questionnaire, which we mailed to a random sample of hunters who were issued deer harvest tickets (ADF&G 2008, 2009).

For this reporting period deer pellet surveys for Unit 1A were conducted in May 2010 at Helm Bay (VCU 716) and Gravina Island (VCU 999). Results were .28 and .33 pellet groups/plot for Helm Bay and Gravina respectively. This represents a decline in pellet groups/plot of 44.5% and 62.1 % since the previous surveys in 2007 (ADFG Unpublished). It also continues a pattern of decline since 1988 when pellet groups/plot for Helm Bay and Gravina peaked at 1.66 and 2.06 respectively (McCoy 2008).

The Department of Wildlife Conservation (DWC) has mailed hunter surveys annually since 1980, with the exception of 1981. DWC mails harvest questionnaires to 33% of all Region I deer harvest ticket holders, and results are expanded to estimate hunting results of all harvest ticket holders. We also estimate the number of hunters reporting as state proxy hunters or federal designated hunters from the surveys.

Because of some contentious issues surrounding allocation of deer harvest in Unit 2 a new joint U.S. Forest Service (USFS) and ADF&G report system was initiated in 2005. Hunters were asked to fill out a voluntary harvest report form if they planned to hunt Unit 2 (Prince of Wales Island) any time during the deer season. That group of hunters was removed from the mail-out survey list and their hunt information was captured on the Unit 2 report form. Results from the Unit 2 harvest report cards were combined with the mail-out survey results. Many hunters spend time in both units during the deer season and this combined report was our best attempt to capture deer hunting efforts without duplicate reporting.

RESULTS AND DISCUSSION

MORTALITY

Harvest

<u>Season and Bag Limit</u>	<u>Resident and Nonresident Hunters</u>	
Unit 1A	1 Aug–31 Dec	4 bucks
Unit 1A Cleveland Peninsula	1 Aug- 31 Dec	2 bucks

Board of Game Actions and Emergency Orders. During the fall 2008 BOG meeting in Juneau a proposal was passed affecting deer hunting on the Cleveland Peninsula. Prior to the passage of this proposal the bag limit was 2 bucks on the 1B portion of the peninsula and 4 bucks on the 1A side. Due to conservation concerns and in order to spread opportunity, the bag limit was changed to 2 bucks for all of the Cleveland Peninsula south of the divide between Yes Bay and Santa Anna Inlet.

Hunter Harvest. Total harvest in the unit is estimated by combining the reported harvest from surveys with estimated illegal and unreported kills. The unreported and illegal take for Unit 1A is estimated to equal approximately half of the legal harvest each season. The last 5 seasons have seen a precipitous drop in hunter numbers, effort and deer harvest compared to that of 1998–2004. During 2006–2009 an average of 279 hunters spent 1,243 days afield in order to harvest an

annual average of 193 deer. The 2008 and 2009 seasons were particularly abysmal with just 75 and 138 deer reported (Table 1), possibly the lowest harvests on record.

The number of hunters using Gravina Island continues to be low. During 2008, 83 hunters reported a harvest of 11 deer, while in 2009 55 hunters reported taking 19 deer. Both of these harvests though low are better than 2007 when no deer were reported taken. No deer were reported harvested on the Cleveland Peninsula in 2002 and 2003, and after 2 years when 40 total were taken, both the 2007–2008 and 2008–2009 report periods had 0 and 3 bucks reported killed during the first and second year respectively of the report period (Table 2). The low deer numbers on the Cleveland are likely due to the combination of low habitat quality, a series of harsh winters, and both wolf and black bear predation. We continue to monitor the Cleveland deer population and are actively seeking ways we might enhance the chronically low deer numbers.

Residency and Success. Over 90% of Unit 1A hunters are local residents living within the unit. During the 2 years of this report period, 198 and 245 local hunters averaged a 22% and 24% success rate respectively. This is down significantly from the previous report period when 266 and 200 local resident hunters had 49% and 40% overall success rates (Table 4). On average over the past 12 years, approximately 12 nonlocal resident hunters have been successful at harvesting deer in this area each season and about 2 nonresident hunters were successful. Nonresident success rates in 2008 and 2009 were 0 and 33% respectively. This is a sharp contrast to 2006 when 9 nonresident hunters enjoyed a 100% success rate. Most nonresident deer hunters hire registered guides and pursue deer as part of a big game package hunt, which increases their chances of taking a deer. Nonlocal resident hunters had low success in 2008 and 2009 where their success rates slipped to 28% and 30% respectively from a previous high of 81% just 2 years earlier (Table 4). The 24.5 hunting days per deer during 2008 was one of the highest on record and is likely an anomaly of the reported hunting effort rather than an actual trend in the data. The 6.1 days hunting per deer in 2009 was more in line with other years and even slightly lower than the 12 year average (Table 1).

Other Mortality

Vehicle–deer collision estimates have remained low (1–5 deer/year), and collisions are not a significant source of deer mortality. Unreported and illegal harvest is estimated at 50% of the reported Unit 1A harvest. This percentage is based on local law enforcement citations and observations during the past few years and on anecdotal comments from local hunters.

HABITAT

Assessment

Logging continues to cause major changes in old-growth habitat. The most serious effects are in higher volume stands at low elevations which are critical to deer during winters with heavy snowfall. U.S. Forest Service and DWC habitat models predict that the forest's capacity to support deer in average winters will decline by nearly half by 2054. Based on field observations and our best estimates of Unit 1A deer populations, we are currently close to these predicted low deer habitat model values. Recent timber sales by the Alaska Mental Health Trust Authority and the State of Alaska on Gravina and Revilla Islands will further reduce carrying capacity for deer in these previously popular Unit 1A hunting areas. The current timber sales are using both

selective and clearcut methods to remove valuable old growth timber and almost all of this timber is slated for raw log export. The decline in deer numbers we see currently in Unit 1A is likely to continue as 15–30 year old harvested timber stands can no longer support deer. We expect to see long-term negative effects on deer numbers, and consequently, on future hunter success in most areas near Ketchikan. The Tongass Land Management Plan predicted that by 2054 few areas would provide enough deer to meet projected hunter demand within roaded and logged portions of Unit 1A (USFS 1989). At the time of this report, Unit 1A deer numbers are no longer meeting local hunter demands.

CONCLUSIONS AND RECOMMENDATIONS

During this report period the deer harvest has remained well below the long-term average for the unit and well below the management goal of 700 deer. The Cleveland Peninsula continues to be an area of high concern for managers. Harvests from this area traditionally averaged over 100 deer per year in the early to mid 1990's with a high of 208 in 1994, but dropped to zero during 2002 and 2003. This abysmal trend has continued with only 6 deer total reported taken from 2006 through 2009.

Gravina Island has traditionally produced a high proportion of Unit 1A deer. However, harvests on Gravina have dropped dramatically since 2001 and during this report period we estimate only 30 deer were legally harvested from the island.

South Revilla Island continues to produce most of the Unit 1A deer harvest. Easy access from Ketchikan makes this area a popular hunting destination. However, both selective and clearcut logging activity will likely have negative long-term impacts on deer in this area by removing critical deer winter habitat. Deer harvest from Revilla averaged 81 deer/year during this report period compared to an average annual harvest of 202 deer from 1998-2007 (Table 2).

With deer numbers remaining low in most of Unit 1A hunters are selecting other more productive areas like nearby Unit 2, and consequently we are seeing less effort and fewer deer harvested in Unit 1A.

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Please cite any information taken from this section, and reference as:

Porter, B. 2011. Unit 1A deer. Pages 1–11 *in* P. Harper, editor. Deer management report of survey and inventory activities 1 July 2008–30 June 2010. Alaska Department of Fish and Game. Juneau, Alaska.

Table 1. Unit 1A reported deer harvest data, regulatory years 1998 through 2009.

Regulatory year	Nr Hunters Expanded ^c	Nr successful hunters expanded	Percent successful	Hunter days expanded	Average days per hunter	Deer ^a	Average deer per hunter	Average hunter days per deer
1998	897	323	36	3369	3.8	508	0.6	6.6
1999	718	174	24	3484	4.9	267	0.4	13.0
2000	631	164	26	3595	5.7	268	0.4	13.4
2001	666	222	33	2673	4.0	352	0.5	7.6
2002	517	165	32	2147	4.2	237	0.5	9.1
2003	487	158	32	1448	3.0	212	0.4	6.8
2004	546	194	36	2222	4.1	347	0.6	6.4
2005 ^b	258	106	41	1257	4.9	132	0.5	9.5
2006	340	191	56	1105	3.3	374	1.1	3.0
2007	241	90	37	1187	4.9	186	0.8	6.4
2008	250	56	22	1836	7.3	75	0.3	24.5
2009	283	70	25	844	3.0	138	0.5	6.1
\bar{x}	486	159	33	2097	4.4	258	.6	9.4

^a Includes does that were reported killed.

^b Harvest information for 2005 should be viewed with caution due to survey reporting inconsistencies

^c Expanded means harvest totals are estimated for the region based on a sample of approximately 33% of hunters from each community. For each community, expansion factors used to estimate totals from mean responses are calculated as the total number of harvest tickets issued to residents of that community divided by the number of returned questionnaires for that community.

Table 2. Unit 1A deer harvest from major harvest areas, regulatory years 1990 through 2009.

Major harvest area	Regulatory year	Nr hunters expanded ^a	Nr successful hunters expanded	Percent successful	Hunter days expanded	Average days per hunter	Average deer per hunter	Deer killed
1-Gravina Island	1990	221	72	33	614	2.8	0.5	101
	1991	198	46	23	624	3.2	0.2	46
	1992	179	64	36	801	4.5	0.9	160
	1993	266	52	20	553	2.1	0.3	87
	1994	246	80	33	578	2.3	0.5	115
	1995	404	164	41	1413	3.5	0.8	328
	1996	---	83	---	---	---	---	135
	1997	373	95	25	971	2.6	0.4	131
	1998	361	110	30	859	2.4	0.5	183
	1999	194	26	13	575	3.0	0.2	35
	2000	187	24	13	646	3.5	0.2	36
	2001	248	71	29	823	3.3	0.5	123
	2002	177	43	24	390	2.2	0.3	50
	2003	138	21	15	300	2.2	0.2	27
	2004	140	51	36	478	3.4	0.6	83
	2005	82	17	21	283	3.5	0.2	17
	2006	70	14	20	219	3.1	0.6	41
	2007	56	0	0	266	4.8	0.0	0
	2008	83	11	13	272	3.3	0.1	11
	2009	55	12	22	123	2.2	0.3	19
2-Revilla	1995	906	305	34	2843	3.1	0.5	410
	1996	---	227	---	---	---	---	314
	1997	562	200	36	2517	4.5	0.5	308
	1998	612	213	35	1925	3.1	0.5	292
	1999	525	119	23	2195	4.2	0.3	173

Table 2. Unit 1A deer harvest from major harvest areas, regulatory years 1990 through 2009.

Major harvest area	Regulatory year	Nr hunters expanded ^a	Nr successful hunters expanded	Percent successful	Hunter days expanded	Average days per hunter	Average deer per hunter	Deer killed
2-Revilla-cont.	2000	488	133	27	2587	5.3	0.4	188
	2001	482	151	31	1457	3.0	0.5	223
	2002	409	150	37	1560	3.8	0.5	193
	2003	416	133	32	1055	2.5	0.4	169
	2004	420	149	35	1586	3.8	0.6	232
	2005	203	87	43	838	4.1	0.5	107
	2006	204	123	60	698	3.4	1.3	261
	2007	181	85	47	823	4.5	1.0	182
	2008	163	36	22	1480	9.1	0.3	45
	2009	255	67	26	679	2.7	0.5	117
3-Cleveland Peninsula	1990	245	122	50	981	4.0	1.0	236
	1991	158	42	27	458	2.9	0.4	59
	1992	280	126	45	1159	4.1	0.9	241
	1993	262	74	28	705	2.7	0.4	109
	1994	307	155	50	1044	3.4	0.7	208
	1995	200	70	35	549	2.7	0.6	114
	1996	---	---	---	---	---	---	96
	1997	198	63	32	577	2.9	0.4	87
	1998	172	23	13	566	3.3	0.1	23
	1999	174	41	24	735	4.2	0.3	59
	2000	104	11	11	224	2.2	0.1	11
	2001	85	8	9	356	4.2	0.1	11
	2002	88	0	0	245	2.8	0	0
	2003	40	0	0	107	2.7	0	0
	2004	64	16	25	106	1.7	0.5	32
	2005	26	8	31	97	3.7	0.3	8

Table 2. Unit 1A deer harvest from major harvest areas, regulatory years 1990 through 2009.

Major harvest area	Regulatory year	Nr hunters expanded ^a	Nr successful hunters expanded	Percent successful	Hunter days expanded	Average days per hunter	Average deer per hunter	Deer killed
4–Mainland ^b	2006	11	0	0	11	1.0	0.0	0
	2007	20	3	15	17	0.9	0.2	3
	2008	17	0	0	28	1.6	0	0
	2009	21	3	14	36	1.7	0.1	3
	1995	66	28	42	56	0.8	0.1	7
	1996	---	6	---	---	---	---	---
	1997	21	6	29	176	8.4	0.3	6
	1998	33	14	42	75	2.3	0.6	19
	1999	24	0	0	52	2.2	0.0	0
	2000	15	0	0	64	4.3	0.0	0
	2001	38	10	26	120	3.2	0.3	10
	2002	7	7	100	14	2.0	1.0	7
	2003	36	0	0	55	1.5	0	0
	2004	14	0	0	35	2.5	0	0
	2005	19	0	0	52	2.7	0.0	0
	2006	20	16	80	31	1.6	1.2	24
	2007	0	0	0	0	0	0	0
	2008	12	3	25	24	2.0	0.5	6
	2009	0	0	0	0	0	0	0

^a Expanded means harvest totals are estimated for the region based on a sample of approximately 33% of hunters from each community. For each community, expansion factors used to estimate totals from mean responses are calculated as the total number of harvest tickets issued to residents of that community divided by the number of returned questionnaires for that community.

^b This includes the Unit 1A mainland except the Cleveland Peninsula.

Table 3. Unit 1A reported and estimated deer harvest/mortality, regulatory years 1998 through 2009.

Regulatory year	<u>Reported harvest</u>			Unreported & illegal harvest ^a	Estimated total harvest	Estimated Nr road kills
	Male	Female	Total			
1998	508	0	508	254	762	1-5
1999	254	13	267	134	401	1-5
2000	261	6	268	134	402	1-5
2001	352	0	352	176	528	1-5
2002	237	0	237	119	356	1-5
2003	212	0	212	106	318	1-5
2004	342	5	347	174	521	1-5
2005 ^b	127	5	132	66	198	1-5
2006	368	6	374	187	561	1-5
2007	180	6	186	93	279	1-5
2008	70	5	75	38	113	1-5
2009	138	0	138	69	207	1-5
\bar{x}	254	4	258	129	387	1-5

^a Unreported and illegal harvest is estimated at 50% of reported harvest^b Harvest information for 2005 should be viewed with caution due to survey reporting inconsistencies

Table 4. Unit 1A deer hunter residency and success, regulatory years 1998 through 2009.

Regulatory year	Successful				Unsuccessful			
	Local resident ^a	Nonlocal resident	Nonresident	Total	Local resident ^a	Nonlocal resident	Nonresident	Total
1998	318	5	0	323	565	5	4	574
1999	156	18	0	174	508	31	5	544
2000	164	0	0	164	455	11	0	466
2001	208	12	0	222	426	9	10	445
2002	165	0	0	165	338	9	5	352
2003	145	13	0	158	306	18	4	328
2004	184	10	0	194	341	12	0	353
2005 ^b	96	5	5	106	116	19	18	153
2006	130	52	9	191	136	12	0	148
2007	80	5	5	90	120	22	9	151
2008	43	13	0	56	155	34	5	194
2009	58	6	6	70	187	14	12	213
\bar{x}	146	12	2	160	304	16	6	327

^a Local resident includes all hunters living in Unit 1A.^b Harvest information for 2005 should be viewed with caution due to survey reporting inconsistencies.

WILDLIFE
MANAGEMENT REPORT

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DEER MANAGEMENT REPORT

From: 1 July 2008
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 1B (3,000 mi²)

GEOGRAPHIC DESCRIPTION: Southeast Alaska mainland from Cape Fanshaw to Lemesurier Point

BACKGROUND

Except in isolated pockets, Sitka black-tailed deer inhabit the Unit 1B mainland in low densities. Deer numbers have fluctuated over time with high and low population extremes. Severe winter weather has caused most population declines, and illegal hunting and predation by wolves and bears have extended the length of the declines. Clearcut logging has and will continue to further reduce deer carrying capacity in some areas.

The most recent significant population declines occurred as a result of a series of severe winters in the late 1960s and early 1970s. The population declines led to restrictive regulations and bag limits in 1973. Unit 1B remained open, with a 1 antlered-deer limit from 1973 to 1980 and a 2 antlered-deer limit from 1981 to the present.

Most of Unit 1B is federal land managed by the U.S. Forest Service (USFS). There are no large communities in Unit 1B, although private in-holdings and small settlements exist at Point Agassiz, Farm Island, and Meyer's Chuck. The subunit is accessible only by boat or airplane although some local logging roads exist for onsite access. Although the communities of Petersburg and Wrangell are located only a short distance west of Unit 1B, much of the hunting effort by individuals in these communities is focused on the Unit 3 islands to the west of the mainland, where deer densities are generally higher. The deer season in neighboring Unit 3 closes a month earlier than Unit 1B, after which time some Petersburg residents shift their deer hunting efforts to the mainland where the season remains open until December 31. From 1996 through 2007, the estimated Unit 1B deer harvest ranged from 34 to 114, while the estimated number of hunters varied from 66 to 186 (Tables 1 and 2).

MANAGEMENT DIRECTION

MANAGEMENT GOALS

The management goal for Unit 1B deer is to maintain healthy, productive populations, sufficiently abundant and resilient to harsh winters to ensure good hunting opportunities and success. The population objective for deer in Unit 1B is from 6,400 to 10,200 deer.

MANAGEMENT OBJECTIVES

- Increase deer populations on winter range (<1,500 foot elevation) to 32 deer/mi² (average 1.0 pellet group/20 m² plot).
- Monitor deer densities using pellet-group surveys.
- Monitor deer harvest using mailed questionnaires.

METHODS

We estimated Unit 1B harvest data from a regional questionnaire, mailed to a random sample of 33% of deer harvest ticket holders. Relative winter deer densities are periodically measured with spring pellet-group transects in selected areas (ADF&G 2009; ADF&G 2010).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Unit 1B pellet-group surveys are currently inadequate to determine deer population trends (Table 3). In spring 2003, the most recent year that pellet-group counts were conducted in the unit, one value comparison unit VCU at Horn Cliff had a pellet-group density of .67 pellet-groups/plot, which was nearly identical to the .60 recorded the previous time the area was surveyed in 1998. No pellet-group surveys were conducted in Unit 1B during the current report period.

MORTALITY

Harvest

Season and Bag Limit

Resident and Nonresident Hunters

Unit 1B

1 Aug–31 Dec 2 bucks

Board of Game Actions and Emergency Orders. No Board of Game actions took place and no emergency orders were issued regarding deer hunting in Unit 1B during the report period.

Hunter Harvest. Following 2 consecutive winters with above average snowfall, the estimated Unit 1B harvest fell to just 34 deer in 2008, slightly over half the preceding 10-year average. The harvest of 34 deer in 2008 matches that from 2002 (Table 1), and represents the lowest unit wide harvest since at least 1990. Deer harvest was reported in 4 Wildlife Analysis Areas (WAAs), including WAA 1603 (Thomas Bay), WAA 1605 (Muddy River/Patterson Glacier), WAA 1706 (Horn Cliffs/LeConte Bay) and WAA 1707 (North Arm of the Stikine River

Drainage). In 2009 the estimated harvest increased to 121 deer, the highest harvest since 1994. Deer harvest was reported from 4 WAAs including WAA 1603 (Thomas Bay), WAA 1605 (Muddy River/Patterson Glacier), WAA 1706 (Horn Cliffs/LeConte Bay), and WAA 1708 (Stikine River Drainage). Bolstered by the relatively high harvest in 2009 and despite the low harvest in 2008, the average annual harvest during the report period was 78 deer annually, which is higher than the preceding 10-year average of 61 deer per year.

Hunter Residency and Success. Based on estimates derived from Deer Hunter Survey responses, no nonresidents hunted deer in Unit 1B during 2008 (Table 2). In 2009, an estimated 12 nonresidents hunted deer in the unit, and half were successful. Deer populations are greater and seasons and bag limits more liberal in other nearby units, therefore, those areas attract more nonlocal hunters. The total number of hunters increased slightly in 2008 (76) from 2007 (66) while the estimated harvest declined from 43 in 2007 to 34 in 2008. During the report period, the number of hunters nearly doubled from 76 in 2008, to 144 in 2009. The hunter success rate in 2008 was 25%, the lowest since 2001. In 2009 hunter success increased to 51%, well above the preceding 10-year average of 37%.

Harvest Chronology. Generally, most harvest in the unit takes place during November, October, and August, in descending order (Table 4). In 2008, the highest estimated harvest occurred in November and October, in descending order. No harvest was reported for any other month in 2008. In 2009, the highest percentage of the harvest occurred in November, August, and December, in descending order.

Transport Methods. Most Unit 1B deer hunters generally reported traveling to their hunting areas by boat (Table 5). In 2008 100% of hunters reported using boats to access their hunt area. In 2009 93% of hunters reported using boats to access their hunting area, and 3% used highway vehicles. Another 3% used unknown transport. Logging roads provide some all-terrain vehicle (ATV) and highway vehicle access in a few isolated portions of the unit.

Other Mortality

In addition to mortality resulting from legal hunting, other sources of deer mortality include predation by wolves and bears, poaching, injury and accidents, and starvation or natural causes.

CONCLUSIONS AND RECOMMENDATIONS

Unit 1B deer populations exist in isolated pockets and have patchy distribution. The unit has relatively low deer density overall (due to typically high snow accumulation) and is largely inaccessible. Unit-wide, deer densities vary from moderate in some isolated areas to extremely low in others. Overall, deer populations seem stable with localized variations. During 2006–2008 the central Alaska Panhandle, including Unit 1B, experienced 3 consecutive winters with above average snowfall. During the winter of 2006–2007 in adjacent Unit 3, the Petersburg and Wrangell areas broke all-time records for snowfall (229.7 inches in Petersburg and 148.5 inches in Wrangell) (NOAA 2010). Although not as severe as the 2 preceding winters, the recorded snowpack of the winter of 2008–2009 was also well above average. Winter weather, predation, and clearcut logging have the greatest effects on deer population dynamics. Clearcut logging and second-growth stands entering stem exclusion have and will continue to reduce deer carrying

capacity in the unit. At this time there are no indications that hunting seasons or bag limits should be further restricted.

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Please cite any information taken from this section, and reference as:

Lowell, R.E. 2011. Unit 1B deer management report. Pages 12–20 *in* P. Harper, editor. Deer management report of survey and inventory activities 1 July 2008–30 June 2010. Alaska Department of Fish and Game. Juneau, Alaska.

Table 1. Unit 1B deer harvest ^a, 1996–2009.

Regulatory year	Estimated legal harvest						Estimated illegal harvest					
	M	(%)	F	(%)	Unk.	Total	M	(%)	F	(%)	Unk.	Total
1996	56	(100)				56						56
1997	105	(100)				105						105
1998	72	(100)				72						72
1999	73	(100)				73			12	(100)		85
2000	44	(100)				44						44
2001	43	(100)				43						43
2002	34	(100)				34						34
2003	82	(100)				82						82
2004	38	(100)				38						38
2005	58	(100)				58						58
2006	114	(100)				114						114
2007	43	(100)				43						43
2008	34	(100)				34						34
2009	105	(100)				105			16	(100)		121

^a Data from mail out survey.

Table 2. Unit 1B deer hunter residency and success, 1996–2009.

Regulatory year	Successful					Unsuccessful					
	Local ^a resident	Nonlocal resident	Nonresident	Total	(%)	Local ^a resident	Nonlocal resident	Nonresident	Total	(%)	Total hunters
1996	46	6	0	52	NA	NA	NA	NA	NA	NA	NA
1997	61	12	0	73	(48)	68	11	0	79	(52)	152
1998	51	5	0	56	(30)	112	14	4	130	(70)	186
1999	38	14	0	52	(33)	65	29	14	108	(67)	160
2000	36	0	0	36	(23)	97	23	0	120	(77)	156
2001	32	0	0	32	(23)	99	5	5	109	(77)	141
2002	30	0	0	30	(33)	52	0	9	61	(67)	91
2003	45	0	0	45	(42)	46	15	0	61	(58)	106
2004	34	0	0	34	(49)	26	10	0	36	(51)	70
2005	47	0	5	52	(43)	48	7	14	69	(57)	121
2006	62	10	5	77	(65)	23	5	13	41	(35)	118
2007	24	3	0	27	(41)	24	6	9	39	(59)	66
2008	19	0	0	19	(25)	57	0	0	57	(75)	76
2009	61	6	6	73	(51)	53	6	6	71	(49)	144

^a Residents of Units 1B, 3, Meyers Chuck, Point Baker, and Port Protection.

Table 3. Unit 1B deer population trends as indicated by pellet-group surveys, regulatory years 1991 through 2002.

Area	Regulatory year	Mean pellet-groups/plot	Number of plots	95% CI
Frosty Bay (VCU 524)	1991	.70	266	0.55–0.86
Muddy River (VCU 489)	1996	1.53	348	1.26–1.80
Horn Cliffs (VCU 490)	1998	.60	250	0.47–0.74
Madan (VCU 504)	2000	.23	244	0.14–0.31
Harding (VCU 511)	2000	.02	207	0.00–0.05
Horn Cliffs (VCU 490)	2002	.67	290	0.53–0.81

Table 4. Unit 1B deer harvest chronology by month and percent, 1996–2009.

Regulatory year	Harvest periods							Number of Deer ^a
	Aug	Sep	Oct	Nov	Dec	Mar	Unk	
1994	14	0	14	59	13	0	0	183
1995	6	0	66	28	0	0	0	75
1996	0	10	38	25	27	0	0	56
1997	4	17	41	18	13	0	7	105
1998	15	9	24	24	7	7	14	72
1999	5	9	0	27	14	0	45	85
2000	21	9	9	61	0	0	0	44
2001	15	18	23	27	11	0	6	43
2002	12	12	24	52	0	0	0	33
2003	20	15	27	38	0	0	0	82
2004	33	0	33	34	0	0	0	39
2005	43	16	19	22	0	0	0	58
2006	14	13	20	42	11	0	0	114
2007	56	9	0	28	0	0	7	43
2008	0	0	34	66	0	0	0	29
2009	17	3	3	64	7	0	7	121

^aMay not equal harvest table due to rounding or incomplete reporting.

Table 5. Unit 1B deer hunter effort, percent by transport method, 1996–2009^a.

Regulatory year	Percent of effort						Not specified	Number of trips
	Airplane	Boat	3- or 4-wheeler	Foot	ORV	Highway vehicle		
1996		100						NA
1997	4	86	7			3		NA
1998		91	4			5		NA
1999	3	94				3		NA
2000	4	90	6					NA
2001		81		2	11	6		NA
2002		91				4	4	NA
2003		84	8	9				NA
2004		95	5					74
2005		97				3		129
2006	3	93					3	118
2007	8	77	6	9				66
2008		100						34
2009		93				3	3	121

^aThe hunter survey reports, transport as total number of hunting trips by method.

WILDLIFE
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 115526
JUNEAU, AK 99811-5526

DEER MANAGEMENT REPORT

From: 1 July 2008
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 1C (7,600 mi²)

GEOGRAPHIC DESCRIPTION: Southeast Alaska mainland and the islands of Lynn Canal and Stephens Passage lying between Cape Fanshaw and the latitude of Eldred Rock, including Sullivan Island and the drainages of Berners Bay

BACKGROUND

Deer have inhabited northern Southeast Alaska since their migration from southern refugia following the Pleistocene epoch (Klein 1965). Deep snow keeps the number of deer on the mainland lower than that on adjacent islands. A 1963 population estimate suggested 200,000 deer in Southeast Alaska (Merriam 1970). The region wide 1962 harvest was 10,500 deer. Severe winters in 1969 and 1971 increased mortality and reduced deer numbers (Olson 1979). Hunter surveys began in 1970 and continue annually. These surveys have grown from telephone contacts of a few hunters to a mail-out survey of a random list of hunters beginning in 1980. Pellet-group counts (Kirchhoff and Pitcher 1988) began in Unit 1C in 1984 and have been conducted on Douglas, Harbor, Lincoln, and Shelter islands on a near annual basis, but rarely in mainland locations.

Deer densities were relatively high throughout the early to mid 1990s but declined substantially due to severe winter weather in 1999. With very mild winters from 2000–2005 the deer populations across the region rebounded again to a high densities. During 1994–2005 above average snowfall was only recorded at the Juneau airport during one of these 11 winters (Figure 1; McCoy 2010) and it is believed deer responded favorably yielding higher populations, and more deer being available to hunters. However, the winter of 2006–2007 was severe with record snowfall recorded in Juneau (Figure 1). Substantial snowfall occurred in November 2006 driving deer to beaches where they were vulnerable to hunters; consequently a substantial increase in harvest was reported in 2006. In addition, another substantial snowfall came in March 2007 that restricted deer movements and caused a decrease in the Unit 1C population. The winter of 2006–2007 spurred the department to conduct spring mortality transects in the unit, and implement a doe closure in both Units 1C and 4 during December of 2007 to protect female deer from further harvest.

Most Unit 1C deer occur on Douglas, Shelter, and Lincoln Islands, locations that have only occasionally been known to support wolves. Biologists receive sporadic reports of wolves on Douglas Island each year but wolves have not been officially documented in the past few years.

Wolves are known to occur in mainland areas of Unit 1C but are rarely seen, and they likely contribute to maintaining low densities of deer in these areas.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

As established by the Alaska Board of Game during its fall 2000 meeting, in response to the intensive management of game law [AS 16.05.255 (i) (4)], the Unit 1C management goal is to manage the deer population to achieve and maintain a population of 6,200 deer while maintaining an annual harvest of 456 deer.

MANAGEMENT OBJECTIVES

- Maintain population densities on Douglas, Lincoln, and Shelter Islands at high levels as reflected by a mean pellet density of 2.0 pellet groups per plot.
- Monitor the deer harvest through mail-out surveys.
- Participate in annual deer-pellet surveys.

METHODS

Each year the department sends deer harvest surveys to a randomly selected group of hunters (approx. 33%) to collect deer harvest data. The survey is designed to collect information on hunter effort, hunt location, hunt timing, number of days hunted, transportation used, and the number of deer harvested. Survey results for hunter effort, success, and kill location were expanded to estimate results for all harvest ticket holders (McCoy et. al. 2008). We conducted pellet-group surveys on Douglas and Shelter Islands during both years of the report period. One of the drawbacks of the pellet data is that the pellet counts occur at the end of the winter, at which time, the deer that deposited the pellets may have died from severe winter weather. Therefore, the pellet counts during the spring don't necessarily indicate a standing crop of deer at that time. Many environmental variables also can affect the density of pellets independent of the number of deer actually present. For instance, the amount of snowfall affects where deer winter, which dictates where and how many pellets you find. In spite of this, we use pellet data along with harvest information to derive population trend information.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

No population estimates are available for Unit 1C deer, but we monitor general population trends using deer pellet data and harvest data from the deer harvest survey. North Douglas Island pellet-group densities indicated a decrease over the 2 years of the report period with 1.85 and 1.07 pellet groups/plot in 2008 and 2009 respectively (Table 1). The decreasing pellet densities from 2008 to 2009 are likely a result of a downward population trend initiated in 2006–2007, and exacerbated by the following 2 winters which were also fairly severe (Figure 1).

At Inner Point on the southwest side of Douglas Island, pellet surveys were conducted during both years of the report period resulting in 1.44 and 1.52 pellet groups/plot in 2008 and 2009

respectively (Table 1). Pellet concentrations in both 2008 and 2009 were at or above the long term (1998–2007) mean of 1.33 groups/plot.

Shelter Island pellet transects were conducted in both years of the report period resulting in .71 and 1.27 pellet groups/plot during 2008 and 2009 respectively. The Shelter Island transects have not been completed annually like Douglas Island. Mean pellet density for the past 10 years when surveys have been conducted (1989–2007) is 1.66 pellet groups/plot. Pellet surveys were not conducted in any other areas of Unit 1C during the report period.

.MORTALITY

Harvest

<u>Season and Bag Limit</u>	<u>Resident and Nonresident Hunters</u>	
Unit 1C Douglas, Lincoln, Shelter, Sullivan Islands	1 Aug–31 Dec	4 deer; antlerless deer may be taken only from 15 Sep–31 Dec
Unit 1C Remainder	1 Aug–31 Dec	2 antlered deer

Board of Game Actions and Emergency Orders. No Board of Game action was taken, or Emergency Orders issued for deer in Unit 1C during the report period.

Hunter Harvest. Based on data gathered from the annual deer hunter survey, hunters in Unit 1C killed 553 deer in 2008 and 291 in 2009 (Table 2), with bucks composing 65% (2008) and 69% (2009) of the harvest. The majority of the Unit 1C deer harvest came from Douglas Island during the report period. Due to its proximity to Juneau and accessibility by road, Douglas Island historically has produced the highest deer harvest in Unit 1C.

The deer harvest on Shelter and adjacent Lincoln Islands decreased in 2008 to 13 deer but increased slightly to 23 deer in 2009. The 2009 Shelter/Lincoln Island harvest is higher than it has been in recent years, and that combined with higher pellet group density, suggests deer numbers continue to rebound on the islands after the winters of 2006–2008. Shelter and Lincoln Islands receive little hunting pressure compared to Douglas Island. Other less hunted areas, such as the mainland near Juneau, Chilkat Range, Holkum Bay and Cape Fanshaw, represent a small percentage of the Unit 1C deer harvest. No data is available concerning the deer population in these mainland areas, but low harvest and a significant number of days required to harvest a mainland deer suggests low numbers.

Hunter Residency and Success. During both years of the report period most hunters (approx. 90%) were Unit 1C residents; nonlocal residents composed the majority of the remaining hunters. No nonresident hunters reported deer hunting in Unit 1C in 2008, whereas nonresidents made up 2% of the Unit 1C hunters in 2009 (Table 3). Hunter success rates were similar in 2008 and 2009 at 27% and 26%, respectively. Hunter success averaged 29% during 1998–2007 so hunters were similarly successful during the report period. Hunters spent an average of 6.4 days hunting per deer taken in 2008 and 8.7 days per deer in 2009 (Table 4). The average deer per hunter was 0.7 in 2008 and 0.4 in 2009 (Table 4). On Douglas Island the number of days deer

hunters spent afield was 2,439 in 2008 and 1,949 in 2009. During the report period hunters averaged 10 and 8 days to take a deer in 2008 and 2009, respectively. On Shelter Island, hunters spent 166 days in the field in 2008, taking 7 days on average to harvest each deer. In 2009 hunters spent 54 days in the field, equating to 4 days hunting per deer harvested.

Transport Methods. As in the past most hunters used highway vehicles or boats to access hunting areas, with foot access being the third most popular method. During this report period 57% of hunters used highway vehicles for access, 28% used boats, 13% accessed hunting areas by walking, approximately 2% used an airplane and other modes of transportation, and 18 hunter responses did not list a method of transportation. Hunters most commonly used highway vehicle and foot access while hunting the east and north sides of Douglas Island; boats were used for hunting on west Douglas Island, Shelter, Lincoln, Sullivan, and other islands in the unit. As previously noted, Douglas Island accounted for the majority of the Unit 1C deer harvest; many of the Douglas Island hunting areas are accessible by road. Although the majority of hunters used highway vehicles to access hunting areas and enjoyed good success, boat hunters were able to harvest deer with less effort. The number of deer per boat-based hunter (0.3) was higher, and the number of hunting days per deer (6.2) was lower for hunters using boats compared to those using highway vehicles (0.2 and 10.7, respectively).

Other Mortality

During both years of the report period an estimated 7–10 deer annually were struck by vehicles and killed on Juneau roads. During spring, deer congregate on highway shoulders to feed on emerging grass. Public Service Announcements are issued annually to remind motorists to be aware of deer and other wildlife along roads.

CONCLUSIONS AND RECOMMENDATIONS

All of the Douglas and Shelter Island pellet group transects were surveyed during both years of the report period. Transects were not conducted on Lincoln Island, or in mainland areas unit 1C during the report period. None of the Unit 1C pellet group transects that were surveyed met the management objective of 2.0 pellet groups/plot during the report period. By and large, pellet group densities increased in Unit 1C from surveys in 2006 and 2007 suggesting deer numbers continue to rebound from the significant mortality caused by the winters of 2006–2008. The harvest management objective of 456 deer was met in 2008 but not in 2009; fewer hunters hunted in 2009 and spent less time hunting deer. Deer harvest can depend on factors outside of deer numbers, and in 2009 the weather played a critical role in limiting the deer harvest. Due to low snowfall during the season, deer remained scattered and hunters had to work hard to find them. When it did snow the conditions made hunter movement noisy and sneaking up on deer was difficult. Consideration should be give to establishing pellet group transects in mainland areas because of an increasing number of hunters interested in hunting the mainland. Based on observations and anecdotal information, mainland deer numbers near Juneau appear to be increasing.

The natural ability of deer numbers to rebound quickly in areas without significant predator populations such as islands in Unit 1C should aid in the growth of the deer population. Opportunities to harvest Sitka black-tailed deer will likely improve in the coming years if winter weather isn't too severe.

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Please cite any information taken from this section, and reference as:

Scott, R. 2011. Unit 1C deer. Pages 21–30 in P. Harper, editor. Deer management report of survey and inventory activities 1 July 2008–30 June 2010. Alaska Department of Fish and Game. Juneau, Alaska.

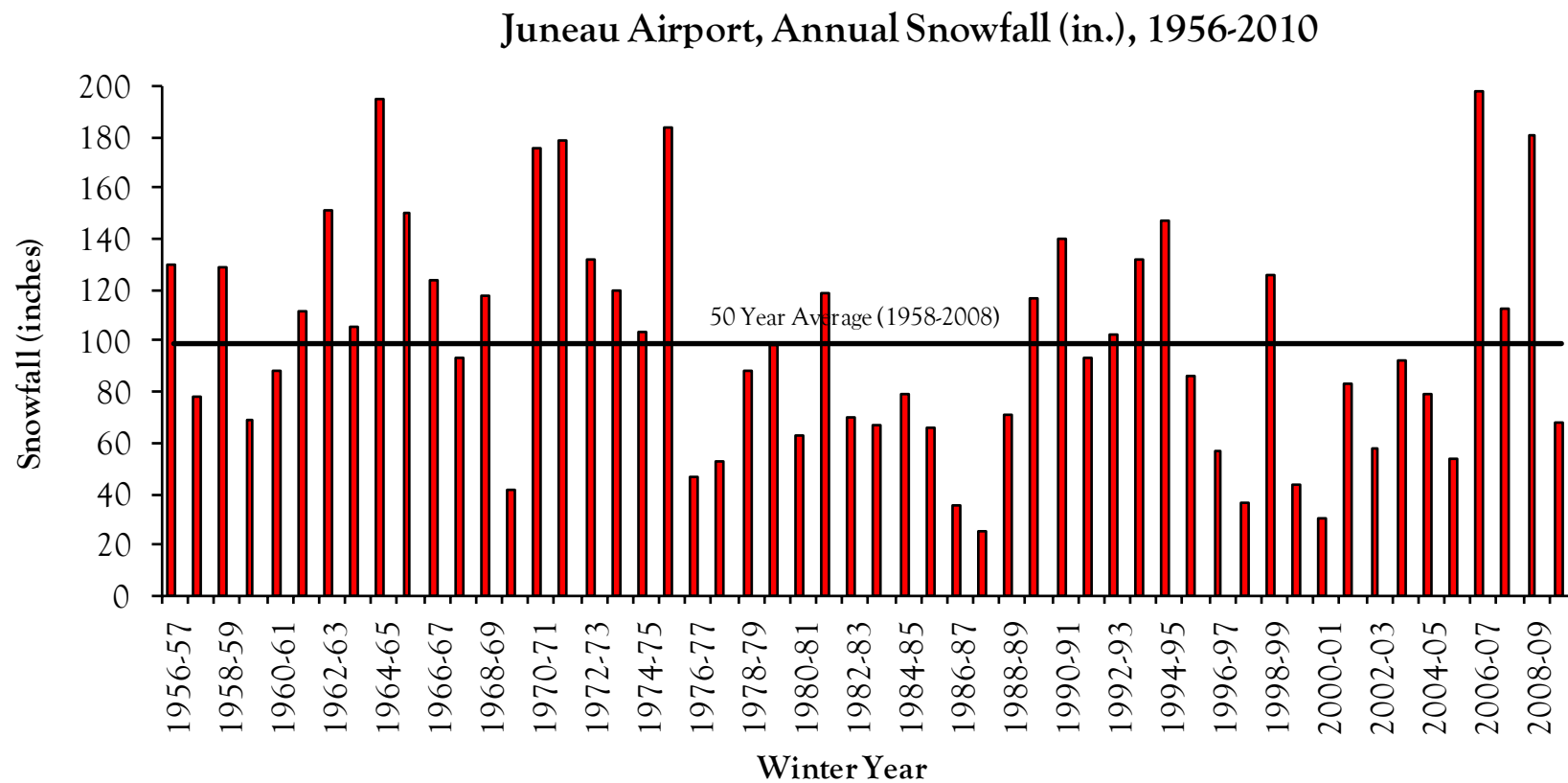


Figure 1. Annual winter snowfall measured at the Juneau airport, 1956-2010. The 50-year average is depicted as a solid line (Data: WFO, Juneau, AK).

Table 1. Unit 1C deer population trends as indicated by pellet-group surveys, 1986 through 2009.

Area	Regulatory year	Mean pellet- groups/plot	Number of plots	95 % CI
Kensington (VCU 20)	1993	0.00	180	---
Portland Island (VCU 27)	1986	0.99	381	0.87–1.12
North Douglas (VCU 35)	1993	0.91	315	0.74–1.09
	1994	0.86	306	0.70–1.02
	1995	0.97	323	0.81–1.12
	1996	1.43	323	1.24–1.62
	1997	1.55	321	1.32–1.77
	1998	1.03	273	0.86–1.19
	1999	0.88	282	0.71–1.04
	2000	1.01	335	0.85–1.17
	2001	0.68	200	0.50–0.85
	2002	0.93	267	0.77–1.09
	2003	1.52	288	1.28–1.76
	2004	2.08	151	1.61–2.54
	2005	2.02	263	1.74–2.29
	2006	2.28	165	1.83–2.73
	2007	2.84	316	2.49–3.19
	2008	1.85	220	1.57–2.14
	2009	1.07	312	0.89–1.24
Inner Point (VCU 36)	1988	1.30	258	1.08–1.53
	1991	2.05	204	1.75–2.36
	1994	1.41	254	1.21–1.60
	1995	1.68	240	1.45–1.91
	1996	2.36	252	2.08–2.64
	1997	0.84	280	0.69–0.98
	1998	1.06	239	0.87–1.25
	1999	1.09	280	0.90–1.28
	2001	0.82	198	0.64–1.00
	2002	0.76	272	0.60–0.92
	2003	0.88	242	0.68–1.08
	2005	2.33	147	1.93–2.72
	2006	2.10	182	1.70–2.50
	2007	1.59	232	1.32–1.85
	2008	1.44	268	1.20–1.68
	2009	1.52	263	1.30–1.74
Rhine Creek (VCU 38)	1996	0.31	108	0.14–0.47
Harbor Island (VCU 65)	1986	1.28	200	1.00–1.56
Couverden (VCU 117)	1992	0.35	350	0.27–0.44

Table 1. continued.

Area	Regulatory year	Mean pellet-groups/plot	Number of plots	95 % CI
Shelter Island (VCU 124)	1988	1.42	300	1.23–1.62
	1989	1.60	300	1.37–1.82
	1992	2.00	250	1.73–2.26
	1994	1.38	297	1.20–1.56
	1996	2.51	312	2.23–2.78
	1998	1.63	290	1.42–1.85
	2000	2.07	231	1.79–2.36
	2002	1.41	300	1.19–1.63
	2004	1.86	200	1.59–2.13
	2006	1.10	321	0.97–1.41
	2007	1.05	321	0.90–1.21
	2008	0.71	250	0.57–0.84
	2009	1.27	325	1.10–1.44
Lincoln Island (VCU 124)	1997	1.57	207	1.27–1.77
	2006	0.84	213	0.62–1.06
Sullivan Island (VCU 94)	1989	1.40	250	1.17–1.62
	1998	0.64	66	0.35–0.93

Table 2. Unit 1C annual deer harvest^a, 1990 through 2009.

Regulatory year	Males	Females	Estimated total
1990	330	169	499
1991	245	172	417
1992	358	153	511
1993	302	277	579
1994	427	232	659
1995	210	101	311
1996	209	143	352
1997	342	96	438
1998	272	116	388
1999	196	139	335
2000	172	69	241
2001	274	71	345
2002	226	141	367
2003	335	137	472
2004	257	86	343
2005	279	221	500
2006	391	249	640
2007	129	26	155
2008	359	194	553
2009	201	90	291

^a Data from expanded results of hunter surveys.

Table 3. Unit 1C deer hunter residency and success, regulatory years 1990 through 2009.

Regulatory year	Successful					Unsuccessful					Total hunters	
	Local ^a resident	Nonlocal resident	Non resident	Unk	Total (%)	Local ^a resident	Nonlocal resident	Non resident	Unk	Total (%)		
1990	291	32	2	0	325 (34)	564	56	3	0	623 (66)	948	
1991	209	21	0	0	230 (28)	551	42	4	0	597 (72)	827	
1992	321	15	6	0	342 (36)	550	63	5	0	618 (64)	960	
1993	295	8	0	0	303 (34)	549	50	2	0	601 (66)	904	
1994	359	4	2	0	365 (36)	574	67	11	0	652 (64)	1,017	
1995	210	0	0	0	210 (21)	670	92	18	0	780 (79)	990	
1996	247	10	0	0	257 NA ^b	NA	NA	NA	NA	NA NA	NA	
1997	241	4	0	0	245 (28)	573	33	9	0	615 (72)	860	
1998	217	6	0	0	223 (23)	672	46	8	0	726 (77)	949	
1999	201	26	0	0	227 (27)	576	49	0	0	625 (73)	852	
2000	176	4	5	0	185 (23)	593	20	6	0	619 (77)	804	
2001	240	15	0	0	255 (29)	555	61	10	0	626 (71)	881	
2002	218	9	0	0	227 (29)	526	41	0	0	567 (71)	794	
2003	293	14	8	0	315 (35)	546	48	0	0	594 (65)	908	
2004	233	26	4	0	263 (30)	563	41	5	0	609 (70)	872	
2005	240	23	5	0	268 (29)	604	42	14	0	660 (71)	928	
2006	340	28	9	0	377 (48)	361	42	5	0	408 (52)	785	
2007	95	17	5	0	117 (19)	440	45	9	0	494 (81)	611	
2008	203	18	0	0	221 (27)	547	53	0	0	600 (73)	821	
2009	184	12	0	0	196 (26)	490	53	12	0	555 (74)	751	

^a Local means the hunter is a resident of Unit 1C.^b Data for unsuccessful hunters unavailable due to changes in survey.

Table 4. Unit 1C hunter effort and success (by number), 1990 through 2009.

Regulatory year	Hunters	Days hunted	Deer killed	Deer/hunter	Days/deer
1990	948	3,262	499	.5	6.5
1991	827	2,993	417	.5	7.2
1992	959	3,202	511	.5	6.3
1993	904	2,950	579	.6	5.1
1994	1,017	4,151	659	.6	6.3
1995	990	3,968	311	.3	12.8
1996	257	NA*	NA	NA	NA
1997	861	3,819	438	.5	8.7
1998	950	3,396	388	.4	8.7
1999	851	2,327	335	.4	7.0
2000	803	2,312	241	.3	9.6
2001	881	2,764	345	.4	8.0
2002	795	2,612	367	.5	7.1
2003	910	3,038	472	.5	6.4
2004	872	3,262	343	.4	9.5
2005	928	3,601	500	.5	7.2
2006	784	2,783	640	.8	4.4
2007	611	2,403	155	.3	15.4
2008	821	3,508	533	.7	6.4
2009	751	2,535	291	.4	8.7

* Data unavailable due to changes in survey.

WILDLIFE
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 115526
JUNEAU, AK 99811-5526

DEER MANAGEMENT REPORT

From: 1 July 2008
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: Unit 2 (3,600 mi²)

GEOGRAPHIC DESCRIPTION: Prince of Wales (POW) Island and adjacent islands south of Sumner Strait and west of Kashevarof Passage and Clarence Strait

BACKGROUND

Sitka black-tailed deer are found throughout Unit 2, both on the mainland of Prince of Wales Island and the smaller adjacent islands. Deer populations tend to fluctuate seasonally, primarily in response to severe winter weather, habitat loss, and wolf and black bear predation. Although Unit 2 experienced 3 consecutive harsh winters from 2006–2009, mild weather during the winter of 2009–2010 coupled with low bear and wolf numbers has resulted in an abundance of deer. Currently deer populations in Unit 2 are a bright spot in the Southeast region where deer numbers are generally down overall.

Sitka black-tailed deer are highly valued for hunting on POW. They are an important subsistence resource as well as becoming increasingly desired as a sport hunting trophy. POW has a reputation for producing large-bodied and large-antlered bucks and a number of bucks qualify for the Boone and Crockett and Pope and Young record books each year. Weather conditions and population levels are the main regulators of deer harvests. The yearly harvest in Unit 2 has averaged 2,720 deer over the past dozen seasons (1998–2009) (Table 1).

Hunting of does is allowed under Federal regulations though the practice has sparked much controversy. Limited hunting of antlerless deer was allowed before 1978. A 3-week antlerless season was initiated in Unit 2 during regulatory year (RY) 1987, but was discontinued a year later because of public opposition. In 1995, despite state opposition, a federal 2½-month antlerless season was implemented in Unit 2. The federal antlerless season remains in effect, running from October 15 through December 31, and allows qualified rural hunters to harvest 1 female deer as part of their 5 deer bag limit. In the fall of 2007 the annual bag limit for qualified rural hunters increased from 4 to 5 deer under federal hunting regulations. The bag limit remains 4 bucks for hunters hunting under state regulations.

Craig is the largest community in Unit 2, with approximately 1,100 residents. Craig was once the fastest growing community in Alaska during the period when many Prince of Wales Island (POW) logging camps closed and families moved into town. The population of Craig stabilized

as some residents moved away in search of employment, while others started new tourism-based businesses. The population now appears to be in a slow, steady decline.

Clearcut logging has been widespread in Unit 2 and its effects on deer habitat are significant and enduring. Counting national forest and private lands, ADF&G biologists estimate that 475 mi² of forested habitat has been cut during the past 50 years in Unit 2. The result of that timber harvest has been the removal of a large portion of important deer range, especially critical winter habitat.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

Action taken by the Board of Game in fall 2000 established a Unit 2 population goal of 71,000 deer and a harvest goal of 2,700 deer. This action is based on the board identifying the Unit 2 population as important for satisfying high levels of human consumptive use.

MANAGEMENT OBJECTIVES

- Maintain populations in excess of 45 deer per mi² of winter range, as determined by mean pellet-group densities of 1.4 pellet groups per plot (Kirchhoff 1990).

METHODS

We collected population information from anecdotal reports provided by hunters, from field observations, spring pellet-group surveys and spring mortality transects. In addition, a new technique for estimating deer abundance was developed during this reporting period. Todd Brinkman, PhD developed a technique to identify individual deer using fecal DNA and used DNA-based mark and recapture techniques to estimate population trends in distinct watersheds (Brinkman 2009). ADFG is currently testing this new technique on Northeast Chichagof Island. Managers are excited about this new methodology. It has the potential to replace traditional pellet group surveys in the future.

We collected harvest data from an annual questionnaire mailed to a random sample of hunters who were issued deer harvest tickets during the hunting season. We mailed harvest questionnaires to 33% of all harvest ticket holders and expanded our results to cover all harvest ticket holders (ADF&G 2009 and ADFG 2010). Due to growing issues in Unit 2 and the poor historical survey response rates from residents of Unit 2, some POW communities were sampled at approximately 100% starting in 2003.

Because of contentious issues surrounding allocation of deer harvest in Unit 2, since fall 2005 Unit 2 deer hunters have been required to fill out a new harvest report form specific to the unit. Those hunters were removed from the mail out survey list and their hunt information is instead captured on the Unit 2 report form. Beginning fall 2011, the Unit 2 report form and mail out questionnaire will be replaced by a statewide deer harvest ticket report, the same as is currently used for other species such as moose and caribou.

RESULTS AND DISCUSSION

MORTALITY

Harvest

Season and Bag Limit

Unit 2

Resident and Nonresident Hunters

1 Aug–31 Dec

4 bucks

Federally Qualified Subsistence Hunters

24 July–31 December 5 deer, however, no more than one may be an antlerless deer.

Board of Game Actions and Emergency Orders. No regulatory changes were made to the state deer seasons or bag limits in Unit 2 during this period.

Hunter Harvest. Reported deer harvest in Unit 2 during the past 2 seasons was estimated at 3,593 and 3,326 deer, well above the harvest objective of 2,700 and the previous 10-year average of 2,572. Deer per hunter (1.6 and 1.5 deer during 2008 and 2009, respectively) was slightly higher than the long-term average of 1.4 while the average hunter-days per deer of 3.6 and 3.5 was lower than the long-term average of 4.1 hunter days/deer (Table 1). This harvest data is consistent with anecdotal and field observations in Unit 2, which all suggest the Unit 2 deer population is healthy, stable to increasing, and currently at a 12 to 15 year high.

Harvest during 2008 and 2009 on the main island of POW was the highest on record with 3,088 and 3,251 deer harvested, respectively, and well above the 2,344 average of the previous 10-year period. Success rates in 2008 and 2009 were also very high at 71 and 74%, and well above the long term average of 67% (Table 2).

Hunter Residency and Success. An estimated 48% of the hunters harvesting deer in Unit 2 during the past 2 years were residents of POW Island. Hunters living in communities of POW had a higher success rate than other hunters, with residents enjoying an average success rate of 81% during 2008 and 2009. Ketchikan hunters' share of the Unit 2 harvest during the 2008 and 2009 seasons was 28%, similar to the previous 10-year average of 26% (Table 3). Nonresident effort continued to increase in Unit 2. In 2007 the highest number of out-of-state hunters on record was documented at 219. That was eclipsed in both 2008 and 2009 with 229 and 224 hunters. The combined nonresident success rate for 2008 and 2009 was 54%; much higher than the previous 10-year average of 38%; again indicative of a robust deer population and perhaps an increase in guided hunting activity (Table 4). As black bear hunting opportunities diminish on POW, many lodges, outfitters and guides may be shifting focus to deer.

During the 2008 season, 156 does were reportedly harvested under federal subsistence permits in Unit 2. During 2009, 172 does were reported (Table 5). Based on anecdotal reports we believe this reported doe harvest is likely a very low estimate of actual female deer taken by federal subsistence hunters.

Despite current abundant populations, historically high harvests, and liberal seasons and bag limits there are continued rumblings from the subsistence community about their inability to meet their subsistence needs. These concerns are substantiated in some cases and not in others.

One concern is the perception of increased hunting pressure. The numbers of hunters for this reporting period (2,269 and 2,079 in 2008 and 2009 respectively) are only slightly higher than the long-term average of 1,940 (Table 1). The recently enacted Access Travel Management Plan (ATM) by the USFS will close 150 new miles of road to highway vehicles and convert an additional 222 miles from highway vehicle use to OHV use only (USDA 2009). The ATM may serve to squeeze the same number of hunters into smaller areas, affirming the perception of increasingly crowded hunting conditions.

Harvest Chronology. Most Unit 2 deer are harvested during August, October, and November. From 1998 through 2002 August and November harvests were roughly equal with 27% and 29% of the harvest respectively. As a result of changes to Federal deer hunting regulations in 2003, most nonlocal resident hunters now have only 2 weeks of August to hunt. Federally qualified hunters are also taking advantage of the July season. The August percentage of total take is roughly half (15%) of what it was prior to 2003. For hunters not qualified to hunt under federal regulations, November (which coincides with the rut) is now the most popular time period to hunt by far and accounted for roughly 50% of the total harvest in 2009 (Table 6).

Transport Methods. With the extensive road system in Unit 2, highway vehicles typically dominate the preferred access methods for hunters. During the period 1998–2007, boats accounted for about 18% of the deer hunting effort with highway vehicles accounting for 75%. However, during this reporting period those numbers changed markedly to 29% boat and 63% vehicle (Table 7). This is probably a result of a combination of factors. High deer numbers on several islands west of POW have enticed hunters to use boats to pursue deer in these areas, and, guides using boats to accommodate nonresident hunters have both contributed to the higher percentage of boat use during this report period. As long as deer numbers remain stable in these western islands we expect hunting via boat access to continue to increase in popularity, though it will never overtake the use of highway vehicles.

Other Mortality

We believe that Unit 2 has one of the highest illegal and unreported harvests in the region. Unreported and illegal kill is estimated to be equal to the Unit 2 reported harvest (Table 5). These estimates are based on anecdotal reports, interviews with law enforcement personnel, and former and current research on collared deer on POW. Of an estimated 75,000 deer in Unit 2, the illegal removal of an estimated 3,500 deer equates to a 4.7% mortality rate. The high illegal take is partly due to the extensive and remote road system and the lack of law enforcement personnel. There is also some local acceptance and a culture of poaching. Illegal hunting may increase as hunting becomes more difficult due to decreasing ability to see deer as clearcuts grow in, and increasing hunting pressure with higher unemployment rates. Flynn and Suring (1989) reported that actual hunter kill could be 38% greater than total estimated harvests from hunter reports because of crippling loss. Field observations and voluntary reports of wounding loss verify that our estimates are conservative.

Historically, deer/vehicle collision estimates have remained low (10–25 deer/year) and have not been a significant source of Unit 2 mortality. However, the collision risk has increased with completion of extensive new POW paving projects, which now extend from Craig to Naukati and east to Thorne Bay. In addition, construction and paving of the main 30 road to Coffman Cove was completed in 2008. Higher vehicle speeds, as well as an attractive food source created

by planting grass for erosion control near the roads, will likely cause more deer/vehicle collisions.

HABITAT

Assessment

Although logging activity peaked in the 1980's and early 1990's and declined thereafter, it has seen a resurgence during this reporting period. The Logjam Timber sale involves 73 million board feet of lumber resulting in clear-cut logging of approximately 3,400 additional acres of old-growth habitat. The US Forest Service is planning another large scale sale called the Big Thorne Timber sale which would allow for an additional 100 million board feet of timber from approximately 5,800 acres to be removed from the forest. This sale could begin as soon as 2012. In addition, current legislation before Congress called the Sealaska Bill has the potential to transfer up to 85,000 acres of Tongass National forest to Sealaska Corporation. Of this, potentially 75,000 acres or 117 square miles of additional old-growth habitat could be subjected to clear-cut logging. Although early seral stages of clear-cuts provide exceptional deer forage, the subsequent second growth in the 20 to 30-year-old class eventually reaches a stem exclusion stage where the canopy closes and important understory plants that deer target as forage disappear. Associated with logging is road building, and roads are steadily impinging on deer habitat. As clearcut logging continues to reduce old-growth habitat in Unit 2, deer populations are expected to decline.

Old-growth forests retain important winter forage and provide snow interception. Population models estimate declines in carrying capacity of 50–60% by the end of the logging rotation in 2054. By 2054 we expect few areas will meet projected hunter demand within road-accessible areas and logged portions of Unit 2 (USFS 1989). The USFS is spending some resources to look at second-growth management and is conducting pre-commercial thinning and other treatments for wildlife in some areas. The benefits to deer in these cases may be minimal at best (Farmer et. al. 2006). Long-term consequences of habitat loss include the inability to provide for subsistence needs and a loss of deer hunting opportunities.

CONCLUSIONS AND RECOMMENDATIONS

According to our combined harvest survey information, the Unit 2 harvest objective of 2,700 deer was met in both 2008 and 2009. However, anecdotal reports from hunters and public testimony during an extensive multi-agency Unit 2 deer planning effort during 2006 (Unit 2 Deer Planning Subcommittee 2005) all suggest our best efforts to improve reporting in this unit still significantly underestimate the actual number of deer harvested from Unit 2.

The reported average deer per hunter and the average hunter-days per deer during the past 2 years indicate good recruitment and stable to increasing deer numbers in Unit 2. Numbers of hunters and successful hunters increased slightly during this reporting period and despite increased hunting pressure success rates were still some of the highest on record. All of this information suggests stable to increasing deer numbers.

We should inform the public of the effects of logging on deer populations, so the public is aware of tradeoffs between timber harvest and wildlife. We anticipate that winter habitat loss through

logging will reduce deer carrying capacity for many decades. Long-term consequences of habitat loss include the inability to provide for subsistence needs and the loss of hunting opportunities (Wood 1990, Larsen 1993).

Recent road improvement projects that paved large sections of POW and the planned arrival of a new high-speed ferry at the north end are changing hunter access. New and improved access, coupled with the predicted decline of deer carrying capacity in Unit 2, will require that we monitor deer populations more closely in the future and anticipate management strategies to adapt to changing situations.

Regenerating clear-cuts have reduced the visibility of and access to deer to hunters in some locations, while recent logging may provide good hunting opportunities in the short term in others. Overall though, the loss of winter habitat will most likely reduce deer levels and hunting opportunities. Impacts on habitat due to climate change are unknown at this time.

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Please cite any information taken from this section, and reference as:

Bethune, S. 2011. Unit 2 deer management report. Pages 31–44 *in* P. Harper, editor. Deer management report of survey and inventory activities 1 July 2008–30 June 2010. Alaska Department of Fish and Game. Juneau, Alaska.

Table 1. Unit 2 deer harvest data, regulatory years 1998 through 2009.

Regulatory year	Nr hunters	Nr successful hunters	Percent successful	Total hunter days	Average hunter days	Total deer ^a	Average deer per hunter	Average hunter days per deer
1998	1,968	1,278	65	10,476	5.3	2,426	1.2	4.3
1999	1,938	1,219	63	13,347	6.9	2,527	1.3	5.3
2000	2,252	1,419	63	13,896	6.2	3,028	1.3	4.6
2001	2,047	1,356	66	13,160	6.4	2,865	1.4	4.6
2002	1,956	1,140	58	11,129	5.7	2,169	1.1	5.1
2003	1,518	910	60	8,007	5.3	1,823	1.2	4.4
2004	1,508	1,064	71	7,089	4.7	2,147	1.4	3.3
2005	1,890	1,361	72	10,481	5.5	2,820	1.5	3.7
2006	1,891	1,374	73	9,095	4.8	3,027	1.6	3.0
2007	1,964	1,366	70	10,165	5.2	2,883	1.5	3.5
2008	2,269	1,628	72	12,785	5.6	3,593	1.6	3.6
2009	2,079	1,544	74	11,538	5.5	3,326	1.5	3.5
Average	1,940	1,305	67	10,931	5.6	2,720	1.4	4.1

^a Includes does that were reported killed.

Table 2. Unit 2 deer harvest from Prince of Wales Island only, regulatory years 1998 through 2009.

	Regulatory Year	Nr hunters expanded ^a	Nr successful hunters expanded ^a	Percent successful	Hunter days expanded ^a	Average days per hunter	Average deer per hunter	Deer killed
POW Island	1998	1,868	1,178	63	9,956	5.3	1.2	2,242
	1999	1,833	1,137	62	12,664	6.9	1.3	2,363
	2000	2,150	1,352	63	13,161	6.1	1.3	2,770
	2001	1,907	1,252	66	12,376	6.5	1.4	2,597
	2002	1,814	1,076	59	10,327	5.7	1.1	2,027
	2003	1,385	810	58	7,295	5.3	1.1	1,575
	2004	1,391	963	69	6,530	4.7	1.4	1,915
	2005	1,825	1,293	71	9,199	5.0	1.4	2,603
	2006	1,704	1,235	72	7,958	4.7	1.6	2,656
	2007	1,862	1,296	70	9,734	5.2	1.4	2,695
	2008	2,071	1,464	71	11,150	5.3	1.5	3,088
	2009	1,769	1,325	74	9,664	5.5	1.8	3,251
	Average	1,798	1,198	67	10,001	5.5	1.4	2,426

^a Expanded numbers are derived from a multiplier applied to survey results to yield totals for the area.

Table 3. Unit 1A (Ketchikan) hunters use of Unit 2 deer, regulatory years 1998 through 2009.

Regulatory year	1A Res. Successful Hunters	1A Res. Unsuccessful Hunters	Total 1A Resident Hunters	Total Hunters Unit 2	Deer Harvested By 1A Res.	Total Deer Harvested Unit 2
1998	408	285	693	1,968	813	2,426
1999	328	211	539	1,938	628	2,527
2000	403	250	653	2,252	817	3,028
2001	419	252	671	2,047	848	2,865
2002	369	308	677	1,956	696	2,169
2003	272	209	481	1,518	460	1,823
2004	392	156	548	1,508	788	2,147
2005	356	151	507	1,890	688	2,820
2006	359	184	543	1,891	713	3,027
2007	364	195	559	1,964	776	2,883
2008	450	200	650	2,269	931	3,593
2009	443	196	639	2,079	856	3,326
Average	380	216	597	1,940	751	2,720

Table 4. Unit 2 Hunter residency and success, regulatory years 1998 through 2009.

Regulatory year	Successful				Unsuccessful			
	Local resident ^a	Nonlocal resident	Nonresident	Total	Local resident ^a	Nonlocal resident	Nonresident	Total
1998	765	505	8	1,278	270	381	39	690
1999	691	479	50	1,220	281	361	76	718
2000	851	530	38	1,419	434	322	77	833
2001	724	587	45	1,356	299	334	59	692
2002	577	517	47	1,141	311	420	85	816
2003	489	363	57	909	184	313	111	608
2004	497	515	52	1,064	151	220	73	444
2005	713	563	85	1,361	168	266	95	529
2006	721	590	63	1,374	144	297	78	519
2007	702	588	75	1,365	157	298	144	599
2008	751	768	109	1,628	206	316	120	642
2009	757	652	135	1,544	153	293	89	535
Average	687	555	64	1,305	230	318	87	635

^a Local residents include Alaskans living within Unit 2 boundaries.

Table 5. Unit 2 reported and estimated deer harvest/mortality, regulatory years 1998 through 2009.

Regulatory year	Reported harvest			Unreported & illegal harvest ^a	Estimated total harvest	Estimated r road kills
	Male	Female	Total			
1998	2,426	134	2,560	2,560	5,120	25–30
1999	2,330	198	2,528	2,528	5,056	25–30
2000	2,798	231	3,029	3,029	6,058	25–30
2001	2,736	129	2,865	2,865	5,730	25–30
2002	2,090	79	2,169	2,169	4,338	25–30
2003	1,712	111	1,823	1,823	3,646	30–50 ^c
2004	2,072	75	2,147	2,147	4,294	30–50
2005	2,673	147	2,820	2,820	5,640	30–50
2006	2,915	112	3,027	3,027	6,054	30–50
2007	2,767	116	2,883	2,883	5,766	30–50
2008	3,437	156	3,593	3,593	7,186	30–50
2009	3,154	172	3,326	3,326	6,652	30–50
Average	2,593	138	2,731	2,731	5,462	

^a Unreported and illegal harvest estimated at 100% of reported harvest.

Table 6. Unit 2 deer harvest chronology, regulatory years 1998 through 2009.

Regulatory year	Month of kill							Unk/ other
	July	Aug	Sep	Oct	Nov	Dec	Jan	
1998	0	881	356	489	605	68	0	156
1999	0	545	437	568	717	117	19	126
2000	0	814	372	721	924	88	8	101
2001	10	688	428	567	951	89	5	132
2002	5	615	281	393	657	79	0	140
2003 ^{ab}	73	274	272	390	562	70	7	174
2004	73	315	236	452	809	60	4	197
2005	207	480	391	509	964	100	8	161
2006	178	479	332	505	1223	154	2	154
2007	140	411	294	469	1230	123	5	211
2008 ^c				560	1618	191	0	157
2009	122	482	254	516	1637	180	5	130
Average	73	544	332	512	991	110	5	153

^a Harvest underestimated on state survey because of new federal subsistence regulations.

^b Federal subsistence deer season opens July 24.

^c July-Sept 2008 data unavailable at time of writing.

Table 7. Unit 2 hunter transport method, regulatory years 1998 through 2009.

Regulatory year	Method of transportation ^a					
	Airplane	Boat	Foot	Highway vehicle ^b	Other	Unk
1998	79	336	54	1,488	5	9
1999	59	273	28	1,567	5	5
2000	91	323	60	1,749	9	21
2001	99	329	46	1,568	0	4
2002	69	356	27	1,483	0	21
2003	38	295	38	1,091	0	56
2004	50	293	13	1,139	5	8
2005	83	336	21	1,405	3	42
2006	88	415	39	1,328	6	15
2007	84	395	30	1,423	0	33
2008	81	713	66	1,327	2	69
2009	64	521	48	1,379	8	54
Average	74	382	39	1412	4	28

^aNumbers of successful and unsuccessful hunter trips.

^bIncludes cars, trucks, and off-road vehicles (3- and 4-wheelers).

WILDLIFE
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 115526
JUNEAU, AK 99811-5526

DEER MANAGEMENT REPORT

From: 1 July 2008
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 3 (3,000 mi²)

GEOGRAPHIC DESCRIPTION: Islands of the Petersburg, Kake, and Wrangell area, including Mitkof, Wrangell, Zarembo, Etolin, Kupreanof, Kuiu and adjacent smaller islands in central Southeast Alaska

BACKGROUND

Sitka black-tailed deer inhabit most Unit 3 islands. Deer populations on these islands have historically fluctuated with high and low extremes; clearcut logging has and will continue to reduce winter carrying capacity in some areas. Severe winter weather causes most population declines, and predation by wolves and bears and illegal hunting have extended the length of declines.

During the late 1960s and early 1970s, deer in Unit 3 experienced a series of severe winters that resulted in a significant population decline and led to restrictive regulations and bag limits in 1973. Unit 3 was closed to deer hunting from 1975 through 1979. The area south of Sumner Strait had a limit of 1 antlered deer from 1980 to 1987. The Alaska Board of Game increased this limit to 2 antlered deer in 1988. In 1991 a registration permit hunt with a 15–31 October season and a 1 antlered deer bag limit was opened on parts of Mitkof, Kupreanof, Woewodski, and Butterworth islands, where the deer season had been closed since 1975. The registration permit was replaced with a harvest ticket requirement in 1995. Beginning with the 1993 hunt, the only part of Unit 3 closed to deer hunting was the area within the Petersburg and Kupreanof city limits. The board abolished that prohibition in fall 2000. At the fall 2002 meeting, the Board of Game extended the season length and increased the bag limit for deer on the Lindenberg Peninsula, aligning the deer regulations on all of Kupreanof Island with the majority of Unit 3. In another action, the board established the Petersburg Management Area, an archery-only hunt area within the Petersburg city limits, and extended the archery-only deer season in this area by an additional 2 weeks. At its fall 2004 meeting, the Board of Game adopted a regionwide regulation requiring that deer hunters use harvest tickets in sequential order and carry any unused tickets with them while hunting.

Most of Unit 3 is federal land managed by the U.S. Forest Service (USFS). This area has experienced a significant amount of logging activity over the years. Initial access to most hunting areas is by water. However, in many areas, once hunters arrive, extensive networks of logging

roads are used for additional access to hunting areas. The communities of Petersburg, Wrangell and Kake are located in the unit and some hunters use local road systems to access hunting areas.

Seasons and bag limits for deer on Mitkof Island and Unit 3 in general are more restrictive compared to other island-dominated management units in the region. Between 1994 and 2005, the estimated Unit 3 deer harvest ranged from 603 to 1,119, and the number of hunters varied from 891 to 1,220. In 2005, the estimated unitwide harvest began decreasing, a trend that continued into the current report period.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

As established by the board during its fall 2000 meeting in response to the intensive management of game law [AS 16.05.255 (i)(4)], the management goal is to manage the Unit 3 deer population to achieve and maintain a population of 15,000 deer while maintaining an annual harvest of 900 deer.

MANAGEMENT OBJECTIVES

- Increase deer populations on winter range (<1,500 ft elevation) to 32 deer/mi², measured by a mean pellet density of 1.0 pellet group/20 m² plot.
- Monitor deer densities using pellet-group surveys.
- Monitor deer harvest using mailed questionnaires.

METHODS

We estimated Unit 3 deer harvest from a regional questionnaire mailed randomly to 33% of deer harvest ticket holders (ADF&G 2009; ADF&G 2010). We measured winter deer density with spring pellet-group transects in selected areas.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Snow cover in the Petersburg area was well above average during the winters of 2006–2007, 2007–2008, and 2008–2009. Because winter severity can influence the results of pellet-group surveys, inferences about population trends based on year-to-year variations in observed pellet-group densities must be made with caution. Nonetheless, we believe the recent declines in pellet-group densities and the decline in the estimated unitwide harvest reflect actual declines in the unit's deer population

In spring 2008, pellet-group counts were conducted in 4 Value Comparison Units (VCUs) on 2 islands in Unit 3 (Table 1). Woewodski (South Mitkof Island) pellet-group counts declined from 1.06 pellet-groups/plot in spring 2007, to .98 in spring 2008. The 3 VCUs sampled on Zarembo Island in spring 2008 revealed high variability in pellet count densities across the island. Two of

the 3 VCUs sampled on Zarembo Island in spring 2008 showed decreasing pellet-group densities compared to spring of 2006 (the last time they were sampled), and 1 VCU increased compared to its last sampling in spring 2004. At Baht Harbor, counts were 1.19 pellet-groups/plot, down from 1.51 in spring 2006. At St. John Harbor, counts were 0.99 pellet-groups/plot, down from 1.98 in spring 2006. Counts at Meter Bight were 2.29 pellet-groups/plot, up considerably from 1.41 in spring 2004.

In spring 2009, pellet-group counts were conducted in 2 VCUs on 3 islands in Unit 3. Woewodski (South Mitkof Island) pellet-group counts continued a decreasing trend that began in 2007, down from .98 pellet-groups/plot in spring 2008 to .81 in spring of 2009. This represents the second lowest count since pellet-group counts were initiated in that area in 1984. The 1 VCU sampled on Etolin and Onslow Islands in spring 2009 decreased from 1.33 in 2007, to 0.96 in 2009.

MORTALITY

Harvest

<u>Season and Bag Limit</u>	<u>Resident and Nonresident Hunters</u>	
Unit 3, Mitkof Island, the Petersburg Management Area	15 Oct–15 Dec	2 bucks
Unit 3, remainder of Mitkof Island, Woewodski and Butterworth islands	15 Oct–31 Oct	1 buck
Remainder of Unit 3	1 Aug–30 Nov	2 bucks

Board of Game Actions and Emergency Orders. No Board of Game actions took place and no emergency orders were issued regarding deer hunting in Unit 3 during the report period.

Hunter Harvest. In 2008, the Unit 3 deer harvest continued a decreasing harvest that began in 2005. The estimated unitwide harvest of 333 deer in 2008 was the lowest reported harvest since 1990 and well below the preceding 10-year average of 816 (Table 2). In 2009 the estimated harvest increased to 547. The decline in the number of hunters during the report period, and reduced deer abundance resulting from severe winter weather and predation likely contributed to the low harvest estimates during the report period.

Hunter Residency and Success. Few nonresidents hunt deer in Unit 3, and most hunters are local residents (Table 3). Nonresidents composed just 6% and 2%, respectively, of all Unit 3 deer hunters in 2008 and 2009. Deer populations are greater and seasons and bag limits more liberal in other nearby units, attracting most nonlocal hunters to those areas. During the report period, the estimated number of hunters declined to their lowest levels on record. The total number of hunters decreased from 682 in 2007 to 556 in 2008, continuing a steady decline that began in 2005. In 2009, the estimated number of hunters increased slightly to 570, but remained well below the preceding 10-year average of 926. The hunter success rate declined from 49% in 2006, and 41% in 2007, to 38% each during 2008 and 2009.

Harvest Chronology. Table 4 shows the historical Unit 3 deer harvest percentage by month. Since 2002, the highest percentage of the unitwide deer harvest has typically occurred during November, followed in descending order by October, August, and September. During 2008 the highest percentage of the harvest occurred during November, October and December in descending order. The Unit 3 deer season is closed during the month of December, so the reported level of harvest during that month represents either illegal harvest, misreporting on the part of hunters, or is possibly an artifact of the expansion factor used to derive monthly harvest estimates. During 2009 the highest percentage of the harvest occurred during November, followed in descending order by October and August.

Transport Methods. In 2008, most hunters reported using boats, highway vehicles and airplanes in descending order, to access their hunting areas. In 2009 an equal percentage of hunters reported using boats and highway vehicles, followed by airplanes, to access their hunting areas (Table 5).

Other Mortality

In addition to mortality resulting from legal hunting, other sources of deer mortality include predation by wolves and bears, poaching, deer-vehicle collisions, injury and accidents, and starvation or other natural causes. We have no estimates of nonhunting mortality during the report period.

CONCLUSIONS AND RECOMMENDATIONS

Unit 3 deer populations and estimated harvest steadily declined from 2004 to 2008. With the possible exception of a few smaller islands, Unit 3 deer exist largely at levels well below carrying capacity. During the preceding report period the central Alaska panhandle, including Unit 3, experienced 2 consecutive winters with well above average snowfall. During the winter of 2006–2007, the Petersburg and Wrangell areas broke all-time records for snowfall (229.7 inches Petersburg and 148.5 inches Wrangell) (NOAA 2010). The winter of 2008–2009 also resulted in above average snowpack though not as severe as the 2 preceding winters. All but 1 of the 6 pellet-group surveys conducted in spring 2008 and 2009 showed decreased pellet-group densities. The only VCU sampled during the report period that had increased pellet-group densities was VCU 459 (Meter Bight) on Zarembo Island in 2008. Slight variations in pellet-group densities can be expected even when populations are stable because annual weather variations can affect how long pellet groups persist through a winter, and deer use of transects surveyed can vary somewhat. However, we believe that due to the severity of winter weather in 2006–2007, 2007–2008, and 2008–2009, the observed declines in both pellet-group densities and estimated hunter harvest reflect actual declines in deer numbers.

Factors potentially contributing to the decline in the GMU 3 deer population and harvest include 3 consecutive deep snow winters (2006–2007, 2007–2008 and 2008–2009), continued reductions in deer carrying capacity resulting from the harvest of productive old growth stands important for overwinter survival, second growth stands entering stem exclusion, and predation by wolves. Furthermore, increasing road densities increase hunter access making more deer more vulnerable to human-caused mortality.

The Board of Game Intensive Management (IM) Unit 3 harvest objective of 900 deer was last achieved in 2004 when an estimated 921 deer were taken. Since then the estimated unitwide harvest has declined annually reaching a low of 333 deer in 2008.

Although we recommend no changes deer seasons or bag limits at this time, some effort to reduce predation on deer may be necessary to bring Unit 3 deer into compliance with Intensive Management population and harvest objectives. Research is needed to evaluate the respective roles weather, clearcut logging, and predation play in influencing Unit 3 deer populations

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Lowell, R.E. 2011. Unit 3 deer management report. Pages 45–57 *in* P. Harper, editor. Deer management report of survey and inventory activities 1 July 2008–30 June 2010. Alaska Department of Fish and Game. Juneau, Alaska.

Table 1. Unit 3 deer population trends as indicated by pellet-group surveys, 1981–2009.

Area	Regulatory year	Mean pellet- groups/plot	Number of plots	95% CI
Security Bay (VCU 400)	1984	.02	360	0.01–0.04
	1989	.25	304	0.16–0.34
	1995	.22	268	0.15–0.29
	2000	.09	201	0.05–0.14
Pillar Bay (VCU 403)	1988	.16	337	0.10–0.22
	2000	.18	264	0.13–0.23
Malmesbury (VCU 408)	1990	.11	206	0.05–0.18
	2000	.06	254	0.03–0.09
Conclusion (VCU 417)	1987	2.66	207	2.32–3.01
	1989	.95	200	0.72–1.18
	1991	.71	200	0.53–0.88
	1996	1.45	191	1.19–1.70
Big John Bay (VCU 427)	1994	.38	300	0.29–0.48
431–Point Barrie (VCU)	1988	.23	357	0.17–0.29
	1993	.77	375	0.64–0.90
Big Level (VCU 434a)	1981	1.54	399	1.45–1.63
	1983	1.56	336	
	1986	1.66	382	1.41–1.90
	1989	1.07	227	
	1991	2.16	456	1.90–2.41
Little Level (VCU 434b)	1981	2.48	114	2.02–2.94
	1983	2.34	136	
	1986	1.39	122	1.07–1.70
	1989	1.52	137	
	1991	3.59	132	3.07–4.11
Castle River (VCU 435)	1984	.19	312	0.12–0.26
	1987	.51	305	0.37–0.65
	1989	.40	312	0.25–0.56
	1994	.32	310	0.20–0.40
	1997	.36	281	0.28–0.44
	2007	.12	275	0.07–0.17

Table continues next page

Table 1. continued.

Area	Regulatory year	Mean pellet- groups/plot	Nr plots	95% CI
East Duncan Canal (VCU 437)	1990	1.12	227	0.92–1.32
	1992	.78	213	0.63–0.94
	1998	1.04	153	0.77–1.30
	2001	1.89	254	1.59–2.19
	2007	1.37	262	1.10–1.65
Portage Bay (VCU 442)	1993	.43	282	0.30–0.56
	1995	.43	277	0.63–0.94
	1998	.39	285	0.29–0.49
Woewodski (S. Mitkof) (VCU 448)	1984	.088	295	0.69–1.08
	1985	1.00	209	0.82–1.19
	1987	1.65	195	1.85–2.61
	1988	1.33	433	1.16–1.51
	1989	1.35	417	1.24–1.73
	1990	1.46	355	1.28–1.64
	1991	1.80	316	1.52–2.07
	1992	0.79	248	0.62–0.97
	1993	1.06	230	0.85–1.27
	1994	1.14	152	0.82–1.46
	1995	1.38	157	1.08–1.67
	1996	2.25	243	1.95–2.55
	1997	1.56	282	1.27–1.84
	1998	1.10	282	0.91–1.29
	1999	1.36	196	1.11–1.60
	2000	1.27	226	1.05–1.50
	2001	1.43	220	1.17–1.68
	2002	0.50	216	0.36–0.64
	2003	1.06	250	0.87–1.25
	2004	0.82	279	0.65–0.98
	2006	1.63	180	1.26–2.00
	2007	1.06	235	0.83–1.28
	2008	0.98	162	0.74–1.22
	2009	0.81	234	0.63–0.98
4Woewodski Island (VCU 448a)	1991	1.86	461	1.66–2.05
	1994	1.30	510	1.15–1.46
Frederick (N. Mitkof) (VCU 449)	1981	.08	945	0.06–0.11
	1990	.55	180	0.36–0.74
	1992	.54	227	0.42–0.65

Table continues next page

Table 1. continued.

Area	Regulatory year	Mean pellet-groups/plot	Nr plots	95% CI
Blind Slough (Central Mitkof) (VCU 452)	1992	1.04	114	0.77–1.30
	1993	1.28	265	1.04–1.51
	1997	1.61	245	1.34–1.88
Dry (VCU 454)	1981	.92	91	0.56–1.28
	1993	1.44	210	1.17–1.72
	1997	1.26	188	0.88–1.39
Vank Island Group (VCU 455)	1981			
a) Sokolof		1.73	900	1.61–1.85
b) Rynda		.25	281	0.18–0.32
c) Greys		.25	284	0.18–0.32
Baht (VCU 456)	2001	2.75	109	2.10–3.41
	2003	1.80	108	1.45–2.15
	2004	2.12	101	1.73–2.51
	2006	1.51	108	1.14–1.88
	2008	1.19	125	0.86–1.52
St. John (VCU 457)	2001	1.67	220	1.38–1.93
	2003	1.17	229	0.96–1.38
	2004	1.75	213	1.44–2.03
	2006	1.98	211	1.65–2.31
	2008	0.99	225	0.81–1.17
Snow Passage (VCU 458)	1994	.57	345	0.45–0.70
	1997	.98	315	0.80–1.16
	2001	1.50	280	1.28–1.72
	2003	1.02	306	0.84–1.20
	2004	1.08	262	0.89–1.27
	2006	1.52	289	1.26–1.78
Meter (VCU 459)	2001	0.87	180	0.64–1.10
	2003	0.89	180	0.68–1.10
	2004	1.41	155	1.07–1.75
	2008	2.29	80	1.33–3.24

Table continues next page

Table 1. continued.

Area	Regulatory year	Mean pellet- groups/plot	Nr plots	95% CI
Woronkofski (VCU 461) (All Transects) (Trans. 10, 11, 12)	1985	1.63	646	1.45–1.81
	1985	2.01	218	1.62–2.39
	1987	2.23	201	1.85–2.61
	1989	2.52	223	2.18–2.85
	1991	1.59	203	1.32–1.85
	1993	.22	225	0.13–0.31
	1994	.26	224	0.18–0.34
	1999	0.11	216	0.06–0.17
	2003	0.08	227	0.03–0.13
Mosman (VCU 467)	1993	.07	304	0.03–0.11
Onslow (VCU 473)	1984	.37	321	0.28–0.46
	1985	.59	334	0.48–0.70
	1986	.72	347	0.59–0.84
	1987	.42	336	0.31–0.55
	1988	.44	329	0.32–0.55
	1991	.66	322	0.51–0.80
	1993	.68	341	0.55–0.82
	1994	.88	340	0.74–1.02
	1997	.73	346	0.59–0.86
	2001	.97	332	0.81–1.13
	2005	0.60	363	0.48–0.71
	2007	1.33	339	1.13–1.53
	2009	0.96	366	0.81–1.10
Fool's (VCU 480)	1994	.54	193	0.38–0.70
	2000	.61	201	0.45–0.77
Canoe (VCU 474)	2000	.11	228	0.06–0.17
Coronation (VCU 564)	1983	1.20	696	1.04–1.36
	1985	2.34	228	N/A
	1988	1.41	408	1.17–1.66
	1989	1.63	293	1.28–1.98
	1997	.44	289	0.34–0.55

Table 2. Unit 3 (estimated) deer harvest, 1996–2009.

Regulatory year	Estimated legal harvest ^a							
	M	(%)	F	(%)	Unk.	Total	Estimated illegal harvest	Total
1994	690	(100)			0	690	0	690
1995	844	(100)			0	844	22	866
1996	588	(100)			0	588	15	603
1997	773	(100)			0	773	7	780
1998	1,005	(100)			0	1,005	114	1,119
1999	862	(100)			0	862	70	932
2000	984	(100)			0	984	36	1,020
2001	853	(100)			0	853	0	853
2002	624	(100)			0	624	0	624
2003	888	(100)			0	888	13	901
2004	921	(100)			0	921	0	921
2005	710	(100)			0	710	8	718
2006	594	(100)			0	594	16	610
2007	457	(100)			0	457	0	457
2008	328	(100)			0	328	5	333 ^b
2009	543	(100)			0	543	4	547

^a Estimates are based on data from a mail questionnaire sent to hunters.

^b Deer harvest reports for the 2008 hunting season were not returned from residents of Kake

Table 3. Unit 3 deer hunter residency and success, 1996–2009.

Regulatory year	Successful					Unsuccessful					
	Local ^a resident	Nonlocal resident	Nonresident	Total	(%)	Local ^a resident	Nonlocal resident	Nonresident	Total	(%)	Total ^b hunters
1996	379	33	6	418	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1997	511	33	0	544	(49)	512	43	9	564	(51)	1,108
1998	612	48	17	677	(59)	419	32	17	468	(41)	1,145
1999	500	68	5	573	(48)	563	56	9	628	(52)	1,201
2000	513	90	0	603	(49)	526	86	5	617	(51)	1,220
2001	435	48	10	493	(49)	459	45	15	519	(51)	1,012
2002	363	51	14	428	(48)	413	22	28	463	(52)	891
2003	480	66	21	567	(58)	345	38	20	403	(42)	970
2004	500	51	9	560	(53)	410	67	21	498	(47)	1,058
2005	404	64	5	473	(52)	356	71	15	442	(48)	915
2006	298	40	32	370	(49)	320	57	9	386	(51)	756
2007	264	14	5	283	(41)	315	66	18	399	(59)	682
2008	184	25	5	214	(38)	284	31	27	342	(62)	556 ^c
2009	197	16	6	219	(38)	325	20	6	351	(62)	570

^a Residents of Units 1B, 3, Meyers Chuck, Point Baker, and Port Protection.^b Data from registration permit report and hunter survey included.^c Deer harvest reports for the 2008 hunting season were not returned from residents of Kake

Table 4. Unit 3 deer percentage of harvest by month, 1996–2009.

Regulatory year	Harvest periods										Total ^a nr deer
	August	September	October	November	December	January	February	March	April	Unk.	
1996	14	7	43	21	1	0	0	0	0	14	588
1997	20	10	35	26	0	1	0	0	0	8	780
1998	13	7	41	31	1	1	1	0	1	4	1,118
1999	15	9	36	33	1	0	1	0	0	5	932
2000	13	9	39	30	0	0	0	0	0	9	1,020
2001	13	14	50	18	0	1	0	0	0	4	853
2002	15	16	25	36	0	0	0	0	0	8	624
2003	19	9	27	30	0	0	0	0	0	15	901
2004	15	10	36	30	1	0	0	0	0	8	921
2005	15	6	30	38	0	0	1	1	0	9	717
2006	21	11	25	35	1	0	0	0	0	7	610
2007	17	5	19	52	1	0	1	0	0	5	458
2008	0	0	31	58	2	0	0	0	0	9	201 ^b
2009	13	6	15	58	0	0	0	0	0	7	548

^a May not equal harvest table due to rounding or incomplete reporting.^b Deer harvest reports for the 2008 hunting season were not returned from residents of Kake

Table 5. Unit 3 deer hunter percentage of effort by transport method, 1996–2009^a.

Regulatory year	Airplane	Boat	3- or 4-wheeler	Foot	Highway vehicle	Other	Unknown	Number of trips
1996	1	50	13	2	34	0		NA
1997	1	55	13	0	31	0		NA
1998	1	53	6	1	39	0		NA
1999	1	35	13	1	50	0		NA
2000	2	38	7	1	52	0		NA
2001	0	37	7	0	56	0		NA
2002	3	38	8	2	49	0		NA
2003	0	49	6	2	40	3		NA
2004	1	47	5	2	43	2		1,580
2005	1	39	5	2	52	0	1	1,263
2006	4	51	0	1	37	1	6	756
2007	1	55	5	1	35	0	3	683
2008	3	53	0	2	43	0	0	546 ^b
2009	2	47	0	1	47	0	2	569

^a The hunter mail survey reports transport as total number of hunting trips by method.

^b Deer harvest reports for the 2008 hunting season were not returned from residents of Kake

WILDLIFE
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 115526
JUNEAU, AK 99811-5526

DEER MANAGEMENT REPORT

From: 1 July 2008
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 4 (5,820 mi²)
GEOGRAPHIC DESCRIPTION: Admiralty, Baranof, Chichagof, and adjacent islands

BACKGROUND

Game Management Unit 4 (Unit 4) provides a substantial portion of the deer hunting opportunity in Southeast Alaska. However, the severe winter of 2006–2007 dealt a significant blow to the population with major losses occurring throughout the unit. Hunter success and effort reflected the deer population decline. The following winters of 2007–2008 and 2008–2009 produced above average snowfall and a long-lasting snowpack well into late May in many locations. However, the winter of 2009–2010 provided a reprieve for the deer as snowfall was 36% below the previous 5-year mean on northeast Chichagof Island, and 67% lower on the southern end of Baranof Island.

Significant changes in deer density over time are normal in Unit 4. Periodic declines are attributable to severe winter weather; most importantly deep snow (Olson 1979). Deer populations were low in the late 1940s following years of high winter mortality. By 1956 deer increased to exceed carrying capacity (Klein and Olson 1960). In recent history severe winters appear to be on an 11-year cycle, with intervening mild winters. Most winters in Unit 4 were mild from the mid 1970s through 1987–1988, with high survival of fawns and adult deer. However, during the winters of 1988–1989 through 1990–1991, persistent snow caused significant deer mortality. During the winters of 1994–1995 and 1998–1999 many deer died, but these appeared to be relatively minor setbacks. A series of mild winters beginning in 1999 until 2005–2006 allowed the population to build to a point that it likely exceeded the habitat capability. The winters of 2006–2008 set new records for snow depth not only in Unit 4, but throughout many locations in Southeast. Deer mortality in the northern areas of Chichagof Island was very high and devastated the population, based on data collected from aerial surveys, boat-based shoreline condition surveys, mortality surveys, road surveys, as well as anecdotal information from hunters, guides, and project crews working in the area. Additionally, multitudes of deer found dead on the beaches, floating in the bays (most significantly in spring 2007), and also the lack of deer seen by hunters in the alpine in fall 2007 and 2008 indicated the severity of the winters had led to high mortality on northeast Chichagof Island. Other areas within the unit with more intact natural habitats (lack of industrial-sized clearcut logging practices) and favorable topographic features didn't appear to be hit quite as hard. The winters of 2009–2010 recorded substantially less snowfall from the previous 3 year period and allowed for

a significant reduction in winter mortality for deer. Noticeable increases in the numbers of fawns and yearlings were seen during survey and research work as well as reported by hunters during this period.

Deer densities are expected to decline in the long term due to habitat alteration caused by commercial logging. Kirchhoff (1994) pointed out that following clearcut logging, browse availability declines as forest regeneration progresses. He also noted that snow accumulation in clearcut areas during severe winters precludes use by deer, resulting in potential starvation mortality. Farmer and Kirchhoff (1998) reiterated that differences in habitat use and mortality may be attributed to forage abundance and availability (Wallmo and Schoen 1980), nutritional quality (Hanley et al. 1989), snow (Kirchhoff and Schoen 1987), and predation risk (Kirchhoff 1994).

Since 1990 both state and federal subsistence hunting regulations have been in effect. The Alaska Board of Game adopted state regulations that apply on all lands in Unit 4. The Federal Subsistence Board promulgated regulations that apply only on federal lands and give federally-qualified subsistence hunters more liberal season dates and bag limits. While the two sets of regulations were initially similar, they have diverged over time.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

As established by the Alaska Board of Game during its fall 2000 meeting in response to the intensive management of game law [AS 16.05.255 (k)(4)], the management goal is to manage the Unit 4 deer population to achieve and maintain a population of 125,000 deer while maintaining an annual harvest of 7800 deer.

MANAGEMENT OBJECTIVES

- Maintain a population capable of sustaining a mean reported harvest of at least 1.5 deer per hunter.
- Maintain a population capable of providing a minimum reported success rate of 1 deer killed per 4 days hunting effort.
- Maintain the male component of the deer harvest at a minimum of 60%.

METHODS

We collected population information from anecdotal reports provided by hunters, from a mail survey of hunters, from field observations during deer capture events, through traditional spring pellet-group surveys, through deer body condition surveys, fawn detection surveys, and spring mortality transects. In addition, a new technique for estimating deer abundance was developed during this report period. Brinkman developed a technique to identify individual deer using fecal DNA and used DNA-based mark and recapture techniques to estimate population trends in distinct watersheds on Chichagof Island (Brinkman et al. 2010). Managers are excited about this new technique that allows for individual identification of deer through DNA analysis of fecal pellets.

We collected harvest data from an annual questionnaire mailed to a random sample of hunters who were issued deer harvest tickets during the hunting season. We mailed harvest questionnaires to 33% of all harvest ticket holders and expanded our results to cover all harvest ticket holders. Due to growing issues on northeast Chichagof Island associated with low deer numbers and the importance of obtaining accurate harvest data, we sampled 100% of the harvest ticket holders in the community of Hoonah to improve our harvest estimates for that community.

Population data was gathered through spring surveys of fecal pellet groups. The technique has been used to collect population trend data since 1981. Kirchhoff and Pitcher (1988) have described the methods in detail.

During winter 1998, we developed and field-tested methods to document the condition of deer that were physiologically stressed due to severe winter conditions. During periods of heavy snowfall, deer become concentrated on beaches, and we established specific boat routes to examine the physical condition of these deer. We viewed deer through binoculars at ranges of 25–200 meters, and assigned each individual to one of 7 condition classifications. We documented changes in deer condition through the late winter. These surveys have been repeated periodically including during this report period (see Table 6 for the classification and *Other Mortality* section for results.)

Fawn surveys (presence or absence of tracks) were conducted in late June through the end of July (2010) at 14 tidal flat locations in the unit. Although we have not conducted this type of survey regularly, we believe it can be used as an indication of recruitment immediately following a severe winter.

Although no formal investigations were conducted regarding parasites in deer, we inspected several animals during the course of this report period. We found ectoparasites (ticks and lice) on some of those animals examined.

Data in this report are compiled by regulatory year (RY), with the current report period pertaining to RY08 and RY09. A regulatory year begins on July 1 and ends on June 30 of the following calendar year: RY08=July 1, 2008–June 30, 2009.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

A series of winter storms beginning in November 2006 broke a mild winter period going back to 1999. The winter of RY06 ended up with the deepest snowfall measurements on record for many locations in Southeast Alaska. Significant snowfall during the entire month of March 2007 (Lewis 2007) left places like upper Tenakee Inlet with 122 inches of snow at the high tide line well into the last week of April. Late spring snow combined with a deep and persistent snowpack resulted in a high mortality rate among deer. It is likely the deep snow limited foraging opportunities while also draining reserves during locomotion. These 2 factors proved too much for many deer as mortalities became commonplace throughout many areas of the unit. With their fat reserves exhausted and existing on a maintenance diet, the lack of access to forage and the effort needed to search for it resulted in many deer mortalities. It also appeared that during extreme high tides, many deer were washed into the ocean, either because they died at the upper

tide line and were swept away, or, were trapped between the upper tide line and the deep snow that prevented them from escaping the rising waters. Whatever the cause, many deer carcasses were observed floating in the ocean during the spring of 2007.

Habitat quality and winter severity vary significantly throughout the unit because of local climatic factors, topography, and the extent of logging activities. Northern and eastern portions of the unit generally experience greater snow depths and sustain higher winter mortality. Areas logged before 1970 are entering a stage of natural reforestation with an impaired ability to support deer over the long term. Because of the extent of clearcut logging, future deer carrying capacity will be lower than pre-logging levels. Many popular deer hunting areas will not be capable of sustaining harvest levels seen in the last decade.

Pellet-group surveys during 2000–2006 (McCoy 2009) generally reflect a slightly increasing deer population (Table 1). This is undoubtedly a result of deer being subjected to relatively light-to-moderate winter snow conditions with only minor mortality due to starvation. Severe winter conditions beginning in fall 2006 and extending through the following 2 winters have reversed the trend. Evaluation of the deer population status for management purposes should continue to be based on a variety of indicators, including pellet-group surveys, beach mortality transects, shoreline deer condition surveys, fawn track-tidal flat surveys, hunter contacts, field observations, and harvest questionnaires.

Population Size

Deer pellet-group surveys conducted during the springs of 2007 and 2008 (McCoy 2010) were not conclusively lower as one would have expected, given the rather severe winters preceding these counts (Table 1). In some cases, the deer pellet density actually increased. This pellet count technique may not fully reflect deer populations in late winter because deer that deposited pellets during December or January may have died in February or March. Snowfall that concentrates deer in restricted habitats may result in high pellet densities in such areas. In years with little snow accumulation, wintering deer may be scattered over wide areas or at elevations above transect boundaries. Transects done in spring of 2009 and 2010 in the Northeast Chichagof watersheds do show increases that one would expect with recovering deer populations.

The drastic decline in harvest from RY06 to RY07 is a good reflection of the lower deer population. After the severe winter of 2006, we expected the 2007 harvest to be much lower, and indeed it was (Table 2). The combination of substantially fewer deer along with the late closure of the doe season across much of the unit led to the low harvest of 2007. Not only does the decline in harvest reflect a downturn in population size, but other indicators do as well. Our surveys indicated a significant lack of physical evidence of deer; few pellets on summer range, excellent growth of preferred deer browse at all elevations, lack of deer tracks, and few sightings during key locations and time periods.

Surveys during this report period, especially in areas south of Tenakee Inlet through Hoonah Sound and south to Necker Bay, indicated an increasing deer population. This was also reflected by an increase in deer harvest in 2008–2009. A small reduction in hunter effort (days spent afield to harvest a deer) also indicated a rebounding population. Northern Chichagof Island exhibited a much slower recovery during the same time period however.

Population Composition

The sex composition of the legal kill (Table 2) was estimated from deer harvest questionnaires (ADF&G 2009, ADF&G 2010). Extrapolations of hunter reports in RY08 estimated a harvest of approximately 2,893 bucks (76%). During the RY09 season, hunters reported harvesting 2,616 bucks (68%). However, these data are skewed toward bucks because of the doe closure on Northeast Chichagof Island.

MORTALITY

Harvest

<u>Season and Bag Limit.</u>	<u>Season Dates</u>	<u>Bag Limit</u>
Unit 4, that portion of Chichagof Island east of Port Frederick and north of Tenakee Inlet including all drainages into Tenakee Inlet and Port Frederick.	1 Aug–31 Dec	3 deer; however, antlerless deer may be taken only from 15 Sep - 31 Dec
Remainder of Unit 4	1 Aug–31 Dec	4 deer; however, antlerless deer may be taken only from 15 Sep –31 Dec

Board of Game Actions and Emergency Orders. The doe harvest was closed on northeast Chichagof Island in both state and federal seasons of RY2008 and RY09 by joint state emergency orders and Federal Subsistence Board actions.

Hunter Harvest. Responses from the hunter harvest surveys indicated there were 1,570 successful deer hunters in Unit 4 during RY08 and 1,433 during RY09 (Table 3). These numbers indicate a significant reduction in successful hunters compared to 2005 and 2006; prior to the huge die off in spring 2007. The doe closure in response to the die off likely further reduced the number of successful hunters.

In RY08 the reported harvest was 3,855 deer. During RY09 hunters reported harvesting 3,909 deer. Weather during the deer hunting season influences the amount of effort by hunters (Faro 1997), thus influencing the harvest. When early snow is sufficient to push deer from higher elevations to beaches, hunters are generally more successful. Illegally shooting from boats causes high crippling rates and loss of deer. Crippling loss, unreported kills, and illegal kills are difficult to accurately determine, but are estimated at approximately 25% of the reported harvest (Whitman 2003). Based on that assumption, the total hunter-related deer mortality was estimated to be about 4,819 deer during RY08. The estimated kill for RY09 is 4,886 deer (Table 2).

Hunter Residency and Success. During RY08 a total of 863 Unit 4 hunters were successful (Table 3) and harvested an estimated 2,648 deer (3.0 deer/successful hunter). Residents of Unit 4 made up 49% of the hunters in RY08, Alaska residents from outside Unit 4 made up 48% of the hunters, and nonresidents made up the remaining 3%. The number of nonlocal hunters increased

21% from the previous season, probably due to their expectations of a rebounding deer population. The majority of the nonlocal hunters are from adjacent communities in Southeast Alaska. During RY08 74% of Unit 4 residents, 58% of nonlocal Alaska residents, and 57% of nonresidents were successful at taking at least 1 deer.

In RY09 a total of 826 Unit 4 hunters were successful (Table 3) and harvested an estimated 1,306 deer (3.3 deer/successful hunter). Residents of Unit 4 made up 49% of the hunters in RY09, while Alaska residents from outside Unit 4 made up 47% (a decline of 1% from the previous year), and nonresidents made up 5% of the hunters. During RY09, 74% of Unit 4 residents, 56% of non-local Alaska residents, and 47% of nonresidents were successful in taking at least 1 deer.

Harvest Chronology. Most hunters continue to target November for deer hunting, making it typically the greatest single-month for harvest. During RY08, the November harvest accounted for 1,894 deer, or 49% of the harvest (Table 4). December provided the next highest deer harvest (30%) and October (14%) the next. Doe closures were implemented in early October under both state and federal management for the Northeast Chichagof Controlled Use Area (NECCUA) in fall 2008, or the harvest chronology in this area would have been different. The federal season in January generally results in about 3–8% of the reported annual harvest; its variability related to the amount of snowfall.

In RY09, the November harvest accounted for 1,969 deer, or 41% of the harvest (Table 4). The December harvest accounted for the next highest percentage (36%) followed by an October harvest of 6%. The federal season in January provided 5% of the reported annual harvest. Doe closures were again implemented under state and federal management for the NECCUA area during fall 2009.

Transport Methods. Deer hunter transportation type remains almost identical with past years (Table 5). During RYs 08–09 boats were used for 80% of the harvest, while airplanes were used for 7.5% of the harvest. Hunters who walked from their respective residences took 3% of the harvest, and hunters using highway vehicles took 7% of the harvest over the 2 years. Hunters using an off-road vehicle (ORV; 3 or 4-wheelers) took <1% of the harvest. Transport methods have changed little since the 1988–1989 season when data were first collected.

Other Mortality

Starvation mortality due to severe winters had significant effect on Unit 4 deer during the previous report period, and during the first year of this report period. In RY09 though, milder weather seems to have allowed deer to survive at a higher rate. Sixteen 1-mile beach mortality transects that tallied 3.8 mortalities per mile in spring 2007, yielded only 1.6 and .03 mortalities per mile during the spring of RY08 and RY09 respectively.

During February thru late April in RY08 and RY09, 7 boat surveys were completed along more than 150 miles of beach shoreline in areas north of Sitka, Peril Strait, and Tenakee Inlet in an effort to quantify physical condition of wintering deer. During those shoreline deer assessment surveys, 228 deer (RY08) and 278 deer (RY09) were classified. Mean condition of deer seen during these surveys was 3.9 (see the classification guideline scale at Table 6) and only 2 winter-killed deer were found. Overall, we saw fewer deer due to a lack of a deep snowpack holding

deer at lower elevations, but the composition of deer observed had a greater percentage of fawns and yearlings than during the previous report period.

Parasites

Incidental observations of deer lungs reveal that lungworm (*Dictyocaulus viviparus*) does occur in Unit 4 deer, but is assumed to be fatal only infrequently (Whitman 2003). Incidental examinations of additional deer indicate that incidence of lungworm in fawns is high. As a deer matures, incidence of adult worms appears to decline, but most deer show tissue scarring in the lungs from previous infestations that they have overcome. Secondary problems associated with fluid in the lungs (lungworm-pneumonia complex) were not evident. Although presence of roundworms (*Metastrongylidae*) does not necessarily noticeably affect deer, nutritionally stressed individuals may be compromised. We suspect that although *D. viviparus* is ubiquitous within the deer population, it only becomes a problem when deer become nutritionally stressed in conjunction with severe winter weather (Whitman 2003).

Nasal bots (*Cephenemyia jellisoni*) have been previously documented in Unit 4 deer (Whitman 2003), but their incidence is relatively low. Other than making incidental observations, we did not conduct any specific parasite examinations for ticks (*Dermacentor*) or sucking lice (*Tricholipeurus lipeuroides*) during this reporting period.

HABITAT

Assessment

During the report period incidental data (field notes and photographs) were collected during pellet-group and other field surveys noting the overall browse condition in the lower elevation areas. Following the severe deer population decline of RY06 many favorable browse species, targeted by deer, such as red huckleberry and blueberry exhibited very good leader growth. On northeast Chichagof Island, the browse leader growth was remarkable not only at low elevations but also at subalpine elevations. This was additional evidence the deer population was severely reduced, as very little browsing was apparent on even the most favored browse and forb plant species.

CONCLUSIONS AND RECOMMENDATIONS

All management objectives were met during both years of the report period. The average harvest per hunter during RY08 was 1.6 deer, and in RY09 it increased to 1.7 deer; both above the objective of at least 1.5 deer per hunter. The minimum objective for a success rate of 1 deer killed per 4 days of hunting effort was exceeded during both years of the report period with 2.8 days and 2.5 days during RY08 and RY09 respectively. The harvest of bucks comprised 76% and 68% of the harvest in RY08 and RY09 respectively, exceeding the objective of 60%.

A major management concern continues to be the diverging hunting regulations promulgated by the Federal Subsistence Board and the Alaska Board of Game. Different regulations for separate groups of hunters using the same resource make enforcement difficult, confuse hunters, and lessen the credibility of management agencies. In addition, conflicting regulations may make management of the resource more difficult in the future. Wherever possible, the division should assist the 2 regulatory entities in standardizing deer hunting regulations. The state and the

Federal Subsistence Board did work closely together in issuing emergency closures related to restricting the harvest of does in the NECCUA during the previous and current reporting period.

At this time, we do not recommend changes to the Unit 4 state regulations concerning Sitka black-tailed deer.

ACKNOWLEDGMENTS

Many people were involved in surveys and data compilation. Many thanks to all those who participated, including D. Larsen, N. Barten, H. Dennison, K. McCoy, C. Koch A. Blaine, S. Hinton, C. Buhler, S. Crass, P. Harper, P. Edwards, R. Miller, M. Becker, B. Kriekhaus, J. Serio, and T. Suminski.

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Please cite any information taken from this section, and reference as:

Mooney, P.W. 2011. Unit 4 deer management report. Pages 58–74 in P. Harper, editor. Deer management report of survey and inventory activities 1 July 2008–30 June 2010. Alaska Department of Fish and Game. Juneau, Alaska.

Table 1. Unit 4 deer population trends as indicated by pellet-group surveys, 1985–2009.

VCU Area	Regulatory year	Mean pellet groups/plot	Number of plots
128 – Hawk Inlet	1985–86	1.92	286
	1986–87	2.54	278
	1988–89	1.82	334
	1989–90	2.19	250
	1991–92	1.61	319
	1995–96	1.26	325
	1998–99	1.25	176
	2001–02	1.17	183
	2004–05	2.69	322
	2006–07	1.19	305
	2007–08	1.33	290
171– Hood Bay	1986–87	2.31	358
	1988–89	1.77	366
	1989–90	1.85	375
	1991–92	1.91	360
	1993–94	1.64	371
	1999–00	1.04	349
	2002–03	1.41	220
	2005–06	2.76	355
182 – Pybus Bay	2007–08	1.62	301
	1985–86	2.00	235
	1986–87	2.03	242
	1988–89	2.00	156
	1989–90	1.72	221
	1991–92	1.13	236
	1994–95	1.48	205
	1997–98	1.37	256
185 – Pleasant Island	1990–91	1.38	311
	1991–92	1.34	210
	1992–93	1.77	305
	1993–94	1.26	345
	1998–99	1.82	223
	2001–02	1.96	351
	2004–05	1.33	312
189 – Port Althorp	1987–88	1.80	195
	1990–91	1.92	223
	1991–92	1.36	261
	1992–93	1.39	248
	1993–94	1.31	253
	1994–95	2.12	98
	1997–98	1.48	281
	2000–01	1.82	225

Table 1. Unit 4 deer population trends as indicated by pellet-group surveys, 1985–2009.

VCU Area	Regulatory year	Mean pellet groups/plot	Number of plots
190 – Idaho Inlet	1987–88	1.34	258
	1991–92	0.94	219
	1992–93	0.56	305
	1993–94	0.71	294
	1997–98	1.11	273
	2000–01	0.95	308
	2003–04	1.05	296
202 – Port Frederick	1987–88	1.87	242
	1995–96	1.02	226
209 – Suntaheen Creek	1987–88	1.22	272
	1991–92	1.13	271
	1992–93	0.73	265
	1993–94	1.05	272
	1995–96	0.98	276
	1998–99	1.02	112
	2001–02	1.32	218
	2004–05	1.46	329
	2008–09	0.51	202
	2009–10	1.36	265
211 – Point Augusta	1982–83	1.78	757
	1992–93	2.08	286
	1996–97	3.30	234
218 – Pavlof River	1987–88	1.78	325
	1991–92	1.56	341
	1995–96	1.50	249
	1998–99	2.24	213
	2001–02	2.48	249
	2004–05	2.30	323
	2008–09	0.90	192
	2009–10	1.48	216
223 – Upper Tenakee	1987–88	1.47	253
	1991–92	0.59	265
	1992–93	0.47	249
	1993–94	0.61	319
236 – Corner Bay	1980–81	0.35	60
	1991–92	2.27	206
	1992–93	1.72	50
	1993–94	1.69	198

Table 1. Unit 4 deer population trends as indicated by pellet-group surveys, 1985–2009.

VCU Area	Regulatory year	Mean pellet groups/plot	Number of plots
247 – Finger Mountain	1986–87	3.11	236
	1988–89	2.99	305
	1989–90	3.36	225
	1990–91	3.93	150
	1991–92	2.85	207
	1992–93	3.03	179
	1993–94	2.29	275
	1995–96	2.62	221
	1998–99	3.04	169
	1999–00	2.87	217
	2001–02	2.99	162
	2003–04	3.03	229
	2004–05	2.78	299
	2005–06	2.58	280
	2006–07	1.89	248
	2007–08	3.32	199
	2009–10	2.53	217
254 – Soapstone	1987–88	1.92	274
	1990–91	2.05	270
	1992–93	1.88	243
	1993–94	1.34	310
	1994–95	1.48	283
	2000–01	1.94	246
271 – Chichagof	1990–91	1.39	301
	1994–95	0.98	303
	1997–98	1.34	319
	2000–01	1.23	291
	2003–04	1.15	303
	2006–07	2.13	176
275 – Cobol	1983–84	1.15	224
	1990–91	2.96	185
	1994–95	1.45	218
	1997–98	2.19	219
	2000–01	1.94	180
	2003–04	2.97	232
	2006–07	2.13	176
288 – Range Creek	1982–83	0.51	1788
	1983–84	0.71	303
	1984–85	1.32	224
	1996–97	1.44	353
	2002–03	1.65	355
	2005–06	1.82	359
	2009–10	1.06	341

Table 1. Unit 4 deer population trends as indicated by pellet-group surveys, 1985–2009.

VCU Area	Regulatory year	Mean pellet groups/plot	Number of plots
296 – Portage Arm	1980–81	0.53	213
	1989–90	3.09	214
	1996–97	1.59	39
	2002–03	2.77	103
298 – M. Arm Kelp Bay	2002–03	2.77	103
	1989–90	2.68	306
	1996–97	2.67	100
	2002–03	1.41	140
	2005–06	2.10	248
	2007–08	1.91	208
300 – Nakwasina	1986–87	2.31	195
	1988–89	2.32	244
	1989–90	2.99	255
	1990–91	3.98	175
	1991–92	1.64	223
	1992–93	3.15	188
	1993–94	1.46	230
	1994–95	1.75	216
	1995–96	2.82	210
	1996–97	2.79	200
	1997–98	2.99	217
	1998–99	3.20	146
	1999–00	2.64	181
	2000–01	2.33	186
	2001–02	2.35	132
	2002–03	3.09	221
	2003–04	3.36	211
	2004–05	2.22	254
	2005–06	3.91	205
	2006–07	3.40	167
	2007–08	3.17	166
	2009–10	2.77	183
305 – Sea Lion Cove	1986–87	3.31	226
	1988–89	1.75	303
	1990–91	1.63	219
	1991–92	1.30	239
	1993–94	1.29	221
	1994–95	1.30	210
	1995–96	1.63	225
	1997–98	1.71	241
	1999–00	1.42	201
	2000–01	1.41	231

Table 1. Unit 4 deer population trends as indicated by pellet-group surveys, 1985–2009.

VCU Area	Regulatory year	Mean pellet groups/plot	Number of plots
305 – Sea Lion Cove (cont)	2001–02	2.01	119
	2002–03	1.90	249
	2003–04	1.13	206
	2004–05	1.40	252
	2005–06	1.41	245
	2006–07	3.40	167
	2007–08	1.44	159
	2009–10	1.04	249
308 – South Kruzof	1992–93	1.62	345
	1993–94	1.71	370
	1998–99	1.38	365
339 – Cape Ommaney	1987–88	1.74	172
	1999–00	1.26	270
	2002–03	1.56	221
344 – Whale Bay	1999–00	1.40	260
	2002–03	1.70	279
348 – West Crawfish	1989–90	1.35	360
	1999–00	1.34	211
	2002–03	1.31	313

Table 2. Unit 4 deer harvest, 2005 through 2009.

Regulatory year	Estimated legal harvest ^a						Estimated illegal harvest ^b	Total
	M	(%)	F	%	Unk	Total		
2005–2006	4600	(70)	2002	(30)		6602	1651	8253
2006–2007	5519	(72)	2163	(28)		7682	1921	9603
2007–2008	1511	(82)	335	(18)		1846	462	2308
2008–2009	2893	(75)	941	(25)	21	3855	964	4819
2009–2010	2616	(67)	1262	(33)	32	3909	977	4886

^a From mail questionnaire.

^b Includes crippling loss estimate.

Table 3. Unit 4 deer hunter residency and success, 2005 through 2009.

Regulatory Year	Successful				Unsuccessful				Total # hunters
	Local resident	Nonlocal resident	Nonresident	Total	Local resident	Nonlocal resident	Nonresident	Total	
2005–2006	1119	1138	88	2345	281	498	42	821	3166
2006–2007	1151	1151	92	2394	250	363	50	663	3057
2007–2008	556	333	9	898	405	644	52	1101	1999
2008–2009	863	665	42	1570	298	478	32	808	2378
2009–2010	826	599	48	1473	285	467	55	807	2280

Table 4. Unit 4 deer harvest chronology, 2005 through 2009. (This includes 25% estimated illegal harvest.)

Regulatory year	Harvest periods												Total harvest
	August (%)	September (%)	October (%)	November (%)	December (%)	January (%)	Other						
2005–2006	351 (4)	561 (7)	1288 (16)	3285 (40)	1506 (18)	721 (9)	541	8253					
2006–2007	414 (4)	373 (4)	1190 (12)	4523 (47)	2410 (25)	411 (4)	282	9603					
2007–2008	205 (9)	210 (9)	175 (8)	1121 (49)	393 (17)	69 (3)	135	2308					
2008–2009 ^a	0 (0)	0 (0)	560 (14)	1894 (49)	1161 (30)	0 (0)	1204	4819					
2009–2010	215 (4)	215 (4)	313 (6)	1969 (41)	1735 (36)	135 (3)	304	4886					

^aMissing 2008–09 August and September information in Winfonet.

Table 5. Unit 4 deer harvest, percent by transport method, 2005 through 2009.

Regulatory year	Percent of harvest						Number of hunters
	Airplane	Foot	Boat	ORV ¹	Highway Vehicle	Unknown ²	
2005–2006	6	3	73	5	12	1	3166
2006–2007	8	3	81	1	6	2	3057
2007–2008	6	3	73	2	13	3	1998
2008–2009	7	3	80	1	10	0	2378
2009–2010	8	3	81	0	4	3	2280

¹ 3- and 4-wheelers included

² “Other” included

(This compares harvest only, no efforts of unsuccessful hunters.) Number of hunters = successful & unsuccessful

Table 6. Scale for Unit 4 Shoreline Deer Assessment Classification Guidelines.

0	Dead. Observation should be accompanied by necropsy report/notes.
1	Animal may be unwilling or unable to stand. Ribs visible through coat.
2	“Humped” appearance. May be “shaky” in hind limbs when walking. Animal may be somewhat lethargic. Often hesitant to leave beach. Hips noticeably angular at illium. Hair often showing disarray or missing patches. Some posterior ribs may be visible.
3	Hair usually patchy. Some angled appearance of hips when viewed from the side. When viewed from rump, backbone visible.
4	Rounded hips, sleek coat. May have “breeding patches” of missing/scuffed hair. Very alert.
5	Fat. Classification usually reserved for late summer/early fall.
U	Unclassified. Generally used when any particular animal is too far away to be accurately classified or has departed the beach fringe before classifying.

**WILDLIFE
MANAGEMENT REPORT**

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 115526
JUNEAU, AK 99811-5526

DEER MANAGEMENT REPORT

From: 1 July 2008
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 5 (5,800 mi²)

GEOGRAPHIC DESCRIPTION: Cape Fairweather to Icy Bay, Eastern Gulf Coast

BACKGROUND

Deer were introduced to Yakutat Bay islands in 1934, when 7 does and 5 bucks were released (Paul 2009). These animals established a small population that persists on islands and along the eastern mainland of Yakutat Bay. Heavy snowfall and predators limit deer densities, but the population has supported small harvests over the years. Most deer are taken incidentally. There is little potential for this herd to increase because of the extreme climatic conditions and limited habitat.

Due to deer declines in the 1970s and a virtual cessation of harvest, the Unit 5 season was closed in July 1980. By the end of the 1980s, deer had recovered to some degree, and public requests for an open season were heard. In 1991 the Board of Game instituted a limited hunt in Unit 5A, with a 1-month bucks only season. Since then, small numbers of deer have been taken in most years, including some reports of illegal harvest.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

- Maintain a population capable of sustaining a 1-month season and a bag limit of 1 buck.

METHODS

Each year the department sends deer harvest surveys to a randomly selected group of hunters (approx. 33%) to collect deer harvest data. The survey was designed to collect information on hunter effort, hunt location, hunt timing, number of days hunted, transportation used, and the number of deer harvested. Survey results for hunter effort, success, and kill location were expanded to estimate results for all harvest ticket holders. Since 1984, Unit 5A pellet-group surveys have been conducted to gauge deer population trends. U.S. Forest Service (USFS) crews usually perform this work. Pellet transects were not conducted in Unit 5 during the report period (Table 1). Data in this report are compiled by regulatory year (RY), with the current report period pertaining to RY08 and RY09. A regulatory year begins on July 1 and ends on June 30 of the following calendar year: RY08=July 1, 2008–June 30, 2009.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Deer populations remain relatively low in the Yakutat area based on our 2 indirect measures of deer numbers, i.e., pellet-group densities and deer harvest. It was always thought that limited habitat and heavy snow accumulations on the mainland would prevent deer from increasing significantly; however, anecdotal information gathered during the previous report period suggested that deer were much more abundant than ever before, and had expanded their range as far inland as the Dangerous River. In recent years, deer were routinely seen along the road system near the community of Yakutat as well as the areas adjacent to Highway 10. In the past it had been almost unheard of to see a deer more than a few miles inland of the beach and any sighting of deer on the mainland was considered a novelty. This greater abundance of deer is attributed to a series of mild winters during the mid-1990s–2005. In RY 2007, 4 islands (Krutoi, Kriwoi, Khantaak, and Dolgi) adjacent to Yakutat in Yakutat Bay were surveyed for deer pellet densities. The results of the spring 2008 pellet survey yielded the highest densities recorded for the area, and suggest an increasing number of deer on the inlands (McCoy 2008). Further surveys in future years should give us a good indication as to whether a higher deer population is the trend, or if the pellet densities of 2007 are an anomaly.

MORTALITY

Harvest

Season and Bag Limit

Resident and Nonresident Hunters

Unit 5A

1 Nov–30 Nov: 1 antlered deer

Unit 5B

No open season

Board of Game Actions and Emergency Orders. The board made no changes to deer hunting regulations during the report period and no emergency orders were issued.

Hunter Harvest. Based on deer hunter survey data, 33 deer were harvested in 2008 (RY08), and 21 taken in 2009 (RY09) (Table 2). The current report period's deer harvest is among the largest since the season was reopened in 1991. Hunter effort was similar to the previous report period, with 68 hunters expending 270 days of effort in 2008, and 54 hunters spending 160 days afield in 2009. The number of days per deer harvested reached its highest level in 2007 at 19.5 days/deer. In both years of the current report period the number of days needed to take a deer returned to levels similar to the early 2000s. In 2008 and 2009 the number of days per deer was 8.2 and 8.0 respectively (Table 3). Because these figures are expanded from the hunter survey, significant error is possible due to low effort and harvest in this area.

Illegal Harvest. Anecdotal information collected from both Alaska Department of Fish and Game and USFS employees stationed in Yakutat suggests that there may be some illegal harvest of deer in Unit 5A, but the scope of this take is unknown.

Hunter Residency and Success. Since 1991, virtually all Unit 5A deer hunters have been local residents. During 2008 and 2009 resident hunters took 28 and 21 deer, respectively. In 2008

nonresidents took 5 deer and were likely associated with guided hunts or visiting family in Yakutat (Table 4).

Transport Methods. Boats are typically the only means of transportation used by successful hunters in 5A since nearly all deer are taken from islands that require a boat for access. Several hunters reported using highway vehicles and walking but all successful hunters reported hunting from a boat in 2008. In 2009 however, 17 successful hunters reported using an ORV or highway vehicle to access hunting areas. Very likely this is the result of hunters using a vehicle to get to the harbor, then using a boat to access the islands for deer hunting.

CONCLUSIONS AND RECOMMENDATIONS

The single management objective for this area was met during the report period. The Unit 5A deer hunt allows Yakutat residents an opportunity to legally harvest a small number of deer. The number of deer taken in Unit 5 increased during this report period and is higher than the 10-year mean harvest of 10.5 deer/year. The number of hunters and days hunted were higher than the 10-year means of 46 hunters and 175 days, indicating people are actively pursuing deer at a higher rate. These efforts are being rewarded based on the fact that the number of days per deer during the report period was below the 10-year mean of 10.5 days/deer.

Although deer seem to be more widespread than in the past, habitat conditions, predation, and deep snow will prevent this population from ever growing significantly. The Yakutat airport received above average snowfall in 2008 but got a reprieve in 2009 with a below average snow fall. In 2008, 225 inches of snow fell, and 111 inches of snow in 2009 (National Weather Service, <http://www.arh.noaa.gov/clim/akcoopclim.php?wfo=pajk>). The impact of extreme winter weather is likely to be the major force in regulating deer numbers in this area. Mortality transects should be created in the Yakutat area in an effort to catalogue effects of severe winters on local deer populations. Pellet transect data should continue to be collected to monitor deer population trends.

The importance of deer as a subsistence food item to the community of Yakutat seems to be a distant second to moose, but in recent years has seemingly surpassed mountain goats. In the past, most deer were taken incidentally by people who happened to detect an animal on the beach while they were conducting other activities. But in recent years, the increased abundance of deer and the better chance of success led to a more concerted effort by hunters to specifically target a deer. It is likely that the small harvest has little effect on the population because hunting mortality is probably compensatory to wolf predation or winter kill. Barring some change in habitat conditions or predation on these deer, it seems likely they will continue to persist at low densities and provide some level of hunting opportunity in Unit 5.

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Please cite any information taken from this section, and reference as:

Scott, R. 2011. Unit 5 deer management report. Pages 75–80 *in* P. Harper, editor. Deer management report of survey and inventory activities 1 July 2008–30 June 2010. Alaska Department of Fish and Game. Juneau, Alaska.

Table 1. Unit 5A deer population trends as indicated by pellet group surveys, 1990–2009.

Area	Regulatory year	Mean pellet groups/plot	Number of plots	95 % CI
Knight Island (VCU 361)	1990	0.81	100	0.61–1.01
	1991	0.95	100	0.74–1.16
	1993	0.44	90	0.25–0.64
	1995	0.00	153	0.00–0.00
	1996	0.03	192	0.01–0.05
	2002	0.22	117	NA
Humpback (VCU 363)	1990	0.01	118	0.00–0.03
Yakutat Islands (VCU 368)	1990	0.32	415	0.24–0.39
	1991	0.48	243	0.37–0.58
	1992	1.07	106	0.81–1.32
	1993	0.66	251	0.52–0.80
	1995	0.59	379	0.48–0.69
	1996	0.59	344	0.48–0.70
	1999	0.90	145	0.85–0.95
	2001	0.66	200	NA
	2002	0.58	325	NA
	2003	0.86	274	NA
	2007	1.97	421	1.76–2.18
Ankau (VCU 369)	1990	0.03	116	0.00–0.05

Table 2. Unit 5A annual deer harvest^a, 2000 through 2009.

Regulatory year	Males	Females	Estimated total
2000	0	0	0
2001	4	0	4
2002	15	0	15
2003	28	0	28
2004	31	8	39
2005	27	0	27
2006	12	0	12
2007	13	0	13
2008	33	0	33
2009	21	0	21

^a Data from expanded results of hunter surveys.

Table 3. Unit 5A hunter effort and success, 2000 through 2009.

Regulatory year	Number of hunters	Number of days hunted	Number of deer killed	Number of deer/hunter	Number of days/deer
2000	4	9	0	0	0
2001	26	34	4	.2	8.5
2002	55	248	15	.3	16.5
2003	72	210	28	.4	7.5
2004	80	343	39	.5	8.8
2005	69	332	27	.4	12.3
2006	64	201	12	.2	16.8
2007	42	254	13	.3	19.5
2008	68	270	33	.5	8.2
2009	54	166	21	.4	8.0

Table 4. Unit 5A deer hunter residency and success, regulatory years 2000 through 2009.

Regulatory year	Successful					Unsuccessful					Total hunters
	Local ^a resident	Nonlocal resident	Nonresident	Unk	Total (%)	Local ^a resident	Nonlocal resident	Nonresident	Unk	Total (%)	
2000	0	0	0	0	0 (0)	4	0	0	0	4 (100)	4
2001	4	0	0	0	4 (15)	16	6	0	0	22 (85)	26
2002	15	0	0	0	15 (27)	40	0	0	0	40 (73)	55
2003	28	0	0	0	28 (39)	44	0	0	0	44 (61)	72
2004	21	17	0	0	38 (51)	36	0	0	0	36 (49)	74
2005	21	5	0	1	27 (39)	42	0	0	0	42 (61)	69
2006	12	0	0	0	12 (19)	52	0	0	0	52 (81)	64
2007	13	0	0	0	13 (31)	29	0	0	0	29 (69)	42
2008	28	0	5	0	33 (49)	35	0	0	0	35 (51)	68
2009	21	0	0	0	21 (39)	33	0	0	0	33 (61)	54

^a Local means residents of Unit 5A.

WILDLIFE
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 P.O. BOX 115526
JUNEAU, AK 99811-5526

DEER MANAGEMENT REPORT

From: 1 July 2008

To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 6 (10,140 mi²)

GEOGRAPHIC DESCRIPTION: Prince William Sound and North Gulf Coast

BACKGROUND

The Cordova Chamber of Commerce introduced Sitka black-tailed deer into Unit 6 between 1916 and 1923 (Paul 2009). At least 24 deer were released on Hawkins and Hinchinbrook islands in Prince William Sound (PWS). This was the first big game translocation in the state and was one of the most successful. Deer quickly occupied vacant habitat on most islands and adjacent mainland in PWS. The population peaked in 1945, resulting in habitat damage and long-term reduction in carrying capacity (Robards 1952). High winter mortality occurred in the late 1940s, mid 1950s, late 1960s, early 1970s (Reynolds 1979), and late 1990s (Crowley 2001). Predation is minimal because there are few wolves and coyotes off the mainland.

Sitka black-tailed deer in Unit 6 are at the extreme northern limit of their range (Cowan 1969). The population usually thrives because of mild, maritime climate conditions on islands in PWS (Shishido 1986). Snow-shading canopies of old-growth forest provide accessible forage and shelter during winter, especially on the larger watersheds of the big islands (Hawkins, Hinchinbrook and Montague) (Shishido 1986; Reynolds 1979). If forbs eventually become buried by deeper snow, blueberry stems (*Vaccinium ovalifolium*) become important forage.

Sitka black-tailed deer are excellent swimmers and often take to the sea in small herds for travel to neighboring islands. A resulting theory held by some local residents is of a seasonal migration of deer in PWS. Reynolds (1979) and Shishido (1986) reported that marking studies of deer in PWS do not support this theory. I suspect that these deer are actually dispersing from areas of high density in search of better forage, particularly when deer numbers are increasing. Deer-tagging studies in PWS indicated that seasonal movements were primarily changes in elevation, with only 2 deer traveling up to 13–14 km from the location where marked. (Shishido 1986, Reynolds 1979). Schoen and Kirchhoff (1984) tracked a movement of 13.6 km by only 1 radiocollared deer in Southeast Alaska and determined it had dispersed from its natal watershed.

The most important factors limiting the deer population are snow depth and duration (Reynolds 1979). A series of mild winters allows deer to increase and disperse to less favorable habitat, only to decline during severe winters from starvation. Hunting can be a limiting factor in local areas when deep snow concentrates deer on beaches during open season; however, this is a

relatively rare occurrence (Reynolds 1979). Harvest may become a more significant factor in the future if numbers of hunters increase. However, weather will continue to constrain hunter access.

Legal deer hunting began in 1935. It was monitored from 1960 through 1979 by harvest reports and hunter contacts. Beginning in 1980, ADF&G collected most information through questionnaires mailed to deer harvest ticket holders. Annual harvests before 1978 probably ranged between 500 and 1,500 (Reynolds 1979). Harvests began to increase after 1978 and peaked at 3,000 in 1987. The average estimated harvest during the 1990s was 2,160, ranging from 1,300 to 3,000 deer.

Clear-cut logging of old-growth forest on private land in PWS was once the most important deer management concern in Unit 6 (Nowlin 1997). Currently there are no logging operations planned within important deer habitat.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

- Deer in Unit 6 were designated big game prey population for intensive management by the Board of Game in 2001. The population objective was set at 24,000 – 28,000 deer capable of sustaining an annual harvest of 2,200 – 3,000 deer.
- To maintain a minimum harvest of 60% males.
- To maintain a minimum hunter success rate of 50%.

METHODS

The Alaska Department of Fish and Game (ADF&G) and the U.S. Forest Service (USFS) cooperate to monitor the population trend in PWS. We conduct annual pellet-group surveys along transects (Kirchhoff and Pitcher 1988) during late May and early June at 8 sampling locations (Fig. 1). Two more locations were added to annual surveys beginning in 2000–2001 (Naked Island and Bay of Isles on Knight Island) to monitor the western PWS population after the road to Whittier opened. Each location has 3–5 transects consisting of a straight line of 1x20-meter plots running uphill from the beach fringe. Most transects terminate at alpine habitat. Those not reaching the alpine terminate after we examine 100 plots. The number of plots varies, depending on the distance from the beach to the alpine and the persistence of snow during the survey. The minimum number of plots within a location was 164. We calculate mean numbers of pellet groups per plot (MPGP) for each location and all locations combined. Kirchhoff and Pitcher (1988) suggested that MPGP of 0.50 to 0.99, 1.00 to 1.99, and 2.00 to 2.99 were low, moderate, and high densities, respectively, for Southeast Alaska.

We estimated deer harvest from responses to questionnaires mailed to deer hunters who were issued harvest tickets in Southcentral Alaska. Approximately 3,000 questionnaires (30% of harvest ticket holders) were mailed to hunters annually, with a response rate averaging 66%. I summarized total harvest, hunter residency and success, harvest chronology, and transportation methods for Unit 6. I grouped harvest data into geographic areas that included Hinchinbrook Island, Montague Island, Hawkins Island, western PWS, and northern and eastern PWS (Fig. 1).

ADF&G supervised a high school science project studying autumn food habits of black-tailed deer on Hawkins and Hinchinbrook Islands. The student (Keegan Crowley, Cordova High School) collected rumen samples from 14 hunter-killed deer, rinsed and separated contents by plant species, then dried and weighed to determine proportion (by dry weight) of plant species in the diet. Proportions of plants in the diet were compared before and after heavy snows buried species typically growing in meadows.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Based on pellet group densities, deer density in PWS was low to moderate during the reporting period (Table 1). Deer numbers were decreasing because of relatively severe winters during the reporting period (Fig. 2) particularly in western PWS. Hawkins and Hinchinbrook Islands (Fig. 1) tend to accumulate less snow than islands in western PWS because a slight temperature cline produces more rain in the east. In addition both eastern islands have extensive old growth forests to support wintering deer, whereas the smaller islands of western PWS have smaller watersheds and much less winter habitat. Although Montague Island has large watersheds, much of the best deer winter habitat was clearcut during the 1980s and 1990s and the island often receives tremendous amounts of snowfall.

Distribution and Movements

Deer currently occupy most of Unit 6. Highest deer densities in Unit 6D (PWS) occurred on Hinchinbrook and Hawkins Islands. Lower densities occurred on smaller islands and mainland areas surrounding PWS. Occasional sightings have occurred in Units 6B and 6A, and, after several mild winters, on the Kenai Peninsula and as far north and west as Anchorage.

Shishido (1986), using radiocollared deer on Hinchinbrook Island (Fig. 1), determined that deer tended to make seasonal, elevational movements within a single watershed, with timing of movements controlled by annual snow persistence. He estimated that average size of a deer's winter home range was 160 ha, versus 282 ha for spring, with seasonal home ranges overlapping. Sitka black-tailed deer are excellent swimmers and often take to the sea singly or in small herds for travel to neighboring islands.

Rumen samples analyzed for food habits indicated that sweet gale (*Myrica gale*; buds and scales) was unexpectedly the most important plant species in the diet, comprising 83% of dry weight in samples before becoming buried under snow in open meadows where it grows (Appendix A). I could find no other reference to use of sweet gale by deer in the literature. After snowfall, primary forage was wintergreen forbs found under the forest canopy, including bunchberry (*Cornus canadensis*), trailing bramble (*Rubus pedatus*), and goldthread (*Coptus* spp).

MORTALITY

Harvest

Season and Bag Limit. The season for resident and nonresident hunters was 1 August–31 December. The bag limit was 5 deer for residents and 4 for nonresidents. Antlerless deer could be taken beginning 1 October.

Board of Game Actions and Emergency Orders. There were no regulatory changes or emergency orders issued during this reporting period. During the Fall 2010 Region I Board of Game meeting the Board approved a harvest reporting method to replace the deer hunter questionnaire. This process is expected to be statewide with approval for the Southcentral deer hunters at the March 2011 Board of Game meeting. All hunters will be expected to submit hunt reports either by mail or online beginning with the 2011 season.

Hunter Harvest. Although deer population level usually is reflected by harvest, prevailing weather conditions during the season can also influence hunter activity. Total estimated deer harvest reported in Unit 6 during 2008–2009 was about 1,900 (Table 2). Harvest declined to 1,600 deer the following year. We attribute the decrease to lower deer numbers and poor fall weather during 2009–2010. As during past years, most harvest came from Montague Island.

Hunter Residency and Success. Deer hunters had annual success rates of 50% and 46%, respectively, during the 2-year reporting period, which was slightly lower than normal (Table 3). I attributed this to lower deer density and worse-than-normal weather conditions. Nonlocal residents represented 63–60% of successful hunters during this reporting period. Local residents on average killed 1.6 deer per hunter compared to 0.8 deer per hunter for nonlocal residents. Nonresidents remained insignificant contributors to the deer harvest. These proportions were similar to previous years.

Harvest Chronology. Hunters killed most deer during October and November (Table 4). Hunters prefer this period because snowfall moves deer to lower elevations and increases visibility. During November the rut was in progress, making bucks more vulnerable to harvest. Harvest chronology has remained unchanged for many years.

Transport Methods. Similar to previous years, hunters primarily used boats and secondarily, airplanes. Other modes, including 3- and 4-wheelers, highway vehicles, and walking, were not used significantly (Table 5).

Other Mortality

I estimated that the combination of wounding loss and unreported and illegal harvest was at least 15% of the total reported harvest (Table 2). Deer pellet surveys and snow index indicated that very little winter mortality occurred during the reporting period (Fig. 2).

CONCLUSIONS AND RECOMMENDATIONS

Under Intensive Management law (AS 16.05.255) our mandated population objective is 24,000 – 28,000 deer. Because we have no estimate of population size this objective is, at best, an educated guess at the number of deer required to support human needs. We have no particular need to obtain a population estimate for management purposes because the primary limiting factor to deer in Unit 6 is snow depth and duration.

Based on pellet group density monitored along transects in PWS, we think deer numbers declined in PWS because of several winters with late and persistent snowfall. Deer density is highest on the 3 largest islands in PWS, but most hunting pressure occurs on the smaller islands of western PWS because of easy access from Whittier. Therefore, although the deer population

could easily have sustained the Intensive Management objective of 2,200 – 3,000 deer, hunters reported taking fewer deer during the reporting period.

Pellet-group surveys and hunter questionnaires were effective tools to monitor and manage deer in Unit 6. MGP has been a reliable index to population trend. The department is currently assessing the installation of snow depth sensors at existing weather stations in PWS in order to update an index of snow depth and duration as it relates to deer. However, weather stations are undergoing prioritization by user groups in response to budget cuts, and until station selection is finalized the snow index will remain suspended.

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Crowley, D. W. 2011. Unit 6 deer management report. Pages 81–95 *in* P. Harper, editor. Deer management report of survey and inventory activities 1 July 2008–30 June 2010. Alaska Department of Fish and Game. Juneau, Alaska.

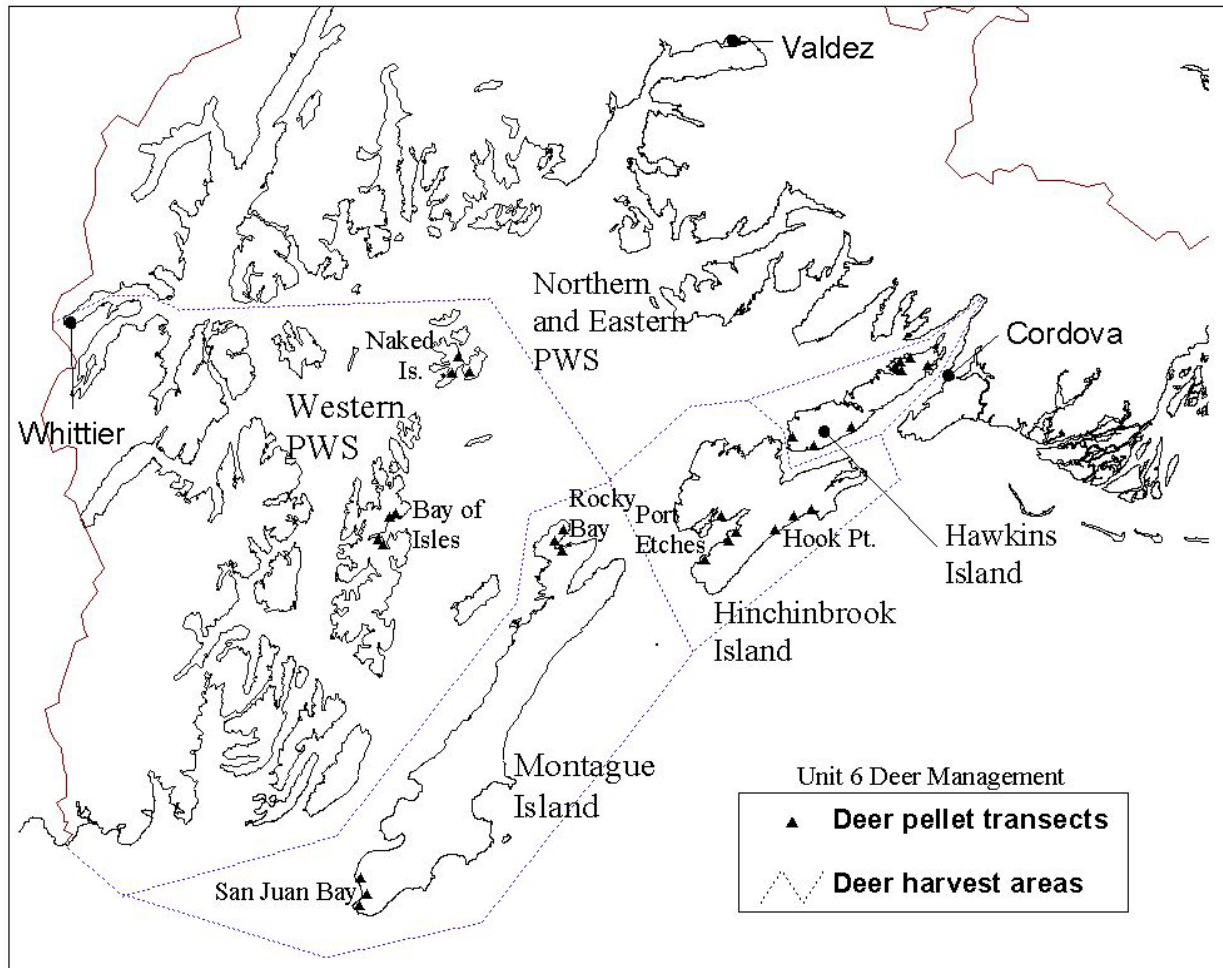


Figure 1. Locations of pellet group transects and harvest area boundaries for deer in Unit 6.

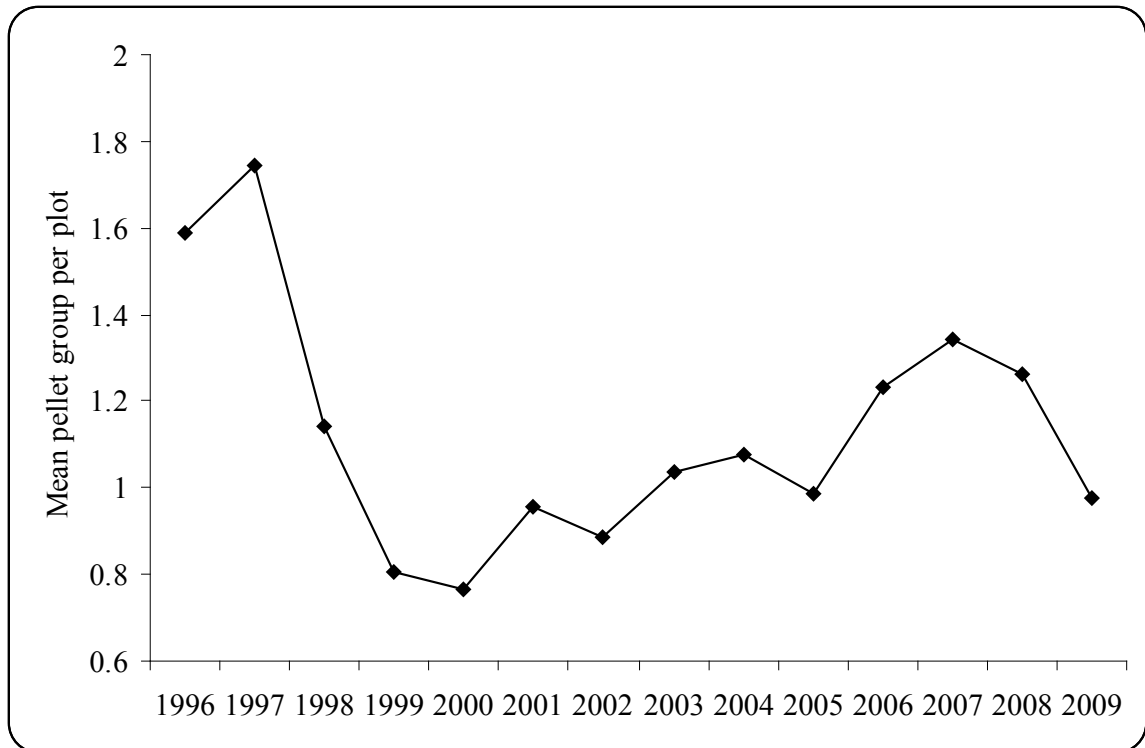


Figure 2. Deer pellet density observed in Unit 6D, Prince William Sound. Stable and declining pellet density results from mortality during winters with deep and persistent snow.

Table 1. Unit 6 deer population trends as indicated by spring pellet-group surveys 2005–2009.

Area	Specific location/UCU	Regulatory Year ^a	MPGP ^b	S.D. ^c	Number of plots
Knight Island	Bay of Isles 1503	2005/06	0.45	0.92	177
		2006/07	0.33	1.00	172
		2007/08	0.42	1.29	170
		2008–09	0.31	0.81	150
		2009–10	0.27	0.72	173
Naked Island	1701	2005–06	0.73	1.09	210
		2006–07	0.60	1.15	210
		2007–08	0.59	1.16	192
		2008–09	0.66	1.81	215
		2009–10	0.51	1.17	210
Montague Island	Rocky Bay 1803	2005–06	1.25	1.85	217
		2006–07	No survey		
		2007–08	0.97	2.14	241
		2008–09	0.75	1.61	218
		2009–10	0.67	1.41	212
	San Juan Bay 1810	2005–06	No survey		
		2006–07	No survey		
		2007–08	No survey		
		2008–09	1.23	1.98	234
		2009–10	No survey		
Hinchinbrook Island	Port Etches 1903	2005–06	1.37	1.69	239
		2006–07	No survey		
		2007–08	1.67	2.08	230
		2008–09	No survey		
		2009–10	0.92	1.36	242
	Hook Point 1905	2005–06	No survey		
		2006–07	No survey		
		2007–08	No survey		
		2008–09	2.16	2.68	219
		2009–10	1.47	1.91	234

Table continues next page

Area	Specific location/UCU	Regulatory Year ^a	MPGP ^b	S.D. ^c	Number of plots
Hawkins Island	N.E. Hawkins 2001	2005–06	No survey		
		2006–07	2.10	2.77	240
		2007–08	2.15	2.62	235
		2008–09	2.06	2.50	231
		2009–10	1.69	2.06	225
	S.W. Hawkins 2003	2005–06	No survey		
		2006–07	1.62	2.29	222
		2007–08	1.93	2.89	217
		2008–09	1.30	2.50	222
		2009–10	1.11	1.56	157
All Areas		2005–06	0.99	1.51	843
		2006–07	1.23	2.14	844
		2007–08	1.35	2.26	1285
		2008–09	1.26	2.12	1489
		2009–10	0.98	1.61	1453

^a Surveys occur during spring of each regulatory year.

^b Mean number of pellet groups per plot.

^c Standard deviation.

Table 2. Unit 6 deer harvest, 2005–2009.

Area	Regulatory year	Estimated legal harvest ^a				Estimated illegal/unreported harvest ^b	Total
		M	(%)	F	(%)		
Hawkins Island	2005–06	492	(77)	146	(23)	96	734
	2006–07	258	(66)	130	(34)	58	446
	2007–08	181	(73)	68	(27)	37	286
	2008–09	305	(71)	126	(29)	65	496
	2009–10	216	(60)	143	(40)	54	413
Hinchinbrook Island	2005–06	399	(76)	124	(24)	78	601
	2006–07	445	(59)	313	(41)	114	872
	2007–08	160	(65)	88	(35)	37	285
	2008–09	161	(73)	59	(27)	33	253
	2009–10	206	(60)	140	(40)	52	398
Montague Island	2005–06	571	(70)	243	(30)	122	936
	2006–07	435	(60)	289	(40)	109	833
	2007–08	270	(69)	119	(31)	58	447
	2008–09	358	(50)	354	(50)	107	819
	2009–10	196	(52)	180	(48)	56	432
Western PWS	2005–06	363	(54)	306	(46)	100	769
	2006–07	255	(49)	266	(51)	78	599
	2007–08	142	(51)	139	(49)	42	323
	2008–09	177	(52)	165	(48)	51	393
	2009–10	164	(49)	170	(51)	50	384

Table continues next page

Table 2 continued.

Area	Regulatory year	Estimated legal harvest ^a				Estimated illegal/unreported harvest ^b	
		M	(%)	F	(%)	Total	Total
Northern and Eastern PWS	2005–06	28	(54)	24	(46)	52	60
	2006–07	43	(55)	35	(45)	78	90
	2007–08	33	(62)	20	(38)	53	61
	2008–09	102	(59)	71	(41)	173	199
	2009–10	92	(71)	37	(29)	129	148
Unit 6 - Unknown	2005–06	0		0		0	0
	2006–07	81	(84)	16	(16)	97	112
	2007–08	32	(73)	12	(27)	44	51
	2008–09	6	(50)	6	(50)	12	14
	2009–10	7	(19)	29	(81)	36	41
Unit 6 - Total	2005–06	1853	(69)	843	(31)	2696	3370
	2006–07	1517	(59)	1049	(41)	2566	3208
	2007–08	818	(65)	446	(35)	1264	1580
	2008–09	1109	(59)	781	(41)	1890	2363
	2009–10	881	(56)	699	(44)	1580	1975

^aFrom Deer Hunter Questionnaire Survey^bUnquantified, but estimated to be 15% of reported total.

Table 3. Unit 6 deer hunter residency and success, 2005–2009.

Regulatory year	Successful					Unsuccessful					Total hunters
	Local resident ^a	Nonlocal resident	Non resident	Total	(%)	Local resident	Nonlocal resident	Non resident	Total	(%)	
2005–06	362	596	36	994	(59)	134	516	27	677	(41)	1671
2006–07	329	614	21	964	(59)	122	531	21	674	(41)	1638
2007–08	174	313	126	613	(41)	182	529	186	897	(59)	1510
2008–09	269	510	27	806	(50)	151	604	41	796	(50)	1602
2009–10	212	357	22	591	(46)	143	494	61	698	(54)	1289

^a Resident of Unit 6

Table 4. Unit 6 deer harvest chronology percent by month, 2005–2009.

Regulatory year	Harvest periods					<i>n</i>
	August	September	October	November	December	
2005–06	10	8.5	32	30	19	2696
2006–07	7	5	30	33	24	2566
2007–08	14	5	35	25	20	1267
2008–09	13	3	34	30	21	1602
2009–10	11	6	29	35	18	1289

Table 5. Unit 6 deer harvest percent by transport method, 2003–2007.

Regulatory year	Percent of harvest						<i>n</i>
	Airplane	Boat	3- and 4-wheeler	Highway vehicle	Foot	Unknown	
2005–06	11	85	1	0	1	2	2741
2006–07	9	86	1	1	1	2	2494
2007–08	15	76	1	1	3	4	1253
2008–09	14	81	0	1	2	2	2537
2009–10	14	80	0	1	2	3	2111

APPENDIX A.

Dry weight of plant species consumed by Sitka black-tailed deer in Prince William Sound, Alaska, collected from rumen samples of hunter-killed deer. Results were compared before and after a heavy

Forage Species		Total dry		Pre-snow (n=7)		Post-snow (n=7)	
		weight (g)	%	weight (g)	%	weight (g)	%
FORBS							
Wintergreen forb*		8.879	21.350	2.696	11.790	6.183	33.029
Bunchberry	<i>Cornus canadensis</i>	2.060	4.952	0.284	1.240	1.776	9.487
Bog rosemary	<i>Andromeda polifolia</i>	0.143	0.343	0.143	0.624	0.000	0.000
Deer fern	<i>Blechnum spicant</i>	0.138	0.332	0.061	0.265	0.077	0.413
TOTAL FORB		11.219	26.977	3.183	13.919	8.036	42.929
snow event that							
	buried open-meadow plant						
SHRUBS							
Sweetgale	<i>Myrica gale</i>	19.522	46.942	19.160	83.790	0.361	1.931
Blueberry	<i>Vaccinium</i>	4.890	11.758	0.056	0.245	4.834	25.821
LB cranberry	<i>Vaccinium vitis-idaea</i>	0.745	1.792	0.015	0.067	0.730	3.898
Yellow heather	<i>Phyllodoce aleutica</i>	1.369	3.292	0.010	0.042	1.360	7.263
Crowberry	<i>Empetrum nigrum</i>	0.728	1.751	0.000	0.000	0.728	3.890
Hemlock	<i>Tsuga heterophylla</i>	1.320	3.173	0.000	0.000	1.320	7.049
Unknown stem		0.475	1.142	0.181	0.793	0.294	1.568
TOTAL SHRUB		29.048	69.849	19.423	84.937	9.626	51.420
species.							
Kelp	<i>Laminaria spp.</i>	0.272	0.653	0.000	0.000	0.272	1.450
Beard lichen	<i>Usnea spp.</i>	1.180	2.838	0.171	0.746	1.010	5.395
Mushroom		0.139	0.335	0.091	0.398	0.048	0.257
Total sample wt (g)		41.587	100.000	22.867	100	18.720	100

*Included an inseparable mixture of primarily goldthread (*Coptis spp.*), bramble (*Rubus pedatus*) and bunchberry that remain green and accessible to deer under forest canopy.

WILDLIFE
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 115526
JUNEAU, AK 99811-5526

DEER MANAGEMENT REPORT

From: 1 July 2008
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 8 (5,097 mi²)

GEOGRAPHIC DESCRIPTION: Kodiak and adjacent islands

BACKGROUND

Officially, the Sitka black-tailed deer population in Unit 8 originated from 3 transplants, totaling 25 deer, between 1924 and 1934 (Paul 2009). The U.S. Secretary of Agriculture gave authorization for the transplant in May 1923, and the project began the next year when 14 animals were captured near Sitka and released on Long Island near Kodiak city. Soon after the Alaska Game Commission was established in 1925 it endorsed the project and adopted regulations to protect the newly established population. In 1930, 2 more deer were captured from Prince of Wales Island and released on Long Island. There was, however, little natural movement from Long Island to Kodiak, so in 1934, 9 deer were captured in the Rocky Pass area near Petersburg and released on Kodiak.

Recently rediscovered evidence, however, suggests deer have been on the archipelago since at least the turn of the last century. A letter dated March 15, 1919 (ADF&G files, Kodiak) from the U.S. Marshal's Office to the Territorial Governor states "The Alaska Commercial Company planted some deer on Kodiak Island some 20 years ago, and up to the time of the Katmai eruption [1912] they were increasing very nicely..." The correspondence noted that ash from the eruption had decimated the deer population on Kodiak, and hunters had killed all the deer on Long Island. A note from the U.S. Department of Agriculture to the governor on April 26, 1919, states "I note your request that protection be continued on deer on Kodiak and Long Islands and will reinsert this in the regulations." We have not found any further information on the date, source, or size of this "original" transplant of deer to Kodiak.

By the early 1940s deer were abundant on Long Island and occupied northeastern Kodiak Island. In 1950 they were a common sight near Kodiak city, and the first officially sanctioned hunt was held in 1953. The deer population continued to expand into unoccupied habitats, and by the late 1960s, deer had dispersed throughout Kodiak, Afognak, and adjacent islands (Smith 1979). The expansion of deer on the southern part of Kodiak Island continued for the next several decades, eventually allowing population expansion to Sitkinak and Tugidak islands in the early 1980s.

Winter mortality proved to be the most significant factor limiting the deer population. Deer herds suffered high mortality during the 1968–69 and 1970–71 winters, causing declines in harvests and hunter success (Alexander 1970, 1973). The population rebounded from 1972 to the mid

1980s, when it reached peak numbers, exceeding 100,000 animals unitwide (Smith 1989). Severe winter conditions prevailed from 1987 through 1992, and deer in the northern part of the archipelago were hit especially hard. There was a short reprieve from 1993 to 1996, but populations declined again in 1997. During the winter of 1998–99 the Unit 8 deer population declined precipitously (Van Daele 2003). The five successive winters (1999–2000 through 2005–06) were relatively mild. Harsh winter weather returned in 2006–07 and 2008–09, along with increased deer mortality. The winter of 2009–10 was moderate and there was a noticeable increase in fawn survival.

Deer have become an important resource for the residents of, and visitors to, the Kodiak Archipelago. Venison has surpassed marine mammals as a primary source of mammalian protein for villagers, and income generated from services provided to deer hunters is a major economic factor in the local economy. In spite of the significance of this resource, we have not yet developed an objective method of measuring the population size or density. Annual hunter harvest surveys have been used to assess trends in the deer population since 1989. We assessed winter mortality by searching for and examining deer carcasses in selected coastal wintering areas and periodically used aerial surveys to assess winter conditions and physical appearance of deer. From 1990 through 1998 the U.S. Fish and Wildlife Service (FWS) experimented with various aerial and ground surveys to monitor deer population trends on the Kodiak National Wildlife Refuge (NWR). Refuge staff also experimented with browse transects, Forward Looking Infrared Radar (FLIR), and range exclosures to investigate deer population trends.

Seasons and bag limits were liberal during the past 2 decades. Seasons ranged from 153 to 184 days, and bag limits ranged from 3 bucks to 7 deer. Most regulatory changes were initiated in response to perceived population trends and hunting effort. The unit typically has been divided into 2–3 hunt areas. The road systems emanating from Kodiak city and Port Lions have had the most restrictive regulations, while more remote areas have been more liberal. Sex restrictions are usually predicated on protecting maternal does while their fawns are still dependent on them or restricting doe harvests during times when the population is recovering from declines. Because of the subjective nature of much of the data used in deer management, close cooperation between the Alaska Department of Fish and Game (ADF&G), FWS, the Kodiak Fish and Game Advisory Committee, and the general public is critical.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVE

Maintain a population of 70,000–75,000 deer and an annual harvest of 8,000–8,500 deer (5 AAC 92.108).

METHODS

Questionnaires have been mailed to hunters annually beginning with the 1989–90 season to assess trends in hunting effort and harvest. The questionnaires were sent to a random sample of deer harvest ticket holders, and harvest estimates were derived from returned questionnaires. Field interviews and posthunt interviews provided preliminary harvest data. Guides and transporters frequently submitted voluntary summaries of hunting activities.

We assessed natural mortality by searching for deer carcasses in selected coastal winter ranges each year. These surveys provided a relative index of winter mortality, but the methods used were not consistent enough to provide unbiased trend data. To supplement information obtained from the beach surveys, we made occasional flights to observe snow conditions and condition of deer during winter months. Reports from the public, particularly spring bear hunters also provided information on winter conditions and deer mortality.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

The Unit 8 deer population experienced substantial winter mortality during 1968–69, 1970–71, 1989–90 and 1998–99. Following many of these occurrences, more conservative regulations were enacted and the populations quickly rebounded (Van Daele 2003).

In the years since the last severe winter mortality (1998–99), there were 5 successive mild winters (1999–2000 through 2005–06) followed by harsh winter weather in 2006–07 and 2008–09, along with increased deer mortality. The winter of 2009–10 was moderate and there was a noticeable increase in fawn survival.

We have no impartial methods of ascertaining deer numbers or densities, but annual hunter questionnaires provide reliable harvest data and an indicator of population trend. Using those data and subjective accounts, the 2009 population estimate was 70,000 deer and appeared to be stable to increasing unitwide.

Population Composition

The percentage of males in the harvest has remained at least 73% since 1990–91 and peaked at 95% in 2001–02. Doe harvests declined precipitously after more conservative seasons were implemented from 2000–01 through 2002–03 in an effort to stimulate population recover from a severe winter-kill in 1998–99. After these restrictions were relaxed the percentage of does in the harvest has increased annually and reached a plateau during this reporting period (Table 1).

Distribution and Movements

Deer are distributed throughout Unit 8 except in the more remote Semedi, Barren, and Chirikof Island groups. Within the past 25 years, deer colonized Tugidak Island, about 20 miles south of Kodiak Island. Tugidak is a State Critical Habitat Area, important to ground-nesting birds and harbor seals. If deer proliferate on the island, it could result in detrimental impacts to the native flora and fauna.

Our knowledge of deer movements in Unit 8 is based on Selinger (1995) who documented movements between summer and winter ranges for 21 radiocollared female deer monitored in 1990 and 1991 near Spiridon Bay on western Kodiak Island. Distances between summer and winter ranges did not exceed 5 km (3 miles) for 14 deer, but 7 deer moved 22 km (13 miles). The mean date of movement between winter and summer ranges was 29 May, and 20 October was the mean date for movement between summer and winter ranges. Summer home ranges were larger than winter home ranges, averaging 454 ha (1.8 mi²) and 107 ha (0.4 mi²), respectively.

MORTALITY

Harvest

Season and Bag Limits. During this reporting period the open season for resident, nonresident, and federal subsistence hunters was 1 August–31 October in that portion of Kodiak Island north of a line from the head of Settlers Cove (including Peregrebni Point) to Crescent Lake (57° 52'N, 152° 08'W) and east of a line from the outlet of Crescent Lake to Mount Ellison Peak and from Mount Ellison Peak to Pokati Point at Whale Passage, and that portion of Kodiak Island east of a line from the mouth of Saltery Creek to the mouth of Elbow Creek and adjacent small islands in Chiniak Bay. The bag limit was 1 buck. A special weapons hunt (archery and muzzleloaders) was open in this area 1–14 November with a bag limit of one deer (either sex). Hunters were required to successfully complete an authorized education course before participating in the primitive weapons hunt.

The open season for resident, nonresident, and federal subsistence hunters in the remainder of Unit 8 was 1 August–31 December. The bag limit was 3 deer. Hunters could harvest only bucks from 1 August–30 September, and deer of either sex could be taken October through December.

Federal subsistence hunting regulations conformed to the state regulations, except that residents of Unit 8 could continue to hunt on the Kodiak NWR throughout January. On Kodiak NWR lands, hunters could harvest deer for other qualified subsistence users if they first obtained a designated hunter permit. Proxy hunting on other lands was restricted to resident hunters who were hunting for other Alaska residents who were ≥ 65 years old, legally blind, or $\geq 70\%$ disabled.

Board of Game Actions and Emergency Orders. The Board of Game made no changes to the deer hunting regulations in Unit 8 during this reporting period. During its March 2007 meeting, the Board required deer harvest tickets to be used sequentially and that hunters carry all unused deer harvest tickets with them while they were hunting. During deliberation, the Board clarified its intent by noting hunters need only carry the number of tickets corresponding to the maximum bag limit in the unit (e.g. 3 harvest tickets in Unit 8).

Hunter Harvest. Harvests during this reporting period appeared to peak after a rebound from the low levels that followed the population decline in 1998–99. In 2008–09 the total legal harvest was estimated at 3,715, and increased to 4,088 in 2009–10. During the previous 5 years of reported harvest the average annual harvest was 5,120 deer (Note: no hunter harvest questionnaire was conducted for the 2004–05 season, Table 1). In 2008–09 the percentage of bucks in the harvest was 75%, and in 2009–10 the percentage of bucks was 75%, a decline from the previous 5-year (2003–04 through 2007–08) average of 82.5%.

As deer populations expanded into new areas, and various parts of the archipelago experienced differing degrees of winter mortality and harvest in the 1990s, harvest patterns shifted toward southern Kodiak Island (Smith 1995). This dynamic has fluctuated in recent years, with northern Kodiak again being the area that usually has the most harvest. In 2008–09, 19% of the reported harvest was from the northern islands in the archipelago (hunt areas 810–813), 49% was from northern Kodiak Island (hunt areas 814–817 and 827–835), and 31% was from southern Kodiak Island (hunt areas 818–826). In 2009–10, 20% of the reported harvest was from the northern

islands, 42% was from northern Kodiak, and 36% was from southern Kodiak. The averages for the previous 5 years were: north islands—21%; northern Kodiak—49%; and, southern Kodiak—30%.

Hunter Residency and Success. The number of hunters afield during this reporting period decreased slightly from an estimated 2,876 in 2008–09 to 2,705 in 2009–10. The average number of hunters afield during the previous 5 years of reported data was 3,409 (Table 2). Unit 8 residents composed 46% of the hunters in 2008–09 and 38% in 2009–10, a slight increase from the previous 5-year average (40%). Nonlocal residents composed 41% of the hunters in 2008–09 and 48% in 2009–10, an increase from the previous 5-year average (40%). Nonresidents composed 13% of the hunters in 2008–09 and 14% in 2009–10, a decline compared to the 5-year average (20%).

Hunter success increased during this reporting period from 63% in 2008–09 to 73% in 2009–10. The average annual hunter success during the previous 5 years was 73% (Table 2). The mean number of deer harvested per hunter afield was 1.3 in 2008–09 and increased to 1.5 deer per hunter in 2009–10. The previous 5-year average was 1.5 deer per hunter (Table 3). In 2008–09, 41% of the hunters killed only 1 deer, and in 2009–10 that figure decreased to 36% (Table 4). In 2008–09, 35% of hunters took ≥ 3 deer, and in 2009–10 that percentage remained stable at 36%. The average percentage of hunters that killed only 1 deer during the previous 5 years was 40%, while the average percentage of hunters taking ≥ 3 deer during that same period was 36%.

Harvest Chronology. November is consistently the peak month of harvest in Unit 8 (Table 5). In 2008–09, 45% of the deer were harvested in November, compared to 2009–10 during which 47% were harvested in November. This percentage was higher than the average (44%) of the previous 5 years.

Transport Methods. Boats and aircraft have been the most favored means of transportation for deer hunters in Unit 8 since inception of the harvest questionnaire. In 2008–09, 37% of the deer hunters used boats and 15% used aircraft as their primary means of access. In 2009–10, 46% of deer hunters used boats and 20% used aircraft. Averages for the previous 5 years were 41% for boats and 20% for aircraft (Table 6). Charter boats are consistently common modes of transportation for deer hunters throughout the archipelago; however, the number of operators from Homer and other off-island locations seems to increase and decline with the availability of deer.

Other Mortality

The winter mortality in 1999–2000 through 2003–04 was very light, with few carcasses found along most transects. More normal winter conditions in 2004–05 and 2005–06 increased deer mortality, but hunter reports and incidental observations suggested the population remained stable to increasing during that time. Harsher winters returned in 2006–07 and 2008–09, resulting in high fawn mortality and a perceptible decline in the deer population on most parts of the archipelago (Table 7).

Unreported deer harvest, including wounding loss and illegal kills outside the hunting season was common, resulting in an estimated additional kill of about 20% of the reported harvest. Free-roaming dogs are significant predators on deer near communities and isolated residences. Deer–

motor vehicle collisions kill an estimated 40–50 deer annually along the Kodiak road system. Brown bear predation of deer occurs, predominantly in late winter, but is not an important limiting factor on the deer population.

HABITAT ASSESSMENT

High deer densities in the late 1970s through the mid 1980s resulted in heavily browsed winter range in some locales. The population decline in the late 1980s reduced pressure on winter range, but we have not evaluated the level of recovery. Staff from Kodiak NWR established constructed small range exclosures in 1999; however, they have never conducted an objective analysis and the exclosures simply provide a graphic example of unbrowsed vegetative growth. During winters with heavy snowfall that force deer onto beaches and exposed capes, vegetation in those areas receives extensive use, especially red elderberry, highbush cranberry, blueberry, and willow. There have been no objective investigations of the browse since the decline in the deer population in 1998–99.

Much of the Sitka spruce forest of central and eastern Afognak Island as well as private land on the Chiniak Peninsula of northeastern Kodiak Island has been clearcut. In the northern range of Sitka blacktails, maintenance of mature forest with a patchy understory for foraging and a well-developed canopy for snow interception are of paramount importance (Nelson et al. 2008). Deer may benefit from increased forage plants in young clearcuts on Afognak Island as long as a mosaic of mature stands are available to provide sufficient thermal cover and areas of reduced snow depths during harsh winters. Selinger (1995) noted that deer on Kodiak Island occupying non-coniferous brush and deciduous forest habitat have much larger summer ranges than deer in heavily forested Southeast Alaska and hypothesized that Kodiak deer may have adopted a strategy that allows them to accumulate greater fat reserves in summer that enhance their survival in areas without coniferous forest.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

Hunters continued to report bucks with abnormal testicular development (“steer deer”), particularly from the south end of Kodiak. Hunter questionnaires indicated that about 3% of the bucks taken in 1999 were steer deer, with the highest prevalence being on the Hepburn Peninsula (13%). From 1999 to 2010, a local big game guide has been collecting samples from normal and abnormal deer harvested on the Aliulik and Hepburn peninsulas. Staff at the University of Guelph in Ontario, Canada, and Colorado State University analyzed these samples. Results suggest an unusual occurrence of underdeveloped testes and/or testes that had not descended in adult bucks (unilateral and bilateral cryptorchidism) (Bubenik et al 2001). The cause of this phenomenon has not been determined, but it is more likely caused by an environmental factor rather than a genetic anomaly (Veeramachaneni et al. 2006; Latch et al. 2008). In spite of the increasing reports of abnormal deer, harvest data from the affected areas do not indicate discernable changes in the population and we feel that no management action is practical or necessary at this time.

Chronic wasting disease (CWD) is having significant impacts on deer management in several states and provinces (Gross and Miller 2001). ADF&G initiated an investigation into the potential presence of CWD on the Kodiak Archipelago in 2003. There have been no reported cases from Alaska, but Kodiak was considered particularly vulnerable because of the presence of

a commercial elk ranch in proximity to a viable wild deer population. From 2003 to 2008 hunters provided samples from 1,398 deer and 81 elk and all of these samples were CWD-free. In addition to providing samples, the hunters were also eager to offer information on their perceptions of deer habitat, behavior, and population levels. In 2009 the investigation was suspended due to the lack of any positive CWD findings and a re-direction of Federal funds.

CONCLUSIONS AND RECOMMENDATIONS

Sitka black-tailed deer on the Kodiak Archipelago is an introduced ungulate using an island habitat. There are no natural predators and vegetation evolved in the absence of any indigenous herbivores (except for seasonal use by brown bears). Much of the archipelago does not provide dense coniferous cover similar to old-growth forests of these ungulates' ancestral homes in Southeast Alaska, and during most winters deer are forced onto beaches by snow and/or cold temperatures. Consequently, the deer population is prone to dramatic population swings. Hunting is suspected to be compensatory for some of the annual winter mortality (i.e. many of the deer that are harvested would likely have been died during the winter anyway), except when the population is at low levels. There are few practical options for active management practices to enhance this deer population. Regulatory responses, such as liberalizing seasons as deer numbers increase and promulgating more conservative regulations when populations have declined, are the most effective ways to manage these animals.

Improving precision in assessing deer population trends is desirable, but is difficult and expensive. Several techniques have been considered and attempted (Van Daele 2003), however hunter questionnaire surveys and anecdotal evidence continue to be the primary tools for assessing the population. Even though objective population data are nonexistent, Alaska Statute 16.05.255 mandates that population and harvest objectives be established for Unit 8 deer because of their importance as a source of human food. ADF&G, in close cooperation with the Kodiak Fish and Game Advisory Committee, Kodiak NWR, commercial operators, and individual hunters made an attempt to satisfy this requirement with the best available data (Van Daele 2003). We recognize there is considerable room for improvement in the estimates used for these objectives.

During this reporting period, the deer population appeared to increase in response to more moderate winter conditions and lower than normal winter mortality. We also saw a corresponding increase in both hunter success, and the number of deer harvested.

A great deal of interagency cooperation continued to occur during this reporting period. The Kodiak Fish and Game Advisory Committee worked closely with its federal subsistence counterpart, the Kodiak/Aleutians Regional Advisory Committee, to develop and review deer hunting regulations for both the state and federal boards. Staffs from the ADF&G and Kodiak NWR were active participants throughout the process. State and federal biologists also worked together to assess winter mortality and conduct interviews of hunters in the field.

Deer harvest information collected by hunter questionnaires has provided objective data that have greatly assisted our management program. These data form the basis of our management reports and provide an insight into interannual deer population changes. The primary reason questionnaires are used instead of more conventional harvest report cards is extended length of

the hunting season and the multiple bag limit that complicate reporting and reduce compliance because hunters forget to send in report cards. Although the current system has been cost-effective and reliable, recent advances in the department's ability to use the internet for communicating with hunters, coupled with increases in postal rates, may provide incentive for development of a new method of gathering deer harvest data that is even more efficient.

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Please cite any information taken from this section, and reference as:

Van Daele, L. J., and J. R. Crye. 2011. Unit 8 deer management report. Pages 96–109 *in* P. Harper, editor. Deer management report of survey and inventory activities 1 July 2008–30 June 2010. Alaska Department of Fish and Game. Juneau, Alaska.

Table 1. Unit 8 deer harvest, 2000-01 through 2009-10.

Regulatory year	Estimated legal harvest ^a				Estimated illegal harvest ^b	Estimated wounding loss ^c	Estimated total
	Male (%)	Female (%)	Unknown	Total			
2000-01	1823 (73)	668 (27)	---	2491	249	249	2989
2001-02	2756 (95)	143 (5)	---	2899	290	290	3479
2002-03	2943 (94)	200 (6)	---	3143	314	314	3771
2003-04	4430 (85)	769 (15)	---	5199	520	520	6239
2004-05 ^d	---	---	---	---	---	---	---
2005-06	5635 (86)	936 (14)	---	6571	657	657	7885
2006-07	4369 (81)	1053 (19)	---	5422	542	542	6506
2007-08	2563 (78)	727 (22)	---	3290	329	329	3948
2008-09	2792 (75)	921 (25)	---	3715	372	372	4459
2009-10	3057 (75)	1030 (25)	---	4088	409	409	4906

^a Harvest data extrapolated from the results of a mail questionnaire survey.

^b Although illegal harvest has not been quantified, it is suspected to be about 10% of the legal harvest.

^c Although wounding loss has not been quantified, it is suspected to be about 10% of the legal harvest.

^d No survey was conducted in 1988-89 and 2004-05.

Table 2. Unit 8 deer hunter residency and success, 2000-01 through 2009-10.

Regulatory year	Successful				Unsuccessful				Total hunters
	Local ^a resident	Nonlocal resident	Nonresident	Total (%)	Local ^a resident	Nonlocal resident	Nonresident	Total(%)	
2000-01	515	608	201	1324 (51)	503	533	257	1293 (49)	2617
2001-02	629	753	134	1516 (72)	238	293	68	599 (28)	2115
2002-03	705	693	207	1605 (59)	524	413	196	1133 (41)	2738
2003-04	1065	1027	308	2400 (77)	356	242	104	702 (23)	3102
2004-05	---	---	---	---	---	---	---	---	---
2005-06	1268	1350	430	3048 (83)	292	185	139	616 (17)	3664
2006-07	1154	1135	433	2721 (71)	429	414	245	1088 (29)	3809
2007-08	583	630	588	1801 (59)	360	486	412	1258 (41)	3059
2008-09	882	732	206	1820 (63)	447	451	158	1056 (37)	2876
2009-10	725	968	291	1984 (73)	296	338	86	720 (27)	2704

^a Includes residents of Unit 8^b No survey was conducted in 1988-89 and 2004-05

Table 3. Unit 8 comparison of deer hunter questionnaire results for 2000-01 through 2009-10.

Regulatory year	% Hunter success ^a	% Hunters taking bag limit ^b	% Male	% Female	Total harvest	Estimated hunters	Mean number deer/hunter	Number days hunted/deer
2000-01	51	22	73	27	2491	2617	1.0	5.7
2001-02	72	29	95	5	2899	2115	1.4	4.0
2002-03	59	30	94	6	3142	2738	1.1	4.8
2003-04	77	42	85	15	5198	3102	1.7	3.0
2004-05 ^c	---	---	---	---	---	---	---	---
2005-06	83	42	86	14	6571	3664	1.8	3.6
2006-07	71	35	81	19	5422	3809	1.4	3.7
2007-08	59	25	78	22	3290	3059	1.1	4.6
2008-09	63	34	75	25	3715	2876	1.3	4.1
2009-10	73	36	75	25	4088	2704	1.5	3.6

^a Harvest data are expanded from returned hunter questionnaires.^b Maximum bag limit was 4 deer in 1980-81; 5 deer in 1981-82; 7 deer in 1982-83; 5 deer in 1983-84 to 1990-91; 5 deer on Kodiak NWR and 4 deer on nonfederal lands in 1991-92 to 2000-01; 4 deer on Kodiak NWR and 3 deer on nonfederal lands in 2001-02; and, 3 deer in 2002-03 to 2009-2010.^c No survey conducted.

Table 4. Number and percent of hunters in Unit 8 that reported harvesting 1, 2, 3, 4, or 5+ deer, 2005–06 through 2009–10.

Deer harvested	2005–06		2006–07		2007–08		2008–09		2009–10	
	Hunters	%	Hunters	%	Hunters	%	Hunters	%	Hunters	%
1 deer	1113	37	1122	41	893	50	740	41	704	36
2 deer	655	22	646	24	469	26	443	24	563	28
3 deer ^a	1164	39	874	32	397	22	874	31	671	34
4 deer ^a	56	2	47	2	15	1	47	1	7	<1
5 + deer ^a	31	1	17	1	26	1	17	3	38	2

^a Maximum bag limit was 3 in all areas.

Table 5. Unit 8 deer harvest chronology percent by period, 2000–01 through 2009–2010.

Regulatory year	Harvest periods (%)						<i>n</i>
	August	September	October	November	December	January	
2000–01	6	6	25	46	17	<1	2510
2001–02	10	8	22	35	22	2	2939
2002–03	6	6	23	38	25	2	3142
2003–04	7	7	21	39	25	1	5198
2004–05 ^a	--	--	--	--	--	--	---
2005–06	7	6	24	45	17	1	6468
2006–07	6	6	21	46	20	1	5422
2007–08	7	5	19	44	23	2	3290
2008–09	6	7	21	45	18	3	3715
2009–10	6	3	19	47	23	2	4088

^a No survey conducted.

Table 6. Unit 8 deer harvest percent by transport method, 1998–88 through 2009–2010.

Regulatory year	Percent of harvest									<i>n</i>
	Airplane	Horse	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Other	Unknown	
1998–99	19	3	43	9	0	2	15	10	2	7339
1999–2000	17	<1	42	8	0	1	15	15	2	5091
2000–01	19	<1	39	8	<1	2	18	12	3	4276
2001–02	14	<1	43	8	0	1	18	15	2	3619
2002–03	16	<1	40	7	0	<1	14	17	4	4403
2003–04	20	<1	42	7	0	2	14	12	2	4410
2004–05 ^a	--	--	--	--	--	--	--	--	--	---
2005–06	20	<1	42	10	0	<1	16	11	<1	5638
2006–07	18	<1	40	9	0	2	18	14	--	5924
2007–08	21	<1	40	9	0	1	17	12	--	4524
2008–09	15	1	37	13	0	<1	17	16	<1	4870
2009–10	20	<1	46	7	0	1	12	13	<1	3929

^a No survey in 2004–05.

Table 7. Unit 8 sex and age composition of deer winter-kill from beach mortality transects, 2000-01 through 2009-2010.

Regulatory year	Adult				Juvenile ^a				Unk. age/ gender	All			
	M (%)	F (%)	Unk.	Total	M (%)	F (%)	Unk.	Total		M (%)	F (%)	Unk.	Total
2000-01 ^b	0 (--)	0 (--)	0	0	0 (--)	0 (--)	0	0	0	0 (--)	0 (--)	0	0
2001-02 ^b	0 (--)	0 (--)	6	6	0 (--)	0 (--)	5	5	2	0 (--)	0 (--)	13	13
2002-03 ^b	0	0	0	0	0	0	0	0	0	0 (--)	0 (--)	0	0
2003-04 ^b	3 (30)	7 (70)	5	15	1 (50)	1 (50)	13	15	5	4 (33)	8 (67)	23	35
2004-05 ^b	0 (--)	2 (100)	2	4	0 (--)	0 (--)	5	5	0	0 (--)	2 (100)	7	9
2005-06 ^b	4 (36)	7 (64)	3	14	8 (67)	4 (33)	29	41	1	12 (52)	11 (48)	33	56
2006-07 ^b	0 (--)	2 (100)	1	3	4 (80)	1 (20)	36	41	1	4 (57)	3 (43)	38	45
2007-08 ^b	0 (--)	1 (100)	3	4	8 (100)	0 (--)	35	43	3	8 (89)	1 (11)	41	50
2008-09 ^b	1 (100)	0 (--)	--	1	1 (25)	3 (75)	14	18	2	2 (25)	3 (75)	16	21
2009-10 ^b	0 (--)	0 (--)	--	0	7 (64)	4 (36)	17	28	1	7 (64)	4 (36)	18	29

^a Includes fawns and yearlings.

^b Data obtained from Kodiak National Wildlife Refuge files.



The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sales of handguns, sporting rifles, shotguns, ammunition and archery equipment. The Federal Aid program allots funds back to states through a formula based on each state's geographic area and number of paid hunting license holders. Alaska receives a maximum 5% of revenues collected each year. The Alaska Department of Fish and Game uses federal aid funds to help restore, conserve and manage wild birds and mammals to benefit the public. These funds are also used to educate hunters to develop the skills, knowledge and attitudes for responsible hunting.



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