Deer
Management Report
of survey-inventory activities
1 July 2004–30 June 2006

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

Phil Mooney, ADF&G

Funded through
Federal Aid in Wildlife Restoration
Grants W-33-3 and W-33-4, Project 2.0
2007

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Please note that population and harvest data in this report are estimates and may be refined at a later date.

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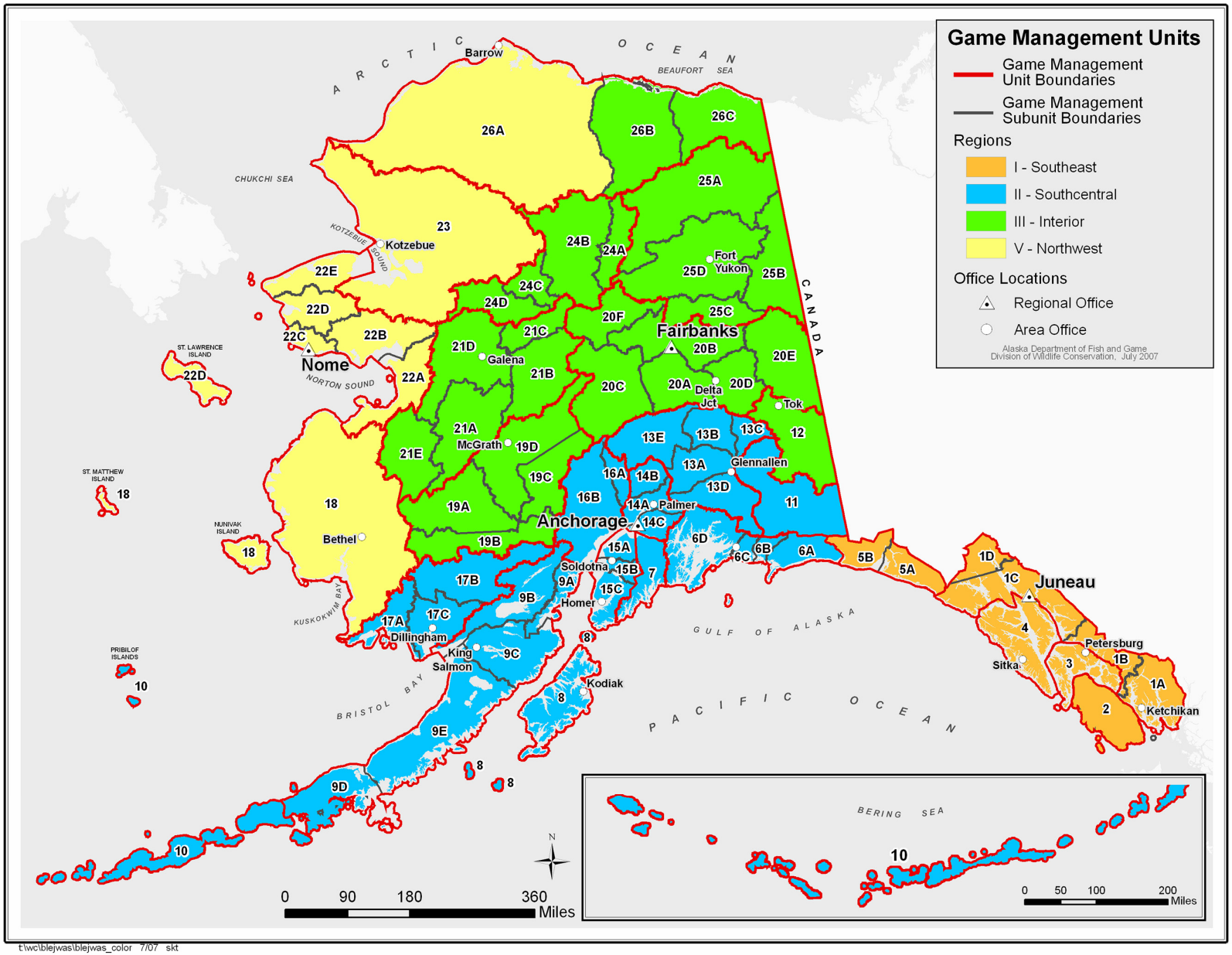

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WILDLIFE

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 2004
To: 30 June 2006

LOCATION

GAME MANAGEMENT UNIT: 1A (5300 mi^2)

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 moderate-to-low levels throughout most of southern Southeast Alaska.

Weather conditions and population levels influence deer harvests. Unit 1A harvests ranged from 143 to 914 deer during the past 10 seasons, with hunting seasons extending from August through December. Limited hunting of antlerless deer was allowed before 1978, but now only bucks are legal. As clearcut logging continues to reduce old-growth habitat in portions of the unit, 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.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

In fall 2000 the Board of Game took action to establish a Unit 1A population goal of 15,000 deer and a harvest goal of 700 deer, based on high consumptive use of the deer population in the subunit.

MANAGEMENT OBJECTIVES

- Maintain populations in excess of 45 deer per mi^2 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 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 (Straugh and Rice 2003; Straugh et al. 2004).

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.

The Division of Subsistence (DS) has historically conducted personal interview household surveys to estimate deer harvests, and some of their results conflict with our estimates. DS has done 4 Subsistence Resource Personal Interview Household Surveys of rural communities within this area during the last 15 years.

Because of some contentious issues surrounding allocation of deer harvest in Unit 2 a new report system was developed. Starting in fall of 2005 deer hunters were required to fill out a new harvest report form if they planned to hunt Unit 2 (Prince of Wales Island) any time during the deer season. Those hunters were 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.

RESULTS AND DISCUSSION

MORTALITY

Harvest

Season and Bag Limit	Resident and Nonresident Hunters	
Unit 1A	1 Aug–31 Dec	4 bucks

Board of Game Actions and Emergency Orders. No regulatory changes were made to state seasons or bag limits during this period. No emergency orders were issued.

Hunter Harvest. Total harvest is estimated by combining the reported harvest from the mail survey along 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 estimated total harvest of 143 deer during the 2005 season was the lowest on record (1984–2005) (Table 1). This lower harvest reflects a change in hunter activity patterns as hunters select other more productive areas to hunt. During the 2005 season only 469 hunters reported spending 1314 days hunting in this unit, about half the long term average of 3006 days by 755 hunters (Table 1). The reported number of deer killed by highway vehicle collisions in the unit remains about the same at 1–5 per year (Table 4).

Only 143 hunters reported spending time hunting deer on Gravina during 2005 and 43 deer were reported taken from Gravina. This harvest was below average (105 deer) but was also a result of half as many hunters spending time on the island. The only time in the past 15 years when the Gravina harvest was lower was the 2003 season, when 132 hunters reported only 27 bucks

harvested. After several years of no reported harvest on the Cleveland Peninsula, hunters reported 32 and 17 bucks harvested during 2004 and 2005 respectively (Table 2). Slow recovery of the deer herd in this area is likely linked to low habitat quality, along with wolf and black bear predation.

Residency and Success. Most Unit 1A hunters are local residents living within the unit. During this report period 189 and 102 local resident hunters had 31% and 29% overall success rates during the 2004 and 2005 seasons. On average, approximately 12 nonlocal resident hunters are successful at harvesting deer in this area and about 3 nonresident hunters are successful each season. Nonresident success was slightly higher (5 hunters) both years than the long term average of 3 per year. The number of unsuccessful nonresident hunters pursuing deer was the highest on record with 18 unsuccessful out-of-state hunters during the 2005 season (average 7) (Table 4).

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. Estimates of illegal and unreported harvest are 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. This loss will be greater in years with deep snow. By 2054 we expect that few areas will meet projected hunter demand within roaded and logged portions of Unit 1A (USFS 1989). Recent timber sales by the Alaska Mental Health Trust Authority and the State of Alaska on Gravina and Revilla Islands will reduce carrying capacity for deer in several popular Unit 1A hunting areas. These current sales are using both selective and clearcut methods to remove valuable timber for export. We expect this will have long-term negative effects on deer numbers, and consequently, on future hunter success in these areas.

CONCLUSIONS AND RECOMMENDATIONS

During this report period the deer harvest has remained below the long-term average for the unit, and the 2005 harvest was the lowest since 1984. The Unit 1A days of effort per deer has improved and is now near the long-term average. After several years of no reported harvest, hunters on the lower Cleveland Peninsula reported 32 deer harvested during 2004 and 17 harvested during 2005.

South Revilla and Gravina islands continue to produce most of the Unit 1A deer harvest. Easy access from Ketchikan makes these areas popular hunting destinations. However, both selective

and clearcut logging activity in these popular hunting areas will likely have a negative long-term effect on deer by removing critical deer winter habitat.

During both of the past 2 years we have seen some of the mildest winters on record, and consequently, winter deer mortality has been low. Since the winter of 1998–99 there has not been sufficient snow depth nor snow persistence to further impact deer in southern southeast.

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

Results from the new Unit 2 Harvest Report Card have been mixed, but we are hoping to improve the reporting accuracy with follow-up calls and public education efforts. This new reporting effort will continue through 2007.

Effort should be made to inform the public about logging effects on deer populations. We anticipate that winter habitat loss will reduce deer carrying capacity for many decades. Long-term implications of habitat loss include the inability to provide for subsistence needs and the loss of hunting opportunities (Wood 1990, Larsen 1993).

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PORTER, B. 2007. Unit 1A deer. Pages 1–11 *in* P. Harper, editor. Deer management report of survey and inventory activities 1 July 2004–30 June 2006. Alaska Department of Fish and Game. Juneau, Alaska.

TABLE 1 Unit 1A deer harvest data, regulatory years 1995 through 2005

Regulatory year	Nr hunters	Nr successful hunters	Percent successful	Hunter days	Average hunter days	Deer [a]	Average deer per hunter	Average hunter days per deer
1995	1118	493	44	5080	4.5	914	0.8	5.6
1996[b]	---	344	---	---	---	539	---	---
1997	875	333	38	4208	4.8	528	0.6	8.0
1998	922	338	37	3482	3.8	556	0.6	6.3
1999	747	189	25	3644	4.9	287	0.4	12.7
2000	636	164	26	3684	5.8	267	0.4	13.8
2001	682	232	34	2689	3.9	367	0.5	7.3
2002	538	179	33	2218	4.1	251	0.5	8.8
2003	523	158	30	1502	2.9	211	0.4	7.1
2004	1037	305	29	2265	2.2	391	0.4	5.8
2005	469	132	28	1314	2.8	143	0.3	9.2
$\bar{x}$	755	261	31	3006	4.0	405	0.5	8.5

[a] Includes does that were reported killed.

[b] Some harvest data not available for 1996 because of survey changes.

TABLE 2 Unit 1A deer harvest from major harvest areas, regulatory years 1990 through 2005

Major harvest area	Regulatory year	Nr hunters expanded	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	25	13	574	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	178	43	24	390	2.2	0.3	50
	2003	132	21	16	294	2.2	0.2	27
	2004	242	51	21	478	2.0	0.3	83
	2005	143	34	24	425	3.0	0.3	43
2-Duke Island	1990	9	2	22	18	2.0	0.2	2
	1991	33	8	24	70	2.1	0.6	20
	1992	22	3	14	58	2.6	0.1	3
	1993	15	0	0	15	1.0	0.0	0
	1994	3	0	0	7	2.0	0.0	0
	1995	19	0	0	49	2.6	0.0	0
	1996	---		---	---	---	---	---

TABLE 2 Unit 1A deer harvest from major harvest areas, regulatory years 1990 through 2005

Major harvest area	Regulatory year	Nr hunters expanded	Nr successful hunters expanded	Percent successful	Hunter days expanded	Average days per hunter	Average deer per hunter	Deer killed
	1997	12	---	50	18	1.5	0.5	6
	1998	---	6	---	---	---	---	---
	1999	---	---	---	---	---	---	---
	2000	6	---	100	13	2.0	1.0	6
	2001		6					
	2002							
	2003	11		55	23	2.1	0.5	6
	2004	0	6	0	0	0	0	0
	2005	0	0	0	0	0	0	0
			0					
3–Revilla	1995	906	305	34	2843	3.1	0.5	410
	1996	---	227	---	---	---	---	314
	1997	615	212	35	2318	3.8	0.5	308
	1998	636	208	33	1865	2.9	0.4	283
	1999	546	115	21	2153	3.9	0.3	163
	2000	512	133	26	2497	4.9	0.4	188
	2001	493	150	30	1447	2.9	0.4	213
	2002	466	144	31	1391	3.0	0.4	179
	2004	420	149	35	1586	3.8	0.6	232
	2005	320	136	43	1202	3.8	0.6	189
4–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

TABLE 2 Unit 1A deer harvest from major harvest areas, regulatory years 1990 through 2005

Major harvest area	Regulatory year	Nr hunters expanded	Nr successful hunters expanded	Percent successful	Hunter days expanded	Average days per hunter	Average deer per hunter	Deer killed
4–Cleveland Peninsula continued	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	186	52	28	512	2.8	0.4	69
	1998	158	23	15	525	3.3	0.1	23
	1999	146	32	22	645	4.4	0.3	49
	2000	84	6	7	181	2.2	0.1	6
	2001	77	5	6	241	3.1	0.1	5
	2002	70	0	0	83	1.2	0	0
	2003	26	0	0	66	2.5	0	0
	2004	64	21	33	106	1.7	0.5	32
	2005	35	12	34	131	3.7	0.5	17
5–Mainland	1995	66	28	---	56	1.0	0.1	7
	1996	---	6	0.0	---	---	---	---
	1997	21	6	29	153	7.3	0.0	0.0
	1998	32	14	44	42	1.3	0.0	0.0
	1999	24	0		43	1.8	0.0	0.0
	2000	15	0					
	2001	28	10	100	87	3.1	0.2	5
	2002	7	7	0	14	2.0	1.0	7
	2003	30	0	0	0	0	0	0
	2004	14	0	0	35	2.5	0	0
	2005	25	4	16	73	2.9	0.2	6

TABLE 3 Unit 1A reported and estimated deer harvest/mortality, regulatory years 1995 through 2005

Regulatory year	Reported harvest			Unreported & illegal harvest[a]	Estimated total harvest	Estimated Nr road kills
	Male	Female	Total			
1995[b]	853	61	914	457	1371	1–5
1996	533	6	539	270	809	1–5
1997	459	69	528	264	792	1–5
1998	545	11	556	278	834	1–5
1999	275	13	288	144	432	1–5
2000	261	6	267	134	401	1–5
2001	367	0	367	168	535	1–5
2002	251	0	251	125	376	1–5
2003	211	0	211	105	316	1–5
2004	387	5	392	196	588	1–5
2005	260	8	268	134	402	1–5
$\bar{x}$	400	16	416	201	623	1–5

[a] Unreported and illegal harvest is estimated at 50% of reported harvest.
[b] Antlerless seasons: State season in 1987, federal season in 1995.

TABLE 4 Unit 1A deer hunter residency and success, regulatory years 1995 through 2005

Regulatory year	Successful				Unsuccessful			
	Local resident[a]	Nonlocal resident	Nonresident	Total	Local resident[a]	Nonlocal resident	Nonresident	Total
1995	464	23	6	493	601	12	12	625
1996	344	---	---	344	---	---	---	---
1997	319	0	14	333	512	16	14	542
1998	323	15	0	338	575	5	4	584
1999	161	29	0	190	517	10	0	527
2000	164	0	0	164	456	16	5	477
2001	219	12	0	231	432	9	10	451
2002	180	0	0	180	374	9	5	388
2003	190	23	0	213	273	32	4	309
2004	189	14	5	208	336	21	0	357
2005	102	5	5	112	128	14	18	160
$\bar{x}$	241	12	3	255	420	14	7	442

[a] Local resident includes Unit 1A resident

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
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DEER MANAGEMENT REPORT

From: 1 July 2004
To: 30 June 2006

LOCATION

GAME MANAGEMENT UNIT: 1B (3000 mi^2)

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. 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 from Unit 1B, much of the hunting effort by individuals in these communities is focused on the islands to the west of the mainland where deer densities are generally higher. Between 1994 and 2003, the estimated Unit 1B deer harvest ranged from 34 to 184, while the number of hunters varied from 91 to 262.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

Population objectives for Unit 1B deer are 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 6400 to 10,200 deer.

MANAGEMENT OBJECTIVES

- Increase deer populations on winter range (<1500 foot elevation) to 32 deer/mi^2 (average 1.0 pellet group/20 m^2 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 (Straugh and Rice 2003; Straugh et al. 2004).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Unit 1B pellet-group surveys are currently inadequate to determine deer population trends (Table 1). In spring 2003, the most recent year that pellet-group counts were conducted in the unit, one 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 antlered deer

Board of Game Actions and Emergency Orders. At the 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. No emergency orders were issued during the report period.

Hunter Harvest. Based on the results of the deer hunter survey, hunter harvest in 2004 continued a declining trend that began in 2000. The estimated harvest of 38 deer in 2004 was less than half of the long-term average and the second lowest estimated harvest since 1984 (Table 2). Deer harvest was reported only from the Thomas Bay area (Muddy River/Patterson Glacier). In 2005 the deer harvest increased only slightly to 58 deer but remained below the 10-year average of 62 deer per year. Deer harvest was reported from the Thomas Bay and Horn Cliff/Le Conte Bay areas.

Hunter Residency and Success.

Based on Deer Hunter Survey estimates, no nonresidents hunted deer in Unit 1B during 2004. An estimated 19 nonresidents hunted deer in the subunit during 2005, only 5 (26%) of which were successful (Table 3). Deer populations are greater and seasons and bag limits more liberal in other nearby units, and therefore, attract more nonlocal hunters. The total number of hunters decreased from 106 in 2003 to 70 in 2004, which may have contributed to the low harvest estimate that year. The number of hunters increased to 112 in 2005 but remained below the long-term average. Despite the low estimated harvest, success rates increased from 33% and 42% during the previous report period to 49% in 2004 and 43% in 2005.

Harvest Chronology. Generally, most harvest in the unit takes place during November, October, and December, respectively (Table 4). In 2004, the harvest was evenly distributed between August, October and November. In 2005, the highest percentage of the harvest occurred in August, November and October, respectively.

Transport Methods. Most Unit 1B deer hunters reported traveling to their hunting areas by boat (Table 5). A small percentage of hunters reported using all-terrain vehicles (ATVs) in 2004 and highway vehicles in 2005 to access hunt areas. Logging roads provide some 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, deer-vehicle collisions, injury and accidents, and starvation or natural causes.

CONCLUSIONS AND RECOMMENDATIONS

Unit 1B deer populations exist in isolated pockets and have a patchy distribution. This area has relatively low deer density (due to typically high snow accumulation) and is largely inaccessible. Unitwide, deer densities vary from moderate in some isolated areas to extremely low in others. Overall, deer populations seem stable with localized variations. Winter weather, predation, and clearcut logging have the greatest effects on deer population dynamics. Clearcut logging has and will continue to reduce deer carrying capacity in the unit. There are no indications that hunting seasons or bag limits should be further restricted.

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TABLE 1 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 2 Unit 1B deer harvest, 1994–2005

Regulatory year	Estimated legal harvest						Estimated illegal harvest					Total[a]
	M	(%)	F	(%)	Unk.	Total	M	(%)	F	(%)	Unk.	
1994	184	(100)				184						184
1995	75	(100)				75						75
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

[a] Data from mail questionnaire.

TABLE 3 Unit 1B deer hunter residency and success, 1994–2005

Successful						Unsuccessful					
Regulatory year	Local[a] resident	Nonlocal resident	Nonresident	Total	(%)	Local[a] resident	Nonlocal resident	Nonresident	Total	(%)	Total hunters
1994	107	18	0	125	(48)	100	35	2	137	(52)	262
1995	40	16	0	56	(33)	81	32	0	113	(67)	169
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	(68)	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

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

TABLE 4 Unit 1B deer harvest chronology by month and percent, 1994–2005

Regulatory year	Harvest periods							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	39	0	0	0	82
2004	33	0	33	33	0	0	0	39
2005	43	16	19	22	0	0	0	58

[a] May not equal harvest table due to rounding or incomplete reporting.

TABLE 5 Unit 1B deer hunter effort, percent by transport method, 1994–2005[a]

Regulatory year	Percent of effort							Number of trips
	Airplane	Boat	3- or 4-wheeler	Foot	ORV	Highway vehicle	Not specified	
1994	5	91	2			2		345
1995	3	89	2	3	2			226
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

[a] The 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
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JUNEAU, AK 99811-5526

DEER MANAGEMENT REPORT

From: 1 July 2004
To: 30 June 2006

LOCATION

GAME MANAGEMENT UNIT: 1C (7600 mi^2)

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 regionwide 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 weather in winter 1999. Evidence of the affect of this severe winter on deer was documented in Unit 4, where three 1-mile mortality transects conducted in upper Seymour Canal on Admiralty Island in April 1999 resulted in a total count of 18 deer carcasses. All but 3 of these mortalities were female deer, and all were adults. Since then, however, we believe the deer population has rebounded because of mild winters in 2000 and 2001. However, spring 2002 was very dry and cold, delaying green-up and the emergence of new vegetation that provides deer with important spring nourishment. This resulted in some deer mortality based on hunter reports of carcasses found during fall 2002. Winters during the report period were mild and deer are believed to have taken advantage of the climatic conditions, resulting in more deer being available to hunters.

Most Unit 1C deer occur on Douglas, Shelter, and Lincoln Islands, locations that have only occasionally been known to support wolves. During summer 2001, at least 7 wolves (2 adults and 5 pups) were seen on a number of occasions near Point Hilda on southern Douglas Island. A Douglas Island trapper caught 7 wolves in January 2002.

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 6200 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

A total of 10,860 deer harvest tickets were issued for the 2004 regulatory year (RY) in Southeast Alaska and 11,381 for RY 2005. (RY begins 1 July and ends 30 June, e.g., RY04 = 1 July 2004 through 30 June 2005.) We mailed nearly one-third of all Southeast deer harvest ticket holders a survey each year; 63% responded in 2004 and 61% responded in 2005. The survey was designed to collect information on hunter effort, hunt location, hunt timing, number of days hunted, mode of transportation, and number of deer harvested. Survey results for hunter effort, success, and kill location were expanded to estimate results for all harvest ticket holders (Straugh et al. 2004 and White 2004). We conducted pellet-group surveys on Douglas and Shelter Islands in RY 2004 but only on Douglas Island in RY 2005.

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. North Douglas Island pellet-group densities increased during the reporting period to 2.08 and 2.02, respectively (Table 1) (Converse 2005). The 2004 survey results are the highest count for this area since 1990. The relatively mild winters we have experienced since 1999 and the removal of several wolves from the island are probably responsible for the higher deer number indices.

At Inner Point on the southwest side of Douglas Island, pellet-group densities have remained low with a 1.18 mean density. During the report period pellet surveys were conducted only in 2005 and showed an increase to 2.33 (Table 1) (Converse 2006). The relatively low pellet groups per plot during the previous 10 years may be due to deer wintering above the highest pellet transect due to low yearly snowfall. It may also have been influenced by selective logging along these transects during late summer and early fall of 1997. During the winter of 1998–99, deep snow

probably caused some mortality that was detected in the relatively low pellet-group counts in spring 1999. Finally, during the winters of 1999–2001 wolves were present on Douglas Island, and they undoubtedly affected deer numbers and distribution on the island.

At Shelter Island, pellet transects were conducted only during RY2004 of this report period. The density of 1.86 groups/plot was higher than the previous count of 1.41 in RY2002. The deer harvest on Shelter and adjacent Lincoln Islands during this report period continued to decline to 18 deer in 2004 and 19 in 2005. It is unknown why the number of deer harvested from these islands continues to decrease. However, there is a corresponding decrease in the number of trips hunters are making to these locations, and the number of days per deer also decreased during the reporting period, indicating hunters are spending less time and making fewer trips to harvest deer on Shelter and Lincoln Islands.

We did not conduct deer pellet surveys on Lincoln or Sullivan Islands or the mainland during this report period.

MORTALITY

Harvest

Season and Bag Limit	Resident and Nonresident Hunters	
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. State regulations remained unchanged during the report period.

Hunter Harvest. Based on data gathered from the annual deer hunter survey in Unit 1C, hunters killed 351deer in 2004 and 506 in 2005 (Table 2), with bucks composing 77% (2004) and 56% (2005) of the harvest. In 2005, the doe harvest increased to 221 animals; the largest doe harvest since 1993. The mean harvest of 429 deer during the report period is slightly higher than the 10-year average of 393 deer. Due to the overall higher pellet group counts in the unit and the period's mild winters, a higher than average harvest is not surprising. An estimated 84% of the Unit 1C deer harvest came from Douglas Island in both 2004 and 2005. This is the second report period (for a total of 4 years) in which Douglas Island represented approximately 80% of the total Unit 1C deer harvest. In both of these years, Shelter and Lincoln Islands accounted for most of the displaced harvest, although the mainland along the Juneau road system has been providing increasingly better hunting opportunities. Other less hunted areas, such as the Chilkat Range and mainland areas near Holkum Bay and Cape Fanshaw, represent a small percentage of the Unit 1C deer harvest. During the report period, 12 deer were reported harvested on the mainland in 2004 and 46 in 2005. The Juneau area mainland appears to have established itself as a deer hunting destination and now has a relatively large number of dedicated mainland hunters.

Hunter Residency and Success. During both years of the reporting period most hunters (91%) were Unit 1C residents, while nonlocal residents composed the majority of the remaining hunters. Nonresidents made up 1% of the Unit 1C hunters in 2004, and 2% in 2005 (Table 3). Hunter success rate ranged from 31% in 2004 to 29% in 2005. An average of 1.3 and 1.9 deer were taken per successful hunter in 2004 and 2005, respectively. Hunters spent an average of 9.4 days of hunting per deer in 2004 and 7.2 days per deer in 2005. The average deer per hunter was 0.4 in 2004 and 0.5 in 2005.

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 (Straugh et al. 2004).During this report period 61% of hunters used highway vehicles for access, 24% used boats, 12% used foot access, less than 1% used an airplane and 28 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 80% of the Unit 1C deer harvest; many of the Douglas Island hunting areas are accessible by road. While 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 trip (.35) was higher, and the number of hunting days per deer (6.0) was lower for hunters using boats compared to highway vehicles (.25 and 8.6, respectively).

CONCLUSIONS AND RECOMMENDATIONS

Although we did conduct mail-out surveys to quantify deer hunting effort and harvest, we were unable to conduct pellet-group counts in each value comparison unit (VCU) on an annual basis. Only North Douglas Island along the road system was surveyed during both years of the report period. Shelter Island was surveyed in 2004 only, the Inner Point area in 2005 only, and Lincoln Island and the mainland were not surveyed at all. All the Douglas Island pellet group transects (North Douglas and Inner Point) met or exceeded the management objective stated goal of 2.0 pellet groups/plot during the report period. The shelter Island VCU 1.86 pellet groups/plot did not meet the deer pellet management objective but is moving upward toward 2.0 pellet groups/plot. The Inner Point VCU pellet group count increased dramatically and is likely due to the same factors affecting the unit's deer: mild winters with lower than average snowfall.. In the past we speculated that selective cut logging and the presence of wolves in the inner point area led to lower pellet counts but neither logging nor wolves were a factor during the report period. We will continue to survey these areas annually and monitor the pellet indices.

Unit 1C deer hunters enjoyed the highest deer harvest since 1993. The higher harvest corresponds to increased deer pellet group counts for most of the VCUs, and favorable winter weather conditions. We will continue to conduct pellet group surveys to monitor deer densities in the unit's available habitat, and will track the doe harvests in the coming years. The 2005 doe harvest was substantially larger than the previous nine years; excessive female deer harvests could impact future recruitment. Given the continued interest many people have regarding the presence or absence of wolves on Douglas Island, efforts should be made to investigate the Hilda Cove area for signs of wolf activity.

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TABLE 1 Unit 1C deer population trends as indicated by pellet-group surveys, 1986–2005

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)	1990	0.8	300	0.65–0.96
	1992	0.74	324	0.62–0.87
	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	----
Inner Point (VCU 36)	1985	1.97	235	1.68–2.25
	1986	1.76	262	1.53–2.00
	1987	1.21	200	1.02–1.39
	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	---
Rhine Creek (VCU 38)	1996	0.31	108	---
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	1986	2.91	288	2.57–3.24
(VCU 124)	1987	3.16	130	2.62–3.70
	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
Lincoln Island (VCU 124)	1997	1.57	207	1.27–1.77
Sullivan Island	1989	1.40	250	1.17–1.62
(VCU 94)	1998	0.64	66	0.35–0.93

TABLE 2 Unit 1C annual deer harvest[a], 1985 through 2005

Regulatory year	Males	Females	Estimated total
1985	296	138	434
1986	347	149	496
1987	325	118	443
1988	271	218	489
1989	330	169	499
1990	245	172	417
1991	358	153	511
1992	302	277	579
1993	427	232	659
1994	210	101	311
1995	209	143	352
1996	342	96	438
1998	273	111	384
1999	201	139	340
2000	172	69	241
2001	302	78	380
2002	217	141	358
2003	330	137	467
2004	270	81	351
2005	285	221	506

[a] Data from expanded results of hunter surveys.

TABLE 3 Unit 1C deer hunter residency and success, regulatory years 1986 through 2005

	Successful						Unsuccessful						
Regulatory year	Local[a] resident	Nonlocal resident	Non resident	Unk	Total	(%)	Local[a] resident	Nonlocal resident	Non resident	Unk	Total	(%)	Total hunters
1986	256	8	0	0	264	(27)	655	67	4	0	726	(73)	990
1987	316	14	0	0	330	(34)	611	42	2	0	655	(66)	985
1988	232	20	0	0	252	(27)	639	45	6	0	690	(73)	942
1989	247	26	0	0	273	(29)	624	43	0	0	667	(71)	940
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)	1017
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	231	4	0	0	235	(27)	583	43	9	0	635	(73)	870
1998	217	5	0	0	222	(24)	672	42	8	0	722	(76)	944
1999	206	27	0	0	233	(27)	575	49	0	0	624	(73)	857
2000	176	4	5	0	185	(23)	592	20	6	0	618	(77)	803
2001	243	23	0	0	266	(30)	557	61	10	0	628	(70)	894
2002	218	9	0	0	227	(28)	531	42	0	0	573	(72)	800
2003	292	14	8	0	314	(35)	546	48	0	0	594	(65)	908
2004	238	27	9	0	274	(31)	563	45	4	0	612	(69)	886
2005	240	24	5	0	269	(29)	604	46	14	0	664	(71)	933

[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 2005

Regulatory year	Hunters	Days hunted	Deer killed	Deer/hunter	Days/deer
1990	948	3262	499	.5	6.5
1991	827	2993	417	.5	7.2
1992	959	3202	511	.5	6.3
1993	904	2950	579	.6	5.1
1994	1017	4151	659	.6	6.3
1995	990	3968	311	.3	12.8
1996	257	NA*	NA	NA	NA
1997	861	3645	438	.5	8.3
1998	946	3384	384	.4	8.8
1999	856	2295	339	.4	6.8
2000	803	2279	241	.3	9.5
2001	894	2895	380	.4	7.6
2002	800	2598	358	.4	7.3
2003	908	3022	467	.5	6.5
2004	885	3308	352	.4	9.4
2005	933	3626	506	.5	7.2

* Data unavailable due to changes in survey.

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DEER MANAGEMENT REPORT

From: 1 July 2004
To: 30 June 2006

LOCATION

GAME MANAGEMENT UNIT: Unit 2 (3600 mi^2)

GEOGRAPHIC DESCRIPTION: Prince of Wales 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. Deer populations tend to fluctuate seasonally, primarily in response to severe winter weather, habitat loss, and wolf and black bear predation. Currently deer numbers are at moderate levels throughout most of southern Southeast Alaska.

Weather conditions and population levels influence deer harvests. Unit 2 harvests ranged from 1880 to 3886 deer during the past 16 seasons. Hunting seasons have generally extended from August through November or December, and 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 allowing qualified rural hunters to harvest 1 doe as part of the 4 deer bag limit.

Starting fall of 2007 federal hunting regulations will allow qualified rural hunters to harvest 5 deer and still allow them to take one doe as part of the new bag limit.

Craig is the largest Unit 2 community, with approximately 1800 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 has since stabilized as some residents have moved away in search of employment, while others have started new tourism-based businesses.

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 470 mi^2 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.

Habitat changes continue from additional logging and from the subsequent second growth in many 20- to 30-year-old clearcuts when they reach the exclusion stage, where the canopy closes and important understory plants disappear. Associated with logging is road building, and roads are steadily impinging on deer habitat; Unit 2 has the highest density of roads in Southeast—over 2200 miles of drivable road surface. As clearcut logging continues to reduce old-growth habitat in Unit 2, deer populations are expected to decline. Population models estimate declines in carrying capacity of 50–60% by the end of the logging rotation in 2054. Long-term consequences of habitat loss include the inability to provide for subsistence needs and a loss of deer hunting opportunities.

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 2700 deer. This action is based on the Unit 2 population being identified by the board as important for satisfying high levels of human consumptive use.

MANAGEMENT OBJECTIVES

- Maintain populations in excess of 45 deer per mi^2 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 and from spring pellet-group surveys. 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 (Straugh and Rice 2003; Straugh et al. 2004). 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 percent starting in 2003. Overall survey response rates were 56% in 2002 and 59% in 2003.

The Division of Subsistence (DS) has historically conducted personal interview household surveys to estimate deer harvest rates, and some of the results conflict with our estimates. DS has completed 4 such surveys in the last 14 years. The latest household survey was done during summer 2000, and the results are being compiled.

Because of some contentious issues surrounding allocation of deer harvest in Unit 2 a new report system was developed. Starting in fall 2005 deer hunters were required to fill out a new harvest report form if they planned to hunt Unit 2 (Prince of Wales Island) any time during the deer season. Those hunters were 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.

RESULTS AND DISCUSSION

MORTALITY

Harvest

Season and Bag Limit	Resident and Nonresident Hunters	
Unit 2	1 Aug–31 Dec	4 bucks

Board of Game Actions and Emergency Orders. No regulatory changes were made to the state deer seasons or bag limits during this period. After being unsuccessful for several years, proposals to the Federal Subsistence Board in 2003 resulted in a shorter deer hunting season for non-federally-qualified hunters and a season extension for local residents of Unit 2. Federal subsistence hunters have been arguing that they would like to see a local preference for Unit 2 deer hunting. Some residents of Prince of Wales Island contend Ketchikan and other nonlocal hunters are impacting their ability to get the deer they need to subsist. The current federal season now runs 24 July–15 August and excludes Ketchikan and other nonlocal hunters from hunting federal lands on Prince of Wales Island until 16 August. The federal bag limit will increase starting fall of 2007. Rather than 4 bucks, the new Federal bag limit will be 5 bucks with an option to take 1 doe as part of that 5 deer bag limit 15 October–31 December. The state deer season for state and private lands in Unit 2 remains 1 August–31 December.

Hunter Harvest. Deer harvest in Unit 2 during the past 2 seasons was estimated at 2147 and 2820 deer, not reaching the harvest objective of 2700 deer during either year. Deer per hunter (1.5 deer) was slightly higher than the long-term average of 1.3 while the average hunter days per deer (3.5) was lower than the long-term average (4.5 hunter days/deer) (Table 1). This harvest data is consistent with anecdotal and field observations in Unit 2, which suggest the deer population is healthy, stable, and currently at a 12–15 year high.

Harvest during 2005 on the main island of POW was the highest it has been since 2000 with 2603 deer harvested. Success was also higher on POW than it has been for over 10 years (Table 2).

We believe that Unit 2 has one of the highest illegal or unreported harvests in the region. Unreported and illegal kill is estimated to be equal to the Unit 2 reported harvest (Table 3). Of an estimated 55,000 deer in Unit 2, the illegal removal of 3000 deer equates to an estimated 5.5% mortality rate. This is partly due to the extensive and increasing road system and the lack of law enforcement personnel. Illegal hunting may increase with a growing human population, additional roads, and higher unemployment rates. Additionally, Flynn and Suring (1989) reported that actual hunter kill could be 38% greater than total estimated harvests from hunter reports because of crippling loss.

Hunter Residency and Success. An estimated 50% 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 with residents enjoying 66% success during 2004 and 77% during the 2005 season. Nonresident effort increased in Unit 2 and in 2005 the most out-of-state hunters on record was documented with 180 hunters enjoying a 47% success rate (Table 4).

Ketchikan hunters' share of the POW harvest during the 2004 and 2005 seasons remained similar to previous years at 37% and 24%. The higher than normal percentage of harvest by Ketchikan residents during the 2004 season is likely due to reporting problems rather than a change in how many deer are taken by Unit 1A residents. During the 2004 season, 75 does were reportedly harvested under federal subsistence permits in Unit 2, and during 2005, 147 does were reported (Table 3).

Harvest Chronology. Most Unit 2 deer are harvested during August, October, and November. Historically August has accounted for most of the harvest (29%). However, during this report period, August dropped down to 19% of the reported harvest (Table 5). This is probably a combination of a shorter season during August for many hunters and also how hunters reported their activity. Because of Federal regulation changes most non local resident hunters now have less than 2 weeks of August to hunt rather than the traditional 4 weeks. For hunters not qualified to hunt under Federal regulations November is now more popular and accounts for 38% of the recent harvest (Table 5).

Transport Methods. With the extensive road system in Unit 2 most hunters prefer to access hunting areas by highway vehicle. Highway vehicles accounted for the majority of deer hunting effort (77%) followed by boats (19%) (Table 5).

Other Mortality

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. The main 30 road from Naukati to Coffman Cove is also under construction and is scheduled for paving by 2008. Higher vehicle speeds, as well as an attractive food source created from grass seed planted for erosion control, will likely cause more deer–vehicle collisions.

HABITAT

Assessment

Logging continues to cause major changes to old-growth habitat. The most serious effects are in higher volume stands at low elevations, which are critical to deer during years of heavy snowfall. U.S. Forest Service (USFS) and ADF&G habitat models predict that the forest's ability to support deer in average winter conditions will decline by nearly half by the end of the logging rotation in 2054. Because of extensive loss of critical winter habitat, in some areas deer declines may exceed 60% following severe winters. 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. Second-growth issues will be one of the top Unit 2 issues during the next 5–10 years as large tracts of previously logged areas reach the closed canopy stem exclusion stage. These large tracts of land will be converted to extremely poor deer habitat, and consequently, we expect habitat capability and deer numbers to decline. Because of ongoing Unit 2 habitat changes, we need more than ever to obtain accurate information on deer herd status to serve as a baseline to assess long-term

changes. The future success of any research or survey program will depend on an informative public education campaign.

CONCLUSIONS AND RECOMMENDATIONS

According to our combined harvest survey information, the Unit 2 harvest objective of 2700 deer was met in 2005, but not during the 2004 season. However, anecdotal reports from hunters and public testimony during an extensive multi-agency Unit 2 deer planning effort 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 deer numbers in Unit 2. Numbers of hunters have remained similar while those same hunters have enjoyed better success and spent less time to harvest a deer. All of this information suggests stable 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.

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TABLE 1 Unit 2 deer harvest data, regulatory years 1995 through 2005

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
1995	2143	1496	70	12,887	6.0	3277	1.5	3.9
1996	---	1889	---	---	---	2512	---	---
1997	1779	965	54	11,342	4.8	1883	1.1	6.0
1998	1958	1268	65	10,447	5.3	2492	1.3	4.2
1999	1943	1224	63	12,600	6.5	2550	1.3	4.9
2000	2231	1419	64	13,865	6.2	3023	1.4	4.6
2001	2047	1356	66	13,160	6.4	2865	1.4	4.6
2002	1957	1141	58	11,129	5.7	2169	1.1	5.1
2003	1518	910	60	8,000	5.3	1783	1.2	4.5
2004	1503	1064	71	7,089	4.7	2147	1.4	3.3
2005	1890	1361	72	10,481	5.5	2820	1.5	3.7
Average	1896	1281	64	11,100	5.6	2502	1.3	4.5

[a] Includes does that were reported killed.

TABLE 2 Unit 2 deer harvest from Prince of Wales Island only, regulatory years 1997 through 2005

	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
POW Island	1997	1711	912	53	10853	6.3	1.0	1761
	1998	1868	1178	63	9956	5.3	1.2	2242
	1999	1833	1137	62	12664	6.9	1.3	2363
	2000	2150	1352	63	13161	6.1	1.3	2770
	2001	1907	1252	66	12376	6.5	1.4	2597
	2002	1814	1076	59	10327	5.7	1.1	2027
	2003	1385	810	58	7295	5.3	1.1	1575
	2004	1391	963	69	6530	4.7	1.4	1915
	2005	1825	1293	71		5.0	1.4	2603

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

TABLE 3 Unit 2 reported and estimated deer harvest/mortality, regulatory years 1995 through 2005

Regulatory year	Reported harvest			Unreported & illegal harvest[a]	Estimated total harvest	Estimated nr road kills
	Male	Female	Total			
1995	2957	320[b]	3277	3277	6554	25–30
1996	2378	134	2512	2512	5024	25–30
1997	1724	159	1883	1883	3766	25–30
1998	2404	88	2492	2492	4984	25–30
1999	2352	198	2550	2550	5100	25–30
2000	2792	231	3023	3023	6046	25–30
2001	2736	129	2865	2865	5730	25–30
2002	2091	79	2170	2170	4340	25–30
2003	1705	78	1783	1783	3566	30–50[c]
2004	2072	75	2147	2147	4294	30–50
2005	2673	147	2820	2820	5640	30–50
Average	2353	149	2502	2502	5004	25–30

[a] Unreported and illegal harvest estimated at 100% of reported harvest.
[b] Antlerless seasons: state season in 1987, federal season in 1995–1999.
[c] Over 75 miles of new pavement with high speed limits will cause more collisions each year.

TABLE 4 Unit 2 Hunter residency and success, regulatory years 1995 through 2005

Regulatory year	Successful				Unsuccessful			
	Local resident[a]	Nonlocal resident	Nonresident	Total	Local resident[a]	Nonlocal resident	Nonresident	Total
1995	893	573	30	1496	226	385	37	648
1996	726	599	34	1359	---	---	---	---
1997	569	388	9	966	304	433	71	808
1998	760	501	8	1269	185	385	39	609
1999	502	672	50	1224	279	365	76	720
2000	851	530	38	1419	426	310	77	813
2001	725	586	45	1356	289	330	59	678
2002	577	517	47	1141	211	419	85	715
2003	495	357	57	909	194	309	111	614
2004	497	515	52	1064	151	215	73	439
2005	713	563	85	1361	168	266	95	529
Average	664	527	41	1233	243	342	72	657

[a] Local residents include Alaskans living within Unit 2 boundaries.

TABLE 5 Unit 2 deer harvest chronology and hunter transport method, regulatory years 1995 through 2005

Regulatory year	Month of kill							Method of transportation[a]					
	Aug	Sep	Oct	Nov	Dec	Jan	Unk	Airplane	Boat	Foot	Highway vehicle[b]	Other	Unk
1995	1253	433	553	904	124	0	10	143	666	877	3792	145	11
1996	518	163	165	331	77	6	---	---	---	---	---	---	---
1997	316	142	163	223	33	---	---	91	269	29	1388	0	0
1998	865	356	483	606	68	0	114	79	336	54	1476	5	9
1999	561	437	573	717	117	0	7	59	273	28	1569	4	10
2000	683	443	533	421	69	8	52	91	323	60	1705	44	9
2001	574	325	431	530	29	5	129	99	329	46	1512	56	4
2002	615	281	394	657	79	0	140	49	465	65	1590	0	4
2003[c]	274	272	356	556	70	7	173	29	349	46	1320	0	0
2004	315	232	425	790	42	4	197	73	427	35	1534	0	3
2005	480	390	482	908	55	6	149	88	466	6	2142	6	75
Average	587	316	414	604	69	4	108	80	390	125	1803	26	13

[a] Numbers of successful and unsuccessful hunter trips.
[b] Includes cars, trucks, and off-road vehicles (3- and 4-wheelers).
[c] Harvest underestimated on state survey because of new federal subsistence regulations

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 2004
To: 30 June 2006

LOCATION

GAME MANAGEMENT UNIT: 3 (3000 mi^2)

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 has extended the length of declines.

The most recent significant population decline resulted from a series of severe winters in the late 1960s and early 1970s, which 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.

Most of Unit 3 is federal land managed by the U.S. Forest Service. 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 2003, the estimated Unit 3 deer harvest ranged from 603 to 1119, while the number of hunters varied from 891 to 1220.

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 (<1500 ft elevation) to 32 deer/mi^2, measured by a mean pellet density of 1.0 pellet group/20 m^2 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 (Straugh and Rice 2003; Straugh et al. 2004). 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 below average during the winters of 2004–05 and 2005–06. Reduced snowfall can result in lower pellet-group densities on deer winter range by allowing deer to winter and deposit pellets at higher elevations beyond the reach of established pellet-count transects. 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.

In spring 2005, pellet-group counts were conducted in 5 Value Comparison Units (VCUs) on 2 islands in Unit 3 (Table 1). Woewodski (South Mitkof Island) pellet-group counts were down from 1.06 pellet-groups/plot in spring 2004, to .82 in spring 2005, the second lowest on record. Mitkof experienced less than the normal amount of snowfall in the winter of 2004–05, which probably contributed to the low pellet-group densities in spring 2005. The 4 VCUs sampled on Zarembo Island in spring 2005 revealed high variability in pellet count densities across the island. Three of the 4 VCUs showed increasing pellet-group densities, while 1 VCU remained

the same compared to spring 2004. At Baht Harbor counts were 2.12 pellet-groups/plot, up from 1.80 in spring 2004. At St. John Harbor counts were 1.75 pellet-groups/plot, up from 1.17 in spring 2004. Counts at Meter Bight were 1.41 pellet-groups/plot, up from .89 in spring 2004. At Snow Passage counts were 1.08 pellet-groups/plot, nearly identical to 1.02 in spring 2004.

No pellet group counts were conducted in Unit 3 during spring 2006.

MORTALITY

Harvest

Season and Bag Limit	Resident and Nonresident Hunters	
Unit 3, Mitkof Island, the Petersburg Management Area	15 Oct–15 Nov	1 antlered deer
Unit 3, remainder of Mitkof Island, Woewodski and Butterworth islands	15 Oct–31 Oct	1 antlered deer
Remainder of Unit 3	1 Aug–30 Nov	2 antlered deer

Board of Game Actions and Emergency Orders. At the fall 2004 meeting, the Board of Game adopted a region-wide regulation requiring that deer hunters use harvest tickets in sequential order and carry any unused tickets with them while hunting.

No emergency orders were issued during the report period.

Hunter Harvest. Deer hunter effort and harvest changed little in Unit 3 before 1991. Hunter survey data for 1991–2005 includes Mitkof Island, which is primarily responsible for increases in both hunter numbers and kill. The unitwide 2004 harvest of 921 deer was above the 10-year average of 838 (Table 2). In 2005 the harvest decreased to 718 deer, the lowest since the 2002 when the estimated harvest was 624 deer. The total number of hunters decreased from 1058 in 2004 to 915 in 2005, which may have contributed to the low harvest estimate that year. Since the liberalization of the deer season and bag limit on the Lindenberg Peninsula in 2003, the Kupreanof Island deer harvest has surpass Zarembo as the unit's leading deer producer.

Hunter Residency and Success. Few nonresidents hunt deer in Unit 3, and most hunters are local residents (Table 3). Nonresidents comprised just 3% and 2%, respectively, of all Unit 3 deer hunters in 2004 and 2005. Deer populations are greater and seasons and bag limits more liberal in other nearby units, attracting most nonlocal hunters to those areas. The total number of hunters increased from 970 in 2003 to 1058 in 2004, and then decreased to 915 in 2005. The success rate was 58% in 2003, 53% in 2004 and 52% in 2005.

Harvest Chronology. Table 4 shows the historical Unit 3 deer harvest percentage by month. The highest percentage of the unitwide deer harvest typically occurs during October, followed in descending order by November, August, and September. This was the case in 2004. In 2005, the highest percentage of the harvest occurred during November, followed in descending order by October, August and September.

Transport Methods. From 1995 through 1998 most hunters reported using boats to access their hunting areas, but from 1999 through 2002 most hunters reported using highway vehicles. In 2003 and 2004 most deer hunters reported using boats to access hunting areas, including 49% and 47%, respectively. In 2005 most deer hunters (52%) once again reported using highway vehicles to access 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 natural causes.

CONCLUSIONS AND RECOMMENDATIONS

Unit 3 deer populations are thought to be stable with localized variations. With the exception of Zarembo and possibly a few smaller islands, Unit 3 deer exist largely at levels below carrying capacity. While most areas where pellet-group surveys were conducted in spring 2005 showed increasing trends, we believe that annual fluctuations in winter severity probably had some influence on pellet-group densities. Winter weather, predation, and clearcut logging have the greatest effects on deer population dynamics. Clearcut logging has and will continue to reduce deer carrying capacity in the unit and increasing road densities serve to improve hunter access making more deer more vulnerable to human caused mortality. There are no indications that hunting seasons or bag limits should be restricted; all Unit 3 can remain open for deer hunting.

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TABLE 1 Unit 3 deer population trends as indicated by pellet-group surveys, 1981–2006

Area	Regulatory year	Mean pellet-groups/plot	Number of plots	95% CI
Security Bay	1984	.02	360	0.01–0.04
(VCU 400)	1989	.25	304	0.16–0.34
	1995	.22	268	0.15–0.29
	2000	.09	201	0.05–0.14
Pillar Bay	1988	.16	337	0.10–0.22
(VCU 403)	2000	.18	264	0.13–0.23
Malmesbury	1990	.11	206	0.05–0.18
(VCU 408)	2000	.06	254	0.03–0.09
Conclusion	1987	2.66	207	2.32–3.01
(VCU 417)	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	1994	.38	300	0.29–0.48
(VCU 427)				
431–Point Barrie	1988	.23	357	0.17–0.29
(VCU)	1993	.77	375	0.64–0.90
Big Level	1981	1.54	399	1.45–1.63
(VCU 434a)	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	1981	2.48	114	2.02–2.94
(VCU 434b)	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	1984	.19	312	0.12–0.26
(VCU 435)	1987	.51	305	0.37–0.65
	1989	.40	312	0.25–0.56
	1994	.32	310	0.20–0.40
	1998	.36	281	0.28–0.44
East Duncan Canal	1990	1.12	227	0.92–1.32
(VCU 437)	1992	.78	213	0.63–0.94
	1998	1.04	153	0.77–1.30
	2002	1.89	254	1.59–2.19

TABLE 1 continued

Area	Regulatory year	Mean pellet-groups/plot	Nr plots	95% CI
Portage Bay	1993	.43	282	0.30–0.56
(VCU 442)	1995	.43	277	0.63–0.94
	1998	.39	285	0.29–0.49
Woewodski (S. Mitkof)	1984	.088	295	0.69–1.08
(VCU 448)	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	1.13	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
4Woewodski Island	1991	1.86	461	1.66–2.05
(VCU 448a)	1994	1.30	510	1.15–1.46
Frederick (N. Mitkof)	1981	.08	945	0.06–0.11
(VCU 449)	1990	.55	180	0.36–0.74
	1992	.54	227	0.42–0.65
Blind Slough	1992	1.04	114	0.77–1.30
(Central Mitkof)	1993	1.28	265	1.04–1.51
(VCU 452)	1997	1.61	245	1.34–1.88
Dry	1981	.92	91	0.56–1.28
(VCU 454)	1993	1.44	210	1.17–1.72
	1997	1.26	188	0.88–1.39

TABLE 1 continued

Area	Regulatory year	Mean pellet-groups/plot	Nr plots	95% CI
Vank Island Group	1981			
(VCU 455)				
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	2001	2.75	109	2.10–3.41
(VCU 456)	2003	1.80	108	1.45–2.15
	2004	2.12	101	1.73–2.51
St. John	2001	1.67	220	1.38–1.93
(VCU 457)	2003	1.17	229	0.96–1.38
	2004	1.75	213	1.44–2.03
Snow Passage	1994	.57	345	0.45–0.70
(VCU 458)	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
Meter	2001	0.87	180	0.64–1.10
(VCU 459)	2003	0.89	180	0.68–1.10
	2004	1.41	155	1.75–1.07
Woronkofski	1985	1.63	646	1.45–1.81
(VCU 461)				
(All Transects)				
(Trans. 10, 11, 12)	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	1993	.07	304	0.03–0.11
(VCU 467)				

TABLE 1 continued

Area	Regulatory year	Mean pellet-groups/plot	Nr plots	95% CI
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
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 deer harvest, 1994–2005

Regulatory year	Estimated legal harvest						Estimated illegal harvest	Total[a]
	M	(%)	F	(%)	Unk.	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	1005	(100)			0	1005	114	1119
1999	862	(100)			0	862	70	932
2000	984	(100)			0	984	36	1020
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

[a] Data from mail questionnaire.

TABLE 3 Unit 3 deer hunter residency and success, 1994–2005

	Successful					Unsuccessful					
Regulatory year	Local[a] resident	Nonlocal resident	Nonresident	Total	(%)	Local[a] resident	Nonlocal resident	Nonresident	Total	(%)	Total[b] hunters
1994	457	33	4	494	(44)	488	101	3	592	(55)	1086
1995	569	28	6	603	(58)	386	47	0	433	(42)	1036
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)	1108
1998	612	48	17	677	(59)	419	32	17	468	(41)	1145
1999	500	68	5	573	(48)	563	56	9	628	(52)	1201
2000	513	90	0	603	(49)	526	86	5	617	(51)	1220
2001	435	48	10	493	(49)	459	45	15	519	(51)	1012
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)	1058
2005	404	64	5	473	(52)	356	71	15	442	(48)	915

[a] Residents of Units 1B, 3, Meyers Chuck, Point Baker, and Port Protection.
[b] Data from registration permit report and hunter survey included.

TABLE 4 Unit 3 deer harvest chronology percent by month, 1994–2005

Regulatory year	Harvest periods										Total[a] nr deer
	August	September	October	November	December	January	February	March	April	Unk.	
1994	16	4	47	31	1	1	0	0	0	0	691
1995	29	7	41	23	0	0	0	0	0	0	866
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	1118
1999	15	9	36	33	1	0	1	0	0	5	932
2000	13	9	39	30	0	0	0	0	0	9	1020
2001	13	14	50	18	0	1	0	0	0	4	853
2002	15	16	25	37	0	0	0	0	0	8	624
2003	19	9	27	30	0	0	0	0	0	15	901
2004	15	10	37	30	1	0	0	0	0	8	921
2005	15	6	30	37	0	0	1	1	0	9	717

[a] May not equal harvest table due to rounding or incomplete reporting

TABLE 5 Unit 3 deer hunter effort percent by transport method, 1994–2005[a]

Regulatory year	Airplane	Boat	3- or 4-wheeler	Foot	ORV	Highway vehicle	Other	Unknown	Number of trips
1992	1	32	4	11	1	50	1		1861
1993	2	44	2	10	4	36	2		1835
1994	1	33	4	13	2	46	1		2204
1995	1	42	5	13	4	34	1		2140
1996	1	50	13	2	0	34	0		NA
1997	1	55	13	0	0	31	0		NA
1998	1	53	6	1	0	39	0		NA
1999	1	35	13	1	0	50	0		NA
2000	2	38	7	1	0	52	0		NA
2001	0	37	7	0	0	56	0		NA
2002	3	38	8	2	0	49	0		NA
2003	0	49	6	2	0	40	3		NA
2004	1	47	5	2	0	43	2		1580
2005	1	39	5	2	0	52	0	1	1263

[a] The hunter mail 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 2004
To: 30 June 2006

LOCATION

GAME MANAGEMENT UNIT: 4 (5820 mi^2)

GEOGRAPHIC DESCRIPTION: Admiralty, Baranof, Chichagof, and adjacent islands

BACKGROUND

Game Management Unit 4 (Unit 4) continues to provide a substantial portion of the deer hunting opportunity in Southeast Alaska. During 2004–05, Unit 4 accounted for 44% of the region's hunter effort and 63% of the deer harvest (Straugh 2005). In the 2005–06 season Unit 4 accounted for 56% of the region's hunter effort and 79% of the deer harvest (Straugh 2006).

Significant changes in deer density 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 heavy winter mortality. By 1956 deer increased to exceed carrying capacity (Klein and Olson 1960). In recent history severe winters appear to be on a 10-year cycle, with intervening mild winters. Most winters in Unit 4 were mild from the mid 1970s through 1987–88, with high survival of fawns and adult deer. However, during the winters of 1988–89 through 1990–91, persistent snow caused significant deer mortality. During the winters of 1994–95 and 1998–99 many fawns died, but these appear to be relatively minor setbacks. A series of mild winters beginning in 1999–2000 to the present period have allowed an apparent recovery of deer populations. Record low snowfall was recorded during the winters of 2002–06.

Deer densities are expected to decline in the future 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 high 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 2 sets of regulations were initially quite similar, they now continue to diverge.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

As established by the Alaska Board of Game during its fall 2000 meeting in response to the Intensive Management law, 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 gathered population data 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.

We conducted winter mortality surveys (beach transects) on a number of previously established trend areas during spring.

Harvest questionnaires were mailed to a sample of hunters with deer harvest tickets to assess hunter effort and success (Straugh 2005, Straugh 2006). Hunters were asked to supply information on hunting effort, kills, months hunted, and kill locations on an area-specific basis.

During winter 1998–99, 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 specific boat routes were established to examine the physical condition of these deer. Deer were viewed through binoculars at ranges of 25–200 meters, and each individual was assigned into one of 7 condition classifications. Changes in deer condition were documented through the late winter. These surveys have been repeated periodically.

Although no formal investigations were conducted regarding parasites in deer, several animals were inspected during the course of this reporting period. Incidence of ectoparasites has been noted.

RESULTS AND DISCUSSION

Population Status and Trend

During winters 2000–06 deer did not appear to be nutritionally stressed. Winter 2001–02 was relatively mild, but the snowpack persisted in higher elevations well into June, and minor starvation mortality probably occurred. Record low snowfall was recorded during the winter of 2002–03, and mild conditions persisted in 2003–06. There are indications that this string of mild winters will be broken with the winter of 2006-07.

Habitat quality and winter severity vary significantly throughout the unit because of local climatic factors, topography, and the extent of logging activities. Eastern portions of the unit generally experience greater snow depths and sustain higher winter mortality. Areas logged before 1970 are now 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 prelogging levels. Many popular deer hunting areas will not be capable of sustaining current harvest levels.

Pellet-group surveys (Table 1) over the last 10-year period generally reflect a slightly increasing deer population. This is undoubtedly a reflection of deer being subjected to relatively light to moderate winter snow conditions with only minor starvation mortality. Evaluation of the deer population status for management purposes should continue to be based on a variety of indicators, including pellet-group surveys, hunter contacts, field observations, harvest questionnaires, and mortality transects.

Population Size

Deer pellet-group surveys conducted during spring 2005 and 2006 indicated a general neutral trend in deer numbers (Table 1) (Converse 2005, Converse 2006). This technique alone 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.

Population Composition

The sex composition of the legal kill (Table 2) was estimated from deer harvest questionnaires (Straugh 2005, Straugh 2006). Extrapolations of hunter reports indicated a 2004–05 estimated take of approximately 5523 bucks (71%, Table 2). During the 2005–06 season, hunters reported taking 4829 bucks (70%). There remains a strong tendency for hunters to select bucks, even though the 15 September–31 December either-sex season (the federal season goes through January) has been in effect for many years.

MORTALITY

Harvest

Season and Bag Limit.	Season Dates	Bag Limit
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 to 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

At the November 2006 meeting the Board of Game made no changes to existing deer hunting regulations for Unit 4.

Hunter Harvest. Responses from the hunter harvest surveys indicated there were 2493 successful deer hunters in Unit 4 during the 2004–05 season and 2440 during the 2005–06 season (Table 3). These numbers indicate a relatively stable hunter effort, continuing a trend observed over the last 10 years.

In 2004–05 the reported kill was 6799 deer. During the 2005–06 season, hunters reported killing 6911 deer. Weather during the deer hunting season influences the amount of effort put forth 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. Shooting from boats under federal subsistence hunting regulations causes high crippling rates and loss of deer. Hunters commonly report spotlighting and poaching of deer on logging roads and trails accessed by all-terrain vehicles on Kruzof, N. Baranof, and Chichagof islands. The extensive road system on NE and NW Chichagof Island has frequent reports of spotlighting and poaching turned into state and federal enforcement officers. These activities also cause high crippling rates and generally result in little to no effort to recover wounded deer. Crippling loss, unreported kills, and illegal kills are difficult to accurately determine, but are estimated at about 25% of the reported harvest (Whitman 2003). Based on these estimates, the total hunter-related deer mortality was estimated to be about 8499 deer during the 2004–05 season. The estimate for the 2005–06 season is 8639 deer (Table 2).

Hunter Residency and Success. During 2004–05 a total of 1064 successful hunters residing in Unit 4 harvested an estimated 3722 deer (3.4 deer/successful hunter) (Table 3). Nonresident hunters made up 3.7% of the Unit 4 hunters during 2004–05, a 50% increase over previous years.

Alaska residents from other than Unit 4 made up most of the hunters (56% in 2004–05). The bulk of these "nonlocal" hunters are from adjacent communities in Southeast Alaska. During that season, 66% of nonresidents, 79% of Unit 4 residents, and 70% of nonlocal Alaska residents were successful at taking at least one deer.

For the 2005–06 season, a total of 1124 successful hunters residing in Unit 4 harvested an estimated 3902 deer (3.5 deer/successful hunter) (Table 3). Nonresident hunters made up 3.8% of the Unit 4 hunters during 2005–06, a slightly increasing trend. Alaska residents from other than Unit 4 made up most of the hunters (53%). For that season, 69% of nonresidents, 79% of Unit 4 residents, and 70% of nonlocal Alaska residents were successful in taking at least one deer.

Harvest Chronology. Most hunters continue to be in the field during November, resulting in the greatest single-month harvest. During the 2004–05 season, the November harvest accounted for 3315 deer, or 39% of the harvest (Table 4). October provided the next highest deer harvest (17%) from Unit 4 with December (12%) following closely. The federal season in January generally results in about 5–8% of the reported annual harvest, but is variable depending on amount of snowfall.

For the 2005–06 season, the November harvest accounted for 3283 deer, or 38% of the harvest (Table 4). Once again, the October harvest (16%) was followed closely with a December harvest of 15% for the next highest deer harvest for the unit. In contrast to other years, the federal season in January provided 8% of the reported annual harvest.

Transport Methods. Deer hunter transportation type remains almost identical with past years (Table 5). During 2004–05 boats were used for 70% of the harvest, while 13% of the hunters used airplanes, 1% walked from their respective residences, 13% used highway vehicles, and 2% used an off-road vehicle (3- or 4-wheeler). Transport methods have changed little since the 1988–89 season, when data were first collected.

As is common for Unit 4, most hunters used boats during the 2005–06 season, and these hunters harvested 72% of the deer. Hunters using airplanes as a transportation type harvested 8% of the deer reported taken in the unit, while those using highway vehicles took 13% of the unit's harvest.

Other Mortality

Starvation mortality due to severe winters had little effect on Unit 4 deer during this reporting period. Data were collected on 10 low-elevation mortality transects during spring, indicating that winter mortality was negligible in springs 2005-2006.

During March and early April 2005 and 2006, nine boat surveys were completed along more than 50 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 surveys, 109 deer (2005) and 89 deer (2006) were classified according to the following scale:

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.

Results of the survey indicate that deer wintering at low elevations in the area were in good shape during springs 2005 and 2006. Mean condition of deer seen during these surveys was 3.8. This compares to a mean condition index of 3.5 calculated from deer surveyed in a portion of the same area during late March 1999 (Whitman 2003). The survey was designed to provide an objective way to assess relative condition of wintering deer. As such, it appears to hold promise as a method of monitoring and documenting declines during severe winters.

Parasites

Incidental observations of deer lungs reveal that lungworm (*Dictyocaulus viviparous*) 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 further. We suspect that although *D. viviparous* is ubiquitous within the deer population, it only becomes a problem when deer become nutritionally stressed in conjunction with severe winter weather.

Nasal bots (*Cephenemyia jellisoni*) have been previously documented in Unit 4 deer (Whitman 2003), but their incidence is relatively low. No further parasite examinations for ticks (*Dermacentor*) or sucking lice (*Tricholipeurus lipeuroides*) were conducted during this reporting period.

In 2005-06, 42 Sitka black-tailed deer heads were collected and submitted for chronic wasting disease (CWD) testing and were found to be negative for the disease. We have no reason to suspect that CWD occurs in Unit 4 deer at this time. Deer head collection and testing will continue in 2006-07.

HABITAT

Assessment

No data were collected.

CONCLUSIONS AND RECOMMENDATIONS

All management objectives were met during both seasons. The average harvest during the 2004–05 season was 3.4 deer per successful hunter. In 2005-06 the success rate was 3.5 deer per successful hunter. In both years bucks comprised 69% of the reported harvest.

Weather during the deer hunting season influences the amount of effort put forth 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. Shooting from boats, although illegal, still occurs frequently, undoubtedly causing high crippling rates and loss of deer. Spotlighting and poaching from logging roads from all-terrain vehicle users, from passenger vehicle users on the extensive road system of NE Chichagof Island, and from boats is frequently reported. Therefore, illegal take and wounding losses are currently estimated at 25% above the legal kill. Although deer densities are high throughout most areas, they remain below estimated carrying capacity. There are areas within the unit that exhibit significant browsing of key plant species and the series of mild winters have allowed deer to remain at higher elevations for a greater period of the year. This has likely contributed to a reduced hunter harvest from easily accessible shoreline hunts. Predation mortality from brown bears is suspected to contribute an additional 15%–20% mortality to the annual total number of deer harvested by hunters. This is based on estimates of brown bear densities along with field observations of predation by bears on deer and goats. We suspect that the extent of the harvest under federal "designated hunter" stipulations is grossly underreported.

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 two regulatory entities in standardizing deer hunting regulations.

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

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TABLE 1 Unit 4 deer population trends as indicated by pellet-group surveys, 1985–2005

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
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
182 – Pybus Bay	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

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	1.35	218
	2004-05	1.44	329
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
223 – Upper Tenakee	1987–88	1.47	253
	1991–92	0.59	265
	1992–93	0.47	249
	1993–94	0.61	319
	1995–96	0.56	263
231 – Saltery Bay	1987–88	2.02	256
	1991–92	0.97	256
	1992–93	0.76	227
	1993–94	0.97	193
	1995–96	1.90	152
	1996–97	1.99	170
235 – Kadashan	1987–88	2.67	221
	1991–92	1.63	282
	1992–93	1.12	385
	1993–94	1.39	294
	1995–96	2.36	204

Area	Regulatory year	Mean pellet groups/plot	Number of plots
236 – Corner Bay	1980–81	0.35	60
	1991–92	2.27	206
	1992–93	1.72	50
	1993–94	1.69	198
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
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
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
288 – Range Creek	1982–83	0.51	1,788
	1983–84	0.71	303
	1984–85	1.32	224
	1996–97	1.44	353
	2002–03	1.65	355

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	1989–90	2.68	306
	1996–97	2.67	100
	2002–03	1.41	140
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	2.29	245
305 – Sea Lion Cove	1986–87	3.31	226
	1988–89	1.75	303
	1989–90	2.03	227
	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
	2001–02	2.01	119
	2002–03	1.90	249
	2003–04	1.13	206
	2004-05	1.40	252
308 – South Kruzof	1992–93	1.62	345
	1993–94	1.71	370
	1998–99	1.38	365

Area	Regulatory year	Mean pellet groups/plot	Number of plots
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, 2001–02 through 2005–06

	Estimated legal harvest[a]						Estimated illegal	
Regulatory year	M	(%)	F	%	Unk	Total	harvest[b]	Total
2001–2002	5350	(72)	2100	(28)		7450	1863	9313
2002–2003	3883	(76)	1234	(24)		5117	1279	6396
2003–2004	5523	(72)	2098	(28)		7621	1905	9526
2004-2005	4817	(71)	1982	(29)		6799	1700	8499
2005-2006	4829	(70)	2082	(30)		6911	1728	8639

[a] From mail questionnaire.

[b] Includes crippling loss estimate.

TABLE 3 Unit 4 deer hunter residency and success, 2001–2002 through 2005–06

Regulatory year	Successful				Unsuccessful				Total # hunters
	Local resident	Nonlocal resident	Nonresident	Total	Local resident	Nonlocal resident	Nonresident	Total	
2001–2002	1187	1477	40	2704	318	529	30	877	3581
2002–2003	947	1224	42	2213	375	783	43	1201	3414
2003–2004	1242	1535	57	2834	253	509	41	803	3637
2004-2005	1064	1347	82	2493	283	544	43	870	3363
2005-2006	1124	1214	102	2440	291	525	46	862	3302

TABLE 4 Unit 4 deer harvest chronology, 2001–2002 through 2005–2006

Regulatory year	Harvest periods																Total harvest
	August	(%)	September	(%)	October	(%)	November	(%)	December	(%)	January	(%)	Other				
2001–2002	466	(5)	745	(8)	1676	(18)	3446	(37)	2049	(22)	466	(5)	465				9313
2002–2003	350	(6)	400	(6)	1206	(19)	2389	(37)	1409	(22)	322	(5)	320				6396
2003–2004	476	(5)	476	(5)	1524	(16)	4096	(43)	2000	(21)	285	(3)	669				9526
2004-2005	765	(9)	680	(8)	1445	(17)	3315	(39)	1020	(12)	510	(6)	714				8499
2005-2006	604	(7)	691	(8)	1382	(16)	3283	(38)	1296	(15)	691	(8)	692				8639

TABLE 5 Unit 4 deer harvest, percent by transport method, 2001–2002 through 2005–2006

	Percent of harvest						Number
Regulatory year	Airplane	Foot	Boat	ORV	Highway vehicle	Unknown	of hunters
2001-2002	10	3	72	3	13	0	3581
2002–2003	8	3	68	2	18	0	3414
2003–2004	11	1	76	2	9	1	3637
2004-2005	13	1	70	2	13	1	3363
2005-2006	8	2	72	2	13	3	3302

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 2004
To: 30 June 2006

LOCATION

GAME MANAGEMENT UNIT: 5 (5800 mi^2)

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 (Burris and McKnight 1973). 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. 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

A total of 10,860 deer harvest tickets were issued for the 2004 regulatory year (RY) in Southeast Alaska and 11,381 for RY 2005. (RY begins 1 July and ends 30 June, e.g., RY04 = 1 Jul 2004 through 30 Jun 2005.) We mailed nearly one third of all Southeast deer harvest ticket holders a survey each year; 63% responded in 2004 and 61% responded in 2005. 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 (Straugh and

Rice 2003; Straugh et al. 2004). 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).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Deer populations remain relatively low in the Yakutat area based on our two 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 report period suggests that deer are much more abundant than ever before, and have expanded their range as far inland as the Dangerous River. 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 almost a novelty. This apparently changed during this report period, with a series of mild winters likely the impetus for deer expanding their range.

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, 38 deer were harvested in 2004, and 27 taken in 2005 (Table 2). Hunter effort increased considerably from the previous report period, with 74 hunters expending 343 days of effort in 2004, and 69 hunters spending 332 days afield in 2005. 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. However, that was not the case during this report period, when 17 and 5 deer were harvested by nonlocal Alaska residents during 2004 and 2005 respectively (Table 3). Although these surprising numbers may be the result of our extrapolation methodology, they still suggest that nonlocal Alaska residents began harvesting deer in Unit 5A.

Transport Methods. Boats are typically the only means of transportation used by successful hunters in 5A. However, in 2002 five hunters reported taking deer on the Yakutat forelands using a highway vehicle. Though 12 hunters reported using a highway vehicle in 2003, no deer were harvested using this method of transportation. This is similar to past years, and is expected, since nearly all deer hunting takes place on Yakutat Bay islands.

CONCLUSIONS AND RECOMMENDATIONS

The Unit 5A deer hunt allows Yakutat residents an opportunity to legally harvest a small number of 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. Local trapping effort reduces some wolf predation on deer. 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 during this report period, 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. Closure of the state hunt should be considered as a management option if pellet transects and harvest data indicate a need for such action.

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STRAUGH, T.B., P. CONVERSE AND K.WHITE. 2004. 2003 Deer hunter survey summary statistics. Alaska Dept. of Fish and Game. Division of Wildlife Conservation. Juneau. 79pp.

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TABLE 1 Unit 5A deer population trends as indicated by pellet group surveys, 1991–2003

Area	Regulatory year	Mean pellet groups/plot	Number of plots	95 % CI
Knight Island (VCU 361)	1991	0.81	100	0.61–1.01
	1992	0.95	100	0.74–1.16
	1994	0.44	90	0.25–0.64
	1996	0.00	153	0.00–0.00
	1997	0.03	192	0.01–0.05
	2003	0.22	117	NA
Humpback (VCU 363)	1991	0.01	118	0.00–0.03
Yakutat Islands (VCU 368)	1991	0.32	415	0.24–0.39
	1992	0.48	243	0.37–0.58
	1993	1.07	106	0.81–1.32
	1994	0.66	251	0.52–0.80
	1996	0.59	379	0.48–0.69
	1997	0.59	344	0.48–0.70
	2000	0.90	145	0.85–0.95
	2002	0.66	200	NA
	2003	0.58	325	NA
	2004	0.86	274	NA
Ankau (VCU 369)	1991	0.03	116	0.00–0.05

TABLE 2 Unit 5A annual deer harvest[a], 1991 through 2003

Regulatory year	Males	Females	Estimated total
1991	2	0	2
1992	0	0	0
1993	3	0	3
1994	5	0	5
1995	7	0	7
1996	0	0	0
1997	0	5	5
1998	5	0	5
1999	5	0	5
2000	0	0	0
2001	4	0	4
2002	15	0	15
2003	28	0	28
2004	31	8	39
2005	27	0	27

[a] Data from expanded results of hunter surveys.

TABLE 3 Unit 5A deer hunter residency and success, regulatory years 1991 through 2005

Regulatory year	Successful						Unsuccessful						Total hunters
	Local[a] resident	Nonlocal resident	Nonresident	Unk	Total	(%)	Local[a] resident	Nonlocal resident	Nonresident	Unk	Total	(%)	
1991	2	0	0	0	2	(6)	34	0	0	0	34	(94)	36
1992	0	0	0	0	0	(0)	15	0	0	0	15	(100)	15
1993	3	0	0	0	3	(14)	19	0	0	0	19	(86)	22
1994	5	0	0	0	5	(21)	15	4	0	0	19	(79)	24
1995	7	0	0	0	7	(32)	15	0	0	0	15	(68)	22
1996	0	0	0	0	0	NA[b]	NA	NA	NA	NA	NA	NA	NA
1997	0	5	0	0	5	(17)	19	0	5	0	24	(83)	29
1998	5	0	0	0	5	(17)	24	0	0	0	24	(83)	29
1999	0	5	0	0	5	(25)	15	0	0	0	15	(75)	20
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	16	(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

[a] Local means residents of Unit 5A.

[b] Data for unsuccessful hunters unavailable due to changes in survey.

TABLE 4 Unit 5A hunter effort and success, 1991 through 2005

Regulatory year	Number of hunters	Number of days hunted	Number of deer killed	Number of deer/hunter	Number of days/deer
1991	36	123	2	.1	61.5
1992	15	61	0	0	0
1993	22	149	3	.1	49.7
1994	24	89	5	.2	17.8
1995	22	61	7	.3	8.7
1996	N/A	N/A	N/A	N/A	NA
1997	29	97	5	.2	19.4
1998	29	92	5	.2	18.4
1999	20	30	5	.3	6.0
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

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 2004
To: 30 June 2006

LOCATION

GAME MANAGEMENT UNIT: 6 (10,140 mi^2)

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 (Fig. 1., Burris and McKnight 1973). 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).

Sitka black-tailed deer in Unit 6 are at the extreme northern limit of their range (Cowan 1969). The population thrives because of favorable environmental conditions on islands in PWS. The climate is milder on the big islands (Hawkins, Hinchinbrook and Montague) compared to the surrounding mainland because of strong maritime influence (Shishido 1986). Snow-shading canopies of old-growth forest provide accessible forage and shelter during winter (Shishido 1986; Reynolds 1979). Although formal research on food habits has not been conducted in PWS, it has been assumed that primary winter forage includes bunchberry (*Cornus Canadensis)*, trailing bramble (*Rubus pedatus)*, and and goldthread (*Coptus* spp). If forbs become buried by deeper snow, blueberry stems (*Vaccinium ovalifolium)* become important forage. Predation is minimal because there are few wolves and coyotes off the mainland. A change in these conditions could significantly influence the deer population.

Shishido (1986), using radiocollared deer on Hinchinbrook Island, determined that deer tended to make seasonal elevation 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 often overlapping.

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, mass 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. Despite small sample sizes in deer-tagging studies, Shishido (1986) and Reynolds (1979) each reported one deer that had traveled 13–14 km from the location where marked. Schoen and Kirchhoff (1984) also tracked a similar movement (13.6 km) by one radio-collared 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 1500 (Reynolds 1979). Harvests began to increase after 1978 and peaked at 3,000 in 1987. The average estimated harvest during the 1990s was 2160, ranging from 1300 to 3000 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

- To maintain a deer population capable of sustaining an annual harvest of 1500 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 cooperated to monitor the population trend in PWS. We conducted annual pellet-group surveys along transects (Kirchhoff and Pitcher 1988) during late May and early June at eight sampling locations (Fig. 2). Two more locations were added to annual surveys beginning in 2000–01 (Naked Island and Bay of Isles on Knight Island) to monitor the western PWS population after the road to Whittier opened. Each location had 3–5 transects consisting of a straight line of 1x20-meter plots running uphill from the beach fringe. Most transects terminated at alpine habitat. Those not reaching the alpine terminated after we had examined 100 plots. The number of plots varied, 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 calculated mean numbers of pellet groups per plot (MPGP) for each location and all locations combined. Kirchhoff and Pitcher

(1988) suggested that MPGPs 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.

Although invaluable as an indicator of population trend, spring pellet-group density has an inherent lag time, particularly during winters with heavy snow. Deer that die in late winter have deposited pellets that may be counted, thereby biasing the index upward (Kirchhoff and Pitcher 1988). An annual snow index (Nowlin 1997) is used to determine if pellet-group density reflects current population density, or if a lag exists because of late-season mortality that would appear in the spring survey of the following year.

We estimated deer harvest from responses to questionnaires mailed to deer hunters who were issued harvest tickets in Southcentral Alaska. Each year (except 2004), staff mailed approximately 3000 questionnaires (30% of harvest ticket holders) and had a questionnaire response rate of 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. 2).

In order to gain more direct information on food habits, I (with assistance from Keegan Crowley, Cordova Jr. High) collected rumen samples from hunter-killed deer on Hawkins Island near Cordova. Hunters were instructed to thoroughly mix rumen contents before sampling. We washed rumen samples (100 ml) through a 2mm screen and separated to plant species or species group as possible. Samples were then dried overnight in a dehydrator, weighed and analyzed.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Based on pellet group densities, deer density in PWS was moderate during the reporting period except for Knight and Naked Islands, which had low density typical of western PWS (Table 1). Highest density occurred on Hawkins Island. Fewer pellet group surveys were conducted during the reporting because of reduced funding.

Deer numbers were stable to increasing during the reporting period following a series of relatively severe winters from 1998–99 through 2003–04 (Fig. 2). The population declined during the severe winters of 1998–99 and 2001–02. The upward trend, interrupted by late heavy snow during 2001–02, should continue following the very mild snow conditions recorded during the reporting period (Fig. 2). These were typical patterns of snowfall regulating population trends of black-tails on their northern-most range.

Distribution and Movements

Deer currently occupy most of Unit 6. Highest deer densities in Unit 6D (PWS) generally occurred on the big 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.

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.

Hunter Harvest. Total estimated deer harvest reported in Unit 6 during 2005–06 was about 2700 (Table 2). We did not conduct a survey during 2004–05 because of budget constraints. The harvest during 2003–04 was a record high, primarily driven by higher harvests in western and northern/eastern PWS. The increased harvest in these areas was a result of easier access for hunters launching from Whittier. As during past years, most harvest came from Montague Island. The reported legal harvest consisted of 69% males during the reporting period.

Hunter Residency and Success. Deer hunters had annual success rates of 59% during 2005–06 (Table 3). Nonlocal residents represented 60% of successful hunters during this reporting period. Local residents on average killed 2.4 deer per hunter compared to 1.4 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 assumed that the combination of wounding loss and unreported and illegal harvest was 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

We achieved our objectives to maintain a deer population capable of sustaining an annual harvest of 1500 deer and a minimum hunter success rate of 50%.

Pellet-group surveys, snow indices, and hunter questionnaires were effective tools to monitor and manage deer in Unit 6. MPGP has been a reliable index to population trend.

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CROWLEY, D. W. 2007. Unit 6 deer. Pages 76–89 *in* P. Harper, editor. Deer management report of survey and inventory activities 1 July 2004–30 June 2006. Alaska Department of Fish and Game. Juneau, Alaska.

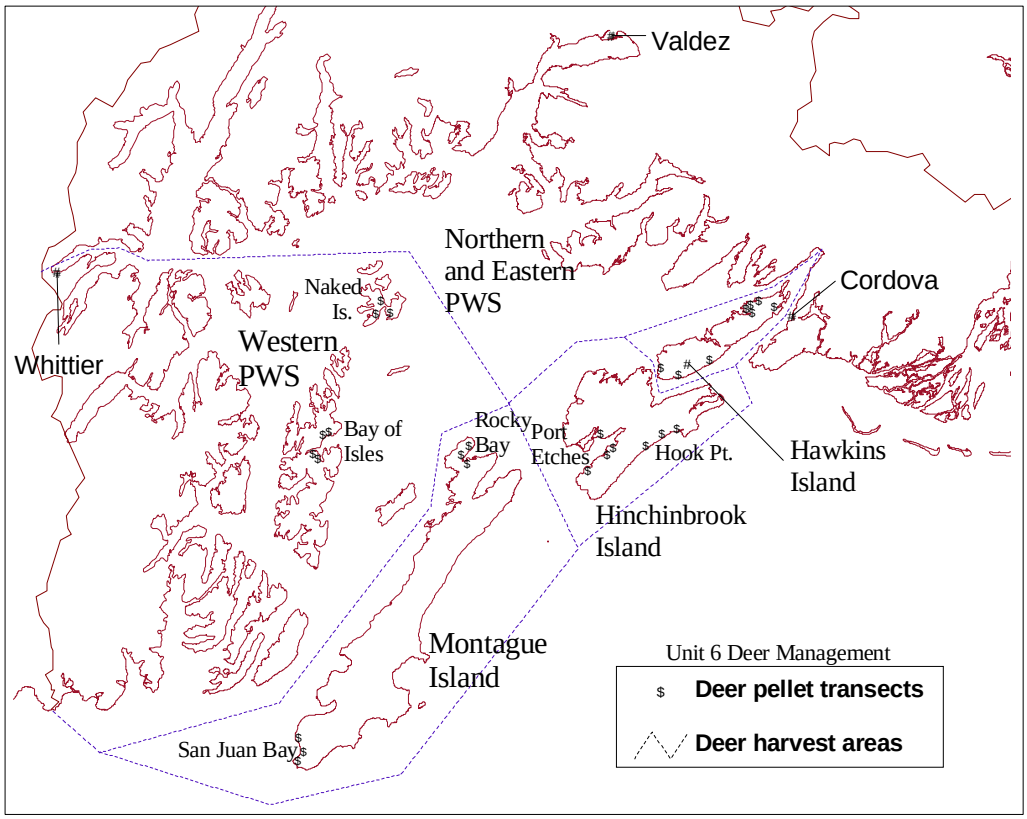

FIGURE 1 Locations of pellet group transects and harvest area boundaries for deer in Unit 6.

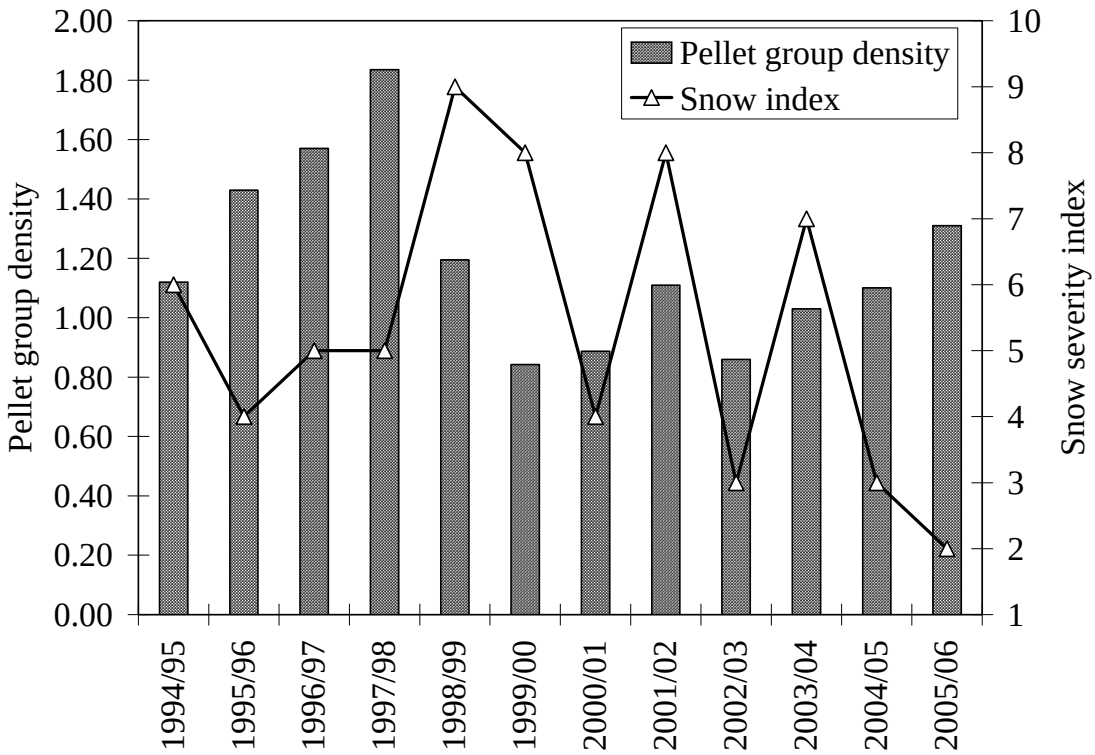

FIGURE 2 Deer pellet group density (number of pellet groups per 20 m^2 plot) and snow index representing depth and duration of snow at Port San Juan, Evans Island in western Prince William Sound.

TABLE 1 Unit 6 deer population trends as indicated by spring pellet-group surveys 1990s–2003. We analyzed survey data using a repeated measures technique from 1994–95 through 2001–02.

Area	Specific location/UCU	Regulatory Year[a]	MPGP[b]	S.E.[c]	Sig. diff.[d]	Number of plots
Hawkins Island	N.E. Hawkins	1991–92	1.49			132
	2001	1993–94	1.16			225
		1994–95	1.12	0.316	96, 98	214
		1995–96	1.84	0.316	99	243
		1996–97	1.55	0.316		
		1997–98	1.90	0.316	99	238
		1998–99	1.11	0.316		237
		1999–00	0.89	0.316	96, 97, 02,	225
		2000–01	0.96	0.316	96, 97, 98, 02	235
		2001–02	1.70	0.316	95, 99	240
		2002–03	1.11			240
		2003–04	1.82			240
		2004–05	1.39			205
		2005–06			Did not survey	
	S.W. Hawkins	1994–95	0.79	0.327	97, 98, 99	200
	2003	1995–96	1.05	0.327	97, 98	222
		1996–97	1.87	0.327		223
		1997–98	1.94	0.327	99	224
		1998–99	1.42	0.327		215
		1999–00	0.85	0.327	97, 98, 99	208
		2000–01	1.05	0.327	97, 98	212
		2001–02	1.16	0.327	97, 98	222
		2002–03	1.40			222
		2003–04	1.52			222
		2004–05	1.90			87
		2005–06			Did not survey	
Hinchinbrook Island	Hook Point	1994–95	1.30	0.456	97, 98	244
	1905	1995–96	1.46	0.456	98	234
		1996–97	1.98	0.456	98, 99	233
		1997–98	2.53	0.456	99	239
		1998–99	1.22	0.456		211
		1999–00	0.77	0.456	96, 97, 98	214
		2000–01	0.76	0.456	96, 97, 98	220
		2001–02	1.11	0.456	97, 98	237
		2002–03	1.24			237
		2003–04	0.93			232
		2004–05			Did not survey	
		2005–06			Did not survey	

Area	Specific location/UCU	Regulatory Year[a]	MPGP[b]	S.E.[c]	Sig. diff.[d]	Number of plots
Hinchinbrook Island	Port Etches	1993–94	1.26			225
	1903	1994–95	1.44	0.2619		228
		1995–96	1.68	0.2619		235
		1996–97	1.96	0.2619		235
		1997–98	1.77	0.2619		235
		1998–99			Did not survey	
		1999–00	1.16	0.2619		235
		2000–01	0.91	0.2619	95, 96, 97, 98, 00	227
		2001–02	0.89	0.2619	95, 96, 97, 98, 00	229
		2002–03	0.69			235
		2003–04	1.19			234
		2004–05	1.09			233
		2005–06	1.37			239
Montague Island	Rocky Bay	1994–95	1.06	0.172		240
	1803	1995–96	1.27	0.172		233
		1996–97	0.92	0.172		219
		1997–98	1.51	0.172	97	218
		1998–99	1.03	0.172	98	218
		1999–00	0.63	0.172	96, 98	218
		2000–01	0.72	0.172	96, 98	211
		2001–02	0.80	0.172	96, 98	198
		2002–03	0.58			218
		2003–04	0.70			212
		2004–05	0.92			218
		2005–06	1.25			217
	San Juan Bay	1994–95	1.00	0.3574		233
	1810	1995–96	1.29	0.3574		237
		1996–97	1.17	0.3574		234
		1997–98	1.36	0.3574		237
		1998–99			Did not survey	
		1999–00	0.75	0.3574		237
		2000–01	0.92	0.3574		235
		2001–02	1.01	0.3574		237
		2002–03	0.77			237
		2003–04	0.68			223
		2004–05			Did not survey	
		2005–06			Did not survey	

Area	Specific location/UCU	Regulatory Year[a]	MPGP[b]	S.E.[c]	Sig. diff.[d]	Number of plots
Naked Island	1701	1993–94	0.35			210
		1997–98	1.13			210
		2000–01	0.46	0.129		207
		2001–02	0.53	0.129		209
		2002–03	0.72			210
		2003–04	0.84			210
		2004–05	0.63			193
		2005–06	0.73			210
Knight Island	Bay of Isles 1503	1993–94	0.45			190
		2000–01	0.43	0.087		179
		2001–02	0.35	0.087		164
		2002–03	0.36			170
		2003–04	0.36			170
		2004–05			Did not survey	
		2005–06	0.45			177
All Areas		1996–97	1.57	0.1564	All years	1384
		1997–98	1.84	0.1541	All years	1601
		1998–99	1.20	0.0917	All years	881
		1999–00	0.84	0.0900	All years	1337
		2000–01	0.89	0.8522	All years	1726
		2001–02	1.11	0.1169	All years	1736
		2002–03	0.86			1769
		2003–04	1.03			1743
		2004–05	1.10			936
		2005–06	1.31			843

[a] Surveys occur during spring of each regulatory year.
[b] Mean number of pellet groups per plot.
[c] Standard error.
[d] Years in which mean was significantly different ($P<0.05$), beginning in 1994–95.

TABLE 2 Unit 6 deer harvest, 2001–2005

Area	Regulatory year	Estimated legal harvest M	(%)	F	(%)	Total	Estimated illegal/unreported harvest[a]	Total
Hawkins Island	2001–02	254	(59)	178	(41)	432	65	497
	2002–03	269	(65)	142	(35)	411	62	473
	2003–04	316	(63)	189	(37)	505	76	581
	2004–05	No survey						
	2005–06	492	(77.1)	146	(22.9)	638	96	734
Hinchinbrook Island	2001–02	439	(65)	236	(35)	675	101	776
	2002–03	242	(60)	160	(40)	402	60	462
	2003–04	421	(63)	245	(37)	666	100	766
	2004–05	No survey						
	2005–06	399	(76)	124	(24)	523	78	601
Montague Island	2001–02	609	(62)	380	(38)	989	148	1137
	2002–03	382	(67)	185	(33)	567	85	652
	2003–04	623	(69)	280	(31)	903	135	1038
	2004–05	No survey						
	2005–06	571	(70)	243	(30)	814	122	936
Western PWS	2001–02	338	(63)	195	(37)	533	80	613
	2002–03	272	(56)	214	(44)	486	73	559
	2003–04	465	(57)	352	(43)	817	123	940
	2004–05	No survey						
	2005–06	363	(54)	306	(46)	669	100	769

TABLE 2 continued

Area	Regulatory year	Estimated legal harvest M	(%)	F	(%)	Total	Estimated illegal/unreported harvest[a]	Total
Northern and	2001–02	12	(100)	0	(0)	12	2	14
Eastern PWS	2002–03	29	(100)	0	(0)	29	4	33
	2003–04	67	(58)	49	(42)	116	17	133
	2004–05	No	survey					
	2005–06	28	(54)	24	(46)	52	8	60
Unit 6 - Unknown	2001–02	0		0		0	0	0
	2002–03	13	(81)	3	(19)	16	2	18
	2003–04	0		0		0	0	0
	2004–05	No	survey					
	2005–06	0		0		0	0	0
Unit 6 - Total	2001–02	1652	(63)	989	(37)	2641	660	3301
	2002–03	1207	(63)	704	(37)	1911	478	2389
	2003–04	1892	(63)	1115	(37)	3007	752	3759
	2004–05	No	survey					
	2005–06	1853	(69)	843	(31)	2696	674	3370

[a]Unquantified, but assumed to be 15% of reported total.

TABLE 3 Unit 6 deer hunter residency and success, 1999–2005

Regulatory year	Successful					Unsuccessful					Total hunters
	Local resident[a]	Nonlocal resident	Non resident	Total	(%)	Local resident	Nonlocal resident	Non resident	Total	(%)	
1999–00	345	495	18	858	(61)	168	340	43	551	(39)	1409
2000–01	224	448	11	683	(54)	149	399	26	574	(46)	1257
2001–02	407	508	26	941	(64)	143	368	16	527	(36)	1468
2002–03	346	477	14	837	(51)	226	553	32	811	(49)	1648
2003–04	401	687	26	1114	(61)	160	511	48	719	(39)	1833
2004–05	No survey										
2005–06	362	596	36	994	(59)	134	516	27	677	(41)	1671

[a] Resident of Unit 6

TABLE 4 Unit 6 deer harvest chronology percent by month, 1999–2005

Regulatory year	Harvest periods					*n*
	August	September	October	November	December	
1999–00	7	3	21	42	27	2265
2000–01	10	5	32	39	10	1785
2001–02	7	6	32	32	20	2704
2002–03	9	5	29	32	25	1902
2003–04	8	4	34	34	20	2975
2004–05	No survey					
2005–06	10	8.5	32	30	19	2696

TABLE 5 Unit 6 deer harvest percent by transport method, 1999–2005

Regulatory year	Percent of harvest						
	Airplane	Boat	3- and 4-wheeler	Highway vehicle	Foot	Unknown	*n*
1999–00	29	64	0	0	5	1	2232
2000–01	27	67	1	0	3	1	1697
2001–02	16	74	1	0	3	2	2641
2002–03	11	81	1	1	3	3	1911
2003–04	11	84	0	0	3	2	3007
2004–05	No survey						
2005–06	11	85	1	0	1	2	2741

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 2004
To: 30 June 2006

LOCATION

GAME MANAGEMENT UNIT: 8 (5097 mi^2)

GEOGRAPHIC DESCRIPTION: Kodiak and adjacent islands

BACKGROUND

Officially, the Sitka black-tailed deer population in Unit 8 originated from three transplants, totaling 25 deer, between 1924 and 1934 (Burris and McKnight 1973). 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.

However, recently rediscovered evidence suggests deer have been on the archipelago since at least the turn of the last century. A letter dated March 15, 1919 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 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 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. In 1977, hunters harvested 1811 deer in Unit 8, with 29% taken from the islands north of Kodiak, 45% from northern Kodiak Island (north of a line between Terror to Ugak Bays), and 24% taken from

southern Kodiak Island. Twenty years later, in 1997, 8709 deer were harvested, 17% from the northern islands, 21% from northern Kodiak, and 46% from southern Kodiak Island.

Winter mortality proved to be the most significant limiting factor for 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 1987–88 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.

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 two 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 or 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 8000–8500 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. The FWS interviewed hunters annually in the Kodiak NWR during October–December boat-based enforcement patrols. 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. Occasional flights were made 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, and 1989–90. Also, there were higher than usual winter mortalities during the late 1970s and the early and late 1990s. After many of these occurrences, more conservative regulations were enacted and the populations quickly rebounded.

The winter of 1998–99 was the most severe in recent history. Snowfall was only slightly above normal, but persistent cold temperatures prevented snow from melting, retarded spring green-up, and increased thermal stress on the deer. The net result was the largest winter mortality event ever seen in Unit 8. Exact data are not available, but biologists with both ADF&G and Kodiak NWR estimated that more than 50% of the deer succumbed to the harsh winter weather (Van Daele 2003). The five successive winters (1999–2000 through 2004–05) were relatively mild, and the winters of 2004–05 and 2005–06 were moderate. The deer population responded by increasing steadily.

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 2006 population estimate was 65,000 deer and appeared to be increasing unitwide.

Population Composition

The percentage of males in the harvest has remained at least 73% since 1990–91and peaked at 95% in 2001–02 (Table 1). In spite of a reduction in hunter success and in the number of deer harvested after the population decline in 1999, the percentage of males in the harvest remained high. Reasons for this include more conservative doe seasons and bag limits in 2000–01 through 200203. These regulatory changes were made to reduce hunting pressure on the does to stimulate a more rapid recovery from the population decline. An anticipated side effect of the changes was a reduction in the number of bucks in the population. While no objective data were available, it

appeared that buck:doe ratios were reduced, and several incidents of late-born fawns were reported. With liberalization of doe harvest regulations in 2003–04 the percentage of does in the harvest increased and subjective observations suggested a recovery of buck:doe ratios.

Distribution and Movements

Deer are distributed throughout Unit 8 except in the more remote Semedi, Barren, and Chirikof Island groups. Within the past 20 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.

Selinger (1995) 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 seven deer moved 22 km (13 miles). The mean date of movement between winter and summer ranges was May 29, and Oct. 30 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 mi^2) and 107 ha (0.4 mi^2), respectively.

MORTALITY

Harvest

Season and Bag Limits. In 2004–05 and 2005–06, 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 1 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 Aug.1-Sept.30, 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 ≥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 their March 2007 meeting, the Board required deer harvest tickets 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 continued to rebound from the low levels that followed the population decline in 1998–99. In 2005–06 the total legal harvest was estimated at 6571. During the previous 5-year period the average annual harvest was 2,988 deer (note: no hunter harvest questionnaire was conducted for the 2004-05 season, Table 1). In 2002–03 restrictive seasons and bag limits implemented immediately after the population decline reduced doe harvests, resulting in 94% of the kill being bucks. In 2003–04 those restrictions were relaxed and in 2005–06 the percentage of bucks in the harvest was 86%. During the previous 5 years, the average annual percentage of bucks in the harvest was 87%.

As deer populations have 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 reversed in recent years. In 2005–06, 23% of the reported harvest was from the northern islands in the archipelago (hunt areas 810–813), 51% was from northern Kodiak Island (hunt areas 814–817 and 827–835), and 27% was from southern Kodiak Island (hunt areas 818–826). These proportions reflect a shift toward northern Kodiak from the averages for the previous 5 years (north islands – 25.4%, northern Kodiak – 42.8%, southern Kodiak – 31.8%).

Hunter Residency and Success. The number of hunters afield during this reporting period increased as the deer population rebounded. In 2005–06, an estimated 3664 hunters were afield; considerably higher than the previous 5-year average of 2643 (Table 2). Unit 8 residents composed 43% of the hunters in 2005–06, matching the average of the previous 5 years (42.9%). Nonlocal residents composed 42% of the hunters in 2005–06, comparable to the previous 5-year average (43.1%). Nonresidents composed 15% of the hunters in 2005–06, a rate comparable overall to the 5-year average (14.0%).

Hunter success was 83% in 2005–06. The average annual hunter success during the previous 5 years was 64.3% (Table 2). In 2005–06, the mean number of deer/hunter afield was 1.8. The previous 5-year average was 1.3 deer/hunter (Table 3). In 2005–06, 37% of the hunters killed only one deer, and 42% took their limit (Table 4). The average percentage of hunters that killed only one deer during the previous 5 years was 43.8%, while the average percentage of hunters taking their limit during that same period was 31%.

Harvest Chronology. November is consistently the peak month of harvest in Unit 8 (Table 5). In 2005–06, 45% of the deer were harvested in November. This percentage was higher than the average (39.0%) 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 the inception of the harvest questionnaire; however, from the mid 1990s through 2002–03 there was erosion in the proportion of hunters using aircraft. The downward trend ended in 2003–04, and in 2005-06, 42% of the deer hunters used boats and 20% used aircraft as their primary means of access. The average of the previous 5 years was 41.0% for boats and 17.3% 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

Mortality surveys in coastal winter ranges documented the severe winter mortality during the winter of 1998–99 as being more than 3 times higher than average winter mortality during the previous five years (150 versus 47.8) (Table 7). Because of the timing of the surveys, and the delayed spring green-up, which resulted in deer dying later than usual, it was suspected that the actual mortality was much higher than the survey data reflect. As in previous years, juvenile deer were the most severely impacted portion of the population. The winter mortality in 1999–2000 to 2003–04 was very light, with few carcasses found along most transects. More normal winter conditions in 2004-05 and 2005-06 resulted in higher deer mortality, but hunter reports and incidental observations suggested the population remained stable to increasing during this reporting period.

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 experimental range use transects within the refuge in 1997, and they constructed range exclosures in 1999. Preliminary data from these pilot studies of deer winter range in selected areas suggested deer used several species of browse heavily when population levels were high. 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, but subjective evidence suggests a notable recovery of several browse species.

Much of the Sitka spruce forest of central and eastern Afognak Island has been clearcut, beginning in 1975. Logging began in 1993 on private land on the Chiniak Peninsula of northeastern Kodiak Island. Mature spruce habitats in those areas were converted to seral shrub-grass communities. Studies in southeastern Alaska indicated old-growth forest was critical in maintaining deer populations (Wallmo and Schoen 1980). The effects of commercial logging activities on deer winter range on Afognak Island have not been investigated, but it appears that while it initially reduces carrying capacity, subsequent increased production of herbaceous and shrubby vegetation may benefit deer, depending on snow conditions and the availability of

sufficient thermal cover and areas of reduced snow depths during harsh winters. Selinger (1995) noted that deer on Kodiak Island occupying nonconiferous brush and deciduous forest habitat have much larger summer ranges than deer in heavily forested Southeast Alaska. He hypothesized that Kodiak deer may have adopted a strategy that allows them to accumulate greater fat reserves in summer that enhances their survival in areas without coniferous forest.

NON-REGULATORY MANAGEMENT PROBLEMS/NEEDS

Improving precision in assessing deer population trends is desirable, but is difficult and expensive. Hunter questionnaire surveys are the most economical, albeit indirect, method of monitoring deer population trends in Unit 8. Kodiak NWR staff initiated aerial and ground deer counts in wintering areas in the refuge in 1992, concluding that aerial surveys required intensive effort to develop corrections for variations in sightability (Zwiefelhofer and Stovall 1992). Pellet-group counts are used in forested habitat of southeastern Alaska to monitor deer population trends (Kirchoff and Pitcher 1988); however, the shrub/graminoid communities used by wintering deer on Kodiak Island do not provide suitable conditions for these types of surveys. The Kodiak NWR staff established some pellet-group transects in the Olga Bay area in 1994, but results were inconclusive and the surveys were discontinued in 1996. Refuge staff members have also experimented with FLIR equipment mounted on a U.S. Coast Guard HH-60 helicopter to census deer on winter ranges on northwestern Kodiak Island.

Kodiak NWR sponsored a workshop in June 2000 to address continued concerns about the impact of introduced animals on native flora and fauna. Workshop participants concluded that a unitwide vegetative analysis was the highest research priority, followed closely by a comprehensive analysis of deer movements, feeding areas, and population dynamics. The U.S. Geological Survey completed a comprehensive vegetative cover map for the Kodiak Archipelago (Fleming and Spencer 2004). The map was derived from LandSat photographs and a ground-truthed computer algorithm and includes 64 distinct cover types in a GIS format.

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 2006, 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 crytorchidism) (Bubenik et al 2001), but the exact cause of this phenomenon has not yet been determined.

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. In 2003 hunters provided samples from 148 deer and six elk, in 2004 there were 394 samples from deer and 16 from elk, and in 2005 we received samples from 402 deer and 21 elk. All of these samples were CWD-free.

CONCLUSIONS AND RECOMMENDATIONS

Sitka black-tailed deer on the Kodiak Archipelago are an introduced ungulate using an island habitat. There are no natural predators and the 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, 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 way to manage these animals.

Although objective population data are nonexistent, Alaska Statute 16.05.255 mandated 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, but by using an open and cooperative forum we are confident they can be used as an important tool for future management.

During this reporting period, the deer population seemed to continue its recovery from the winter mortality that occurred in 1998–99. There were relatively few dead deer found during the late winter and early spring and productivity appeared robust with numerous observations of twin fawns. In response to the increased deer numbers, in 2003 the Board of Game liberalized the bag limit during October and November to allow harvest of deer of either sex. Another nonregulatory liberalization occurred during this reporting period as the number of proxy permits and federal designated hunter permits has increased tremendously, essentially negating individual hunter bag limits in some cases. A consequence of these changes was an estimated legal harvest that increased 164% in five years.

There continued to be a great deal of interagency cooperation 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. We developed a cooperative research project with the U.S. Department of Agriculture to investigate the presence and possible distribution of CWD in deer and elk on the archipelago. This program depends on hunters donating samples from their harvest, and the level of cooperation has been excellent. In addition to providing samples, the hunters were also eager to offer information on their perceptions of deer habitat, behavior, and population levels.

Deer with atypical antler development have been observed on Kodiak for at least the past 20 years. In recent years, the condition appears to be more common, particularly on the south end of

the island. Evidence suggests the aberrations are caused by abnormal testicular development, but the cause is unknown. Potential culprits are genetics, diet, and contaminants. It is possible that part of the perceived increase is due to a higher survival rate of atesticular bucks that do not deplete their fat reserves by participating in the rut prior to winter. In spite of the increasing reports of abnormal deer, survival and productivity of the deer in the affected areas do not appear to have been impacted, and we feel that no management action is practical or necessary at this time. It is important, however, to monitor the situation, and ADF&G should endorse and cooperate in well-designed and peer-reviewed baseline research to examine the cause of the abnormalities.

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TABLE 1 Unit 8 deer harvest, 1987–88 through 2005–06

Regulatory year	Estimated legal harvest[a] M (%)	F (%)	Unk.	Total	Estimated illegal harvest[b]	Estimated wounding loss[c]	Estimated total
1987–88[d]	10,844 (80)	2702 (20)	245	13,791	1379	1379	16,549
1988–89	---	---	---	---	---	---	---
1989–90	6923 (73)	2625 (27)	490	10,038	1004	1004	12,046
1990–91	5367 (66)	2739 (34)	---	8106	811	811	9728
1991–92	6569 (73)	2379 (27)	---	8948	895	895	10,738
1992–93	5144 (73)	1899 (27)	---	7043	704	704	8451
1993–94	5124 (82)	1130 (18)	---	6254	625	625	7504
1994–95	8270 (80)	2130 (20)	---	10,400	1040	1040	12,480
1995–96	5806 (81)	1387 (19)	---	7193	719	719	8631
1996–97	7041 (79)	1903 (21)	---	8944	894	894	10,732
1997–98	6860 (79)	1849 (21)	---	8709	871	871	10,451
1998–99	5993 (76)	1928 (24)	---	7921	792	792	9505
1999–2000	2801 (75)	927 (25)	---	3728	373	373	4474
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	3770
2003–04	4430 (85)	769 (15)	---	5199	520	520	6238
2004-05	---	---	---	---	---	---	---
2005-06	5635 (86)	936 (14)	---	6571	657	657	7885

[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, 1987–88 through 2005–06

	Successful				Unsuccessful				
Regulatory year	Local[a] resident	Nonlocal resident	Nonresident	Total (%)	Local[a] resident	Nonlocal resident	Nonresident	Total (%)	Total hunters
1987–88	1851	2410	290	4551 (76)	645	665	161	1471 (24)	6022
1988–89[b]	---	---	---	---	---	---	---	---	---
1989–90	1892	2080	383	4355 (67)	1124	788	255	2167 (33)	6522
1990–91	1260	1627	185	3072 (74)	550	448	107	1105 (26)	4176
1991–92	1414	1702	262	3378 (76)	479	479	85	1043 (24)	4421
1992–93	1221	1345	207	2773 (67)	541	645	160	1346 (33)	4119
1993–94	935	1247	159	2341 (79)	256	286	63	605 (21)	2946
1994–95	1690	1917	287	3894 (83)	372	314	129	815 (17)	4708
1995–96	1164	1440	300	2904 (73)	480	440	160	1080 (27)	3984
1996–97	1428	1689	339	3456 (80)	348	368	122	838 (20)	4294
1997–98	1372	1749	422	3543 (82)	324	354	119	797 (18)	4340
1998–99	1062	1830	398	3290 (72)	370	548	267	1185 (26)	4560
1999–2000	638	829	372	1839 (57)	567	571	274	1412 (43)	3251
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

[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 1980–81 through 2005–06

Regulatory year	% Hunter success[a]	% Hunters taking bag limit[b]	% Male	% Female	Total harvest	Estimated hunters	Mean number deer/hunter	Number days hunted/deer
1980–81	73	37	74	26	5347	3440	1.6	3.8
1981–82[c]	---	---	---	---	---	---	---	---
1982–83[c]	---	---	---	---	---	---	---	---
1983–84	81	24	74	26	9897	4113	2.4	2.3
1984–85	81	23	74	26	8905	3948	2.3	2.6
1985–86[c]	---	---	---	---	---	---	---	---
1986–87[c]	---	---	---	---	---	---	---	---
1987–88	76	27	80	20	13,791	6022	2.3	2.3
1988–89[c]	---	---	---	---	---	---	---	---
1989–90	67	15	73	27	10,038	6521	1.5	2.5
1990–91	74	19	67	33	8106	4176	1.9	2.9
1991–92	76	31	73	27	8948	4421	2.0	2.7
1992–93	67	29	73	27	7043	4119	1.7	3.7
1993–94	80	33	82	18	6254	2946	2.1	2.4
1994–95	83	35	80	20	10,401	4708	2.2	2.4
1995–96	73	29	81	19	7193	3984	1.8	3.0
1996–97	81	31	79	21	8944	4294	2.1	2.8
1997–98	82	28	79	21	8709	4340	2.0	2.3
1998–99	73	0	76	24	7765	4475	1.7	3.2
1999–2000	56	0	75	25	3728	3251	1.1	4.8
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	2742	1.1	4.8
2003–04	77	42	85	15	5198	3104	1.7	3.0
2004-05[c]	---	---	---	---	---	---	---	---
2005-06	83	42	86	14	6571	3664	1.8	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 2005–06

[c] No survey conducted

TABLE 4 Number and percent of hunters in Unit 8 that reported harvesting 1, 2, 3, 4, or 5+ deer, 2001–02 through 2005–06

	2001–02		2002–03		2003–04		2004-05[b]		2005-06	
	Hunters	%	Hunters	%	Hunters	%	Hunters	%	Hunters	%
1 deer[a]	703	44	709	44	802	33	---	--	1113	37
2 deer	415	26	420	26	591	25	---	--	655	22
3 deer	434	27	416	26	921	38	---	--	1164	39
4 deer	36	2	11	1	40	2	---	--	56	2
5 + deer	1	0	47	3	45	2	---	--	31	1

[a] Maximum bag limit was 4 deer on Kodiak National Wildlife Refuge and 3 deer on nonfederal lands in 2001–02 and 3 deer in all areas in 2002–03 to 2005–06

[b] No deer harvest questionnaire was sent out for the 2004-05 hunting season

TABLE 5 Unit 8 deer harvest chronology percent by period, 1980–81 through 2005–06

Regulatory year	Harvest periods (%)						*n*
	August	September	October	November	December	January	
1980–81	6	9	24	33	22	6	5347
1981–82[a]	--	--	--	--	--	--	---
1982–83[a]	--	--	--	--	--	--	---
1983–84	5	7	25	37	18	7	9897
1984–85	5	9	28	41	15	3	8905
1985–86[a]	--	--	--	--	--	--	---
1986–87[a]	--	--	--	--	--	--	---
1987–88	5	8	26	41	18	3	13,791
1988–89[a]	--	--	--	--	--	--	---
1989–90	3	6	20	51	18	3	10,038
1990–91	5	4	24	43	23	2	8106
1991–92	5	5	20	40	30	0	8948
1992–93	4	5	26	39	26	0	7043
1993–94	5	7	31	39	19	0	6254
1994–95	4	5	29	36	24	0	10,401
1995–96	5	4	25	48	17	<1	7193
1996–97	4	6	25	39	26	0	8944
1997–98	4	3	23	43	28	0	8709
1998–99	5	5	20	40	30	<1	7902
1999–2000	5	6	23	42	23	0	3732
2000–01	6	5	24	44	16	<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

[a] No survey conducted.

TABLE 6 Unit 8 deer harvest percent by transport method, 1987–88 through 2005–06

Regulatory year	Percent of harvest									
	Airplane	Horse	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Other	Unknown	*n*
1987–88	34	--	39	5	--	--	16	2	3	2638
1988–89[a]	--	--	--	--	--	--	--	--	--	---
1989–90	42	--	35	4	--	--	15	4	9	3156
1990–91	43	<1	35	4	<1	1	9	9	0	724
1991–92	43	1	39	5	<1	1	11	14	0	862
1992–93	46	1	39	4	0	2	9	10	0	831
1993–94	45	<1	42	5	0	1	9	12	0	889
1994–95	36	1	44	5	1	1	12	14	0	888
1995–96	40	<1	42	5	0	1	11	12	0	821
1996–97	35	<1	47	7	0	1	10	12	0	915
1997–98	33	<1	49	6	<1	1	13	8	0	858
1998–99[b]	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	--	--	--	--	--	--	--	--	--	---
2005-06	20	<1	42	9	0	<1	15	10	<1	5719

[a] No survey in 1988–89 and 2004-05.

[b] Starting in 1998–99, transportation data were collected by trips taken rather than by hunter.

TABLE 7 Unit 8 sex and age composition of deer winter-kill from beach mortality transects, 1987–88 through 2005–06

Regulatory	Adult				Juvenile[a]				Unk. age/	All			
Year	M (%)	F (%)	Unk.	Total	M (%)	F (%)	Unk.	Total	gender	M (%)	F (%)	Unk.	Total
1987–88	8 (89)	1 (11)	3	12	6 (50)	6 (50)	18	30	10	14 (66)	7 (33)	31	52
1988–89	22 (85)	4 (15)	0	26	43 (57)	32 (43)	69	144	16	65 (64)	36 (36)	85	186
1989–90	9 (41)	13 (59)	16	38	9 (50)	9 (50)	73	91	2	18 (45)	22 (55)	91	131
1990–91	--	--	--	--	--	--	--	--	--	3 (75)	1 (25)	4	8
1991–92	25 (76)	8 (24)	4	17	31 (57)	23 (43)	22	76	17	57 (64)	32 (36)	43	132
1992–93	0 (--)	0 (--)	0	0	0 (--)	0 (--)	1	1	0	0 (--)	0 (--)	1	1
1993–94	15 (100)	0 (--)	2	17	2 (50)	2 (50)	8	12	0	17 (89)	2 (11)	10	29
1994–95	5 (83)	1 (17)	10	16	7 (47)	8 (53)	27	42	2	12 (57)	9 (43)	39	60
1995–96	0 (--)	0 (--)	1	1	4 (66)	2 (33)	28	34	1	4 (67)	2 (33)	31	37
1996–97[b]	5 (55)	4 (45)	2	11	17 (77)	5 (23)	47	69	1	22 (71)	9 (29)	50	81
1997–98[b]	1 (100)	0 (--)	2	3	8 (62)	5 (48)	15	28	1	9 (64)	5 (36)	18	32
1998–99[b]	9 (33)	18 (67)	23	50	12 (33)	24 (67)	61	97	3	21 (33)	42 (67)	87	150
1999–2000[b]	0 (--)	1 (100)	0	1	1 (33)	2 (670)	6	9	0	1 (25)	3 (75)	6	10
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	0	0	0	0	0	0	0	0	0	0 (--)	0 (--)	0	0
2003–04	3 (30)	7 (70)	5	15	1 (50)	1 (50)	13	15	5	4 (33)	8 (67)	23	35
2004-05	0 (--)	2 (100)	2	4	0 (--)	0 (--)	5	5	0	0 (--)	2 (100)	7	9
2005-06	4 (36)	7 (64)	3	14	8 (67)	4 (33)	29	41	1	12 (52)	11 (48)	33	56

[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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