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## **CHAPTER 1: DEER MANAGEMENT REPORT**

From: 1 July 2012

To: 30 June 2014

### **LOCATION**

**GAME MANAGEMENT UNIT:** 1A (5,300 mi<sup>2</sup>)

**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 in response to winter weather and wolf and bear predation. Widespread clearcut logging from the 1970s through the 1990s has eliminated much important deer winter habitat, old-growth forest below 800 feet elevation, making deer more vulnerable to severe winters. Deer numbers are currently at low levels throughout Unit 1A.

Weather conditions and population levels influence deer harvests. Unit 1A harvests have ranged widely during the past 20 years from a high of 914 during 1995 to a low of 75 in 2008. Hunting was open each year in Unit 1A from August through December until 2011 when the deer season was shortened to end November 30. Limited hunting of antlerless deer in Unit 1A was allowed before 1978, but since then only bucks have been legal under both state and federal regulations. As clearcut logging continues to reduce old-growth habitat in portions of the unit, many previously logged stands no longer support deer, and local deer populations are expected to further decline. Population models predict declines in deer carrying capacity of 50–60% by the end of the logging rotation in 2054 (USFS 1989).

### **MANAGEMENT DIRECTION**

#### **MANAGEMENT GOALS**

Deer are highly valued by hunters in the Ketchikan area, and under 5 AAC 92.108 the Board of Game established population and annual hunter harvest goals for Unit 1A of 15,000 deer and 700 deer, respectively. We are currently evaluating the viability of those goals relative to declining habitat conditions. Region I staff also developed a feasibility assessment (ADF&G 2012a) and operational plan (ADF&G 2013) for implementing wolf control and other measures under the intensive management law, to potentially increase deer numbers in a portion of Unit 1A.

#### **MANAGEMENT OBJECTIVES**

- Maintain populations in excess of 45 deer per mi<sup>2</sup> 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, field observations, and to a lesser degree from hunters' anecdotal reports. Deer pellet transects are measured each spring in a sample of Value Comparison Units (VCU) to look at long-term deer trends across Southeast Alaska.

During RY10 we gathered harvest data from an annual hunter questionnaire that we mailed to a random sample of hunters who were issued deer harvest tickets (ADF&G 2012b). DWC mailed harvest questionnaires to approximately 33% of all Region I deer harvest ticket holders. Using the answers on the surveys returned to us, we expanded the results statistically to estimate hunting results of all deer harvest ticket holders. The deer harvest survey has been conducted since the early 1980s to estimate deer harvest. However at the fall 2010 Board meeting the department submitted a proposal to change our harvest assessment methodology from the survey format to an individual hunter harvest ticket report. The proposal passed and the change was implemented in July of 2011. Currently, a hunt report is attached to all deer harvest tickets, and all hunters are required to submit the information using either our online report system or using the attached prepaid postage report form. Our harvest data for RY11 is based on the harvest ticket report and statistically expanded to all hunters similar to the mail survey.

## RESULTS AND DISCUSSION

### MORTALITY

#### *Harvest*

<u>Season and Bag Limit</u>	<u>Resident and Nonresident Hunters</u>	
Unit 1A	1 August–30 November	4 bucks
Unit 1A Cleveland Peninsula	1 August–30 November	2 bucks

Board of Game Actions and Emergency Orders. During the November 2010 BOG meeting the closing date for the 1A deer hunting season was changed from 31 December to 30 November. During the same meeting, the board also adopted a department proposal to add a statewide harvest report portion to the general season deer harvest ticket. Hunters are now required to use the harvest prepaid postage ticket report form to report their hunting effort to the department or they can report online.

At its spring 2013 meeting, the Alaska BOG heard a report on the department's feasibility assessment (ADF&G 2012a) and plans for intensive management activities on Gravina Island. The board then directed the department to prepare an operational plan (ADF&G 2013) and to develop and submit a regulatory proposal for intensive management activities. The department is currently evaluating habitat capability for deer in a portion of Unit 1A before submitting an intensive management activity proposal at the next Southeast BOG meeting.

Hunter Harvest. The harvest survey in RY12 and the harvest ticket report in RY13 indicate an estimated harvest of 236 and 265 deer respectively. This is slightly higher than the previous 5-year average (RY07–RY11) of 153 deer. The average time it took hunters during this report period to harvest a deer (8.4 days) was lower than the previous 5-year average of 10.3 days per

harvested deer. The estimated number of successful hunters increased during this report period from an average 137 during RY10–RY11 to an average of 168 successful hunters during this report period (Table 1). This continues a higher successful hunter trend from the low average of 72 successful hunters during the period RY07–RY09.

The number of people hunting and number of deer harvested on Gravina Island near Ketchikan remained low compared to historical figures. During RY12, 93 hunters reported a harvest of 15 deer, and in RY13, 90 hunters who spent time on the ground reported taking 13 deer. Although low, those figures are higher than RY07 when only 9 deer were reported taken. However, hunter harvest remains well below the past 5-year average of 31 bucks (RY06–RY11). Gravina Island is located near Ketchikan and is accessible by boat or road vehicle, but it appears many local hunters opt to spend their hunting effort in areas with higher deer densities such as those on nearby Prince of Wales Island. During the RY12 and RY13 seasons a total of 182 and 211 male deer were reportedly harvested by hunters on Revilla Island, respectively. Those figures are close to the past 5-year average of 222 bucks (RY06–RY11) (Table 2).

Based on hunt reports, we estimated 8 and 5 deer were harvested during RY12 and RY13 respectively on the Cleveland (Table 2). The chronic low deer numbers on the Cleveland are likely due to the combination of poor habitat quality, a series of harsh winters, and wolf and black bear predation. We continue to monitor the Cleveland deer population and are developing methods to measure winter habitat vegetation quality and quantity of forage available to determine if Intensive Management tools may be effective to enhance deer numbers in this portion of Southeast Alaska.

In addition to reported harvest data we assume there are illegal and unreported kills. Total harvest in the unit is estimated by combining the reported harvest from mail out surveys and harvest ticket reports with estimated illegal and unreported kills. We estimate, based on local law enforcement citations, recent staff observations, and comments from local hunters, that the unreported and illegal take for Unit 1A equals approximately half of the reported legal harvest (Table 3).

#### *Other Mortality*

During this reporting period the number of road-killed deer in the Ketchikan area was higher than the long-term range of 10-15 deer killed per year by vehicles. That could indicate more deer are living near roads or an increase in vehicle traffic near Ketchikan.

Residency and Success. Over 90% of Unit 1A hunters are local residents living within the unit. During the 2 years of this report period, 128 and 145 local hunters were successful for an average success rate of 30% during RY12 and 31% in RY13. This is similar the previous 5-year average success rate (RY07–RY11) for local hunters of 32% (Table 4). On average during the previous 5 years, approximately 19 nonlocal resident hunters have been successful harvesting deer in this area each season with 44% hunters being successful. Nonresident hunters had an average of 24% success during the past 2 years. Most nonresident deer hunters hire registered guides and pursue deer as part of a multi-species big game package hunt, which increases their chances of taking a deer (Table 4).

## **HABITAT**

### *Assessment*

Past and current clearcut logging has altered much deer habitat in Unit 1A. The most serious effects are in higher volume stands below 800 feet elevation, which are critical habitat for deer during winters with heavy snowfall (McNay and Voller 1995). Although young clearcuts can provide considerable forage for deer during snow-free times of year, at 25-30 years following a cut, regenerating trees begin to shade out shrubs and forbs that are important forage species. Closed canopy second-growth forest has low habitat value for deer.

Based on field observations we believe Unit 1A deer populations are currently low and coincide with predictions of the Interagency Habitat Capability Model for deer. Recent timber sales by the Alaska Mental Health Trust Authority and the State of Alaska on Gravina Island, and Forest Service timber sales on Revilla Island will further reduce carrying capacity for deer in these previously popular Unit 1A hunting areas.

The ongoing decline in deer numbers in Unit 1A is likely to continue as the remaining 15–30 year old clearcuts regenerate into closed canopy second-growth forest and available winter range is reduced. As a result, we anticipate hunter success in Unit 1A will also continue to decline. The Tongass Land Management Plan predicts by 2054 few areas within roaded and logged portions of Unit 1A will support enough deer to meet projected hunter demand (USFS 1989). In fact, at the time of this report, Unit 1A deer numbers no longer meet local hunter demand, nor do they meet established Intensive Management deer harvest objectives.

### *Pellet Survey Trends*

We interpret pellet-group transect data cautiously because this type of survey is designed to indicate long-term trends in deer abundance, rather than year to year changes in deer numbers or to estimate deer densities. In most cases we sample 3 transects in unaltered forested habitat within U. S. Forest Service Value Comparison Units (VCU). VCUs correspond to watersheds. We count pellet groups beginning at a marked tree at the beach and survey a transect along a designated compass heading until reaching 1,500 feet elevation, >50% snow cover, or a maximum of 125 20-meter segments. Each 20 meter segment represents a “plot”. Each pellet group within a half meter either side of a 20 meter chain pulled along the transect is counted, and totals for each plot are recorded.

For this reporting period we surveyed south Gravina Island (VCU 765) near Dall Head during spring of 2012 (0.53 PG/plot) and spring 2013 (0.44 PG/plot). In 2011 we found 0.43 PG/plot, indicating the population in that area is stable. We also conducted deer pellet surveys on north Gravina Island (VCU 999). In 2013 we found 0.32 pellet groups/plot, which was similar to survey findings in 2010 (0.33 PG/plot) (McCoy 2010 and 2013). Recent logging activity in VCU 999 has fragmented habitat requiring that we establish new transects for future pellet group surveys in this watershed.

An ADF&G supported graduate student project recently developed and tested a deer fecal pellet-based deer abundance monitoring technique. Biologists used path sampling and DNA extracted from fresh deer fecal pellets to generate a modified mark–recapture (MR) estimate of deer abundance in several Southeast Alaska watersheds. Path sampling can be used alone to increase

pellet group encounter rates and improve estimates of deer abundance using pellet group counts, or it can be used as a sampling method for the more expensive but precise DNA-based MR estimate. We hope these new tools will enable managers to more accurately estimate the abundance and trend of deer populations in densely vegetated habitats like those found in Southeast Alaska. Limitations of the DNA-based MR technique include the high cost to obtain and analyze the samples. We also do not know whether this method can be used in an area with low deer densities (Brinkman et al. 2011) and consequently low pellet encounter rates.

During spring 2013 we compared pellet encounter rates of the path sampling technique to our traditional compass bearing pellet transects in one VCU near Ketchikan. At Dall Head on the south end of Gravina Island the path sampling method yielded 0.83 PG/plot, whereas traditional transects in the same area yielded only 0.44 PG/plot. Preliminary results from this pilot work during 2013 in the Bostwick Bay watershed resulted in 0.78 PG/plot although we did not have parallel traditional transects established in that area to compare the new method results.

Path sampling appears to be a more efficient way of locating pellet groups than compass bearing transects, but using it would make future pellet group data difficult to compare to previous data. The DNA-based MR technique for estimating deer abundance has relatively high personnel and lab costs and applying findings from a small study area to a broader landscape requires assuming deer occur at a uniform density. More analysis is required to determine if it can be a viable way to estimate abundance or trend of a population.

## **CONCLUSIONS AND RECOMMENDATIONS**

During this report period the deer harvest in Unit 1A was higher than the previous 5-year average for the subunit but remained about one third of the 700 deer per year harvest objective. The number of hunters pursuing deer in Unit 1A and hunter effort also exceeded the past 5-year average. However, hunter effort and harvest have declined in two historically popular areas.

Harvests from the Cleveland Peninsula near Ketchikan historically averaged over 100 deer per year in the early to mid-1990s with a high of 208 in RY94, but dropped to zero during RY02 and RY03. Deer numbers in this area remain low with an average of 6 deer taken per year during the current report period. We believe the combined effects of logging and several deep-snow winters during the last 10 years are primarily responsible for the decline of this population.

Another area of concern is Gravina Island which traditionally produced a high proportion of Unit 1A deer. However, since RY01 harvests on Gravina have dropped dramatically, and during this report period we estimated only 15 and 13 deer, respectively, were legally harvested from this 100 square mile island adjacent to Ketchikan. We will continue to monitor this population using traditional pellet group surveys and also evaluate new techniques such as the DNA capture-recapture technique. Although logging has reduced important winter habitat, in the absence of harsh winters we believe this population has the potential to grow and produce higher deer harvests.

South Revilla Island continues to produce most of the annual Unit 1A deer harvest. Easy access from Ketchikan makes this area a popular hunting destination. During this report period deer harvest from Revilla averaged 197 deer per year and was similar to the average annual harvest of 206 deer from RY04–RY11.

Unit wide we anticipate that effects of past and ongoing logging in Unit 1A will continue to reduce carrying capacity and winter habitat for deer, and that over the long term deer abundance and consequently hunter harvest will decline. If that happens, Ketchikan hunters will likely shift their effort to nearby Unit 2.

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Table 1. Unit 1A reported deer harvest data, regulatory years 2004 through 2013.

Regulatory year	No. Hunters expanded <sup>b</sup>	No. successful hunters expanded <sup>b</sup>	Percent successful	Hunter days expanded	Average days per hunter	Deer <sup>a</sup> harvested	Average deer per hunter	Average hunter days per deer
2004	546	194	36	2,222	4.1	347	0.6	6.4
2005	258	106	41	1,257	4.9	132	0.5	9.5
2006	340	191	56	1,105	3.3	374	1.1	3.0
2007	241	90	37	1,187	4.9	186	0.8	6.4
2008	250	56	22	1,836	7.3	75	0.3	24.5
2009	283	70	25	844	3.0	138	0.5	6.1
2010	404	140	35	1,622	4.0	189	0.5	8.4
2011	360	133	37	1,074	3.0	176	0.5	6.1
2012	520	162	31	1,888	3.6	236	0.5	8.0
2013	576	173	30	2,334	4.1	265	0.5	8.8
$\bar{x}$	378	132	35	1,537	4.2	212	0.6	8.7

<sup>a</sup> Includes illegal does that were reported killed.

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



Table 2. Unit 1A deer harvest from major hunt areas, regulatory years 2004 through 2013.

	Regulatory Year	No. hunters expanded <sup>a</sup>	No. successful hunters expanded <sup>a</sup>	Percent successful	Hunter days expanded <sup>a</sup>	Average days per hunter	Average deer per hunter	Deer killed
Gravina Island	2004	140	51	36	478	3.4	0.6	83
	2005	159	45	28	468	2.9	0.3	54
	2006	113	27	24	301	2.7	0.5	57
	2007	107	9	8	377	3.5	0.1	9
	2008	116	14	12	389	3.4	0.2	20
	2009	83	25	30	209	2.5	0.4	31
	2010	89	17	19	309	3.5	0.3	25
	2011	73	15	21	209	2.9	0.2	15
	2012	93	13	14	217	2.3	0.2	15
	2013	90	13	14	246	2.7	0.1	13
	$\bar{x}$	106	23	21	320	3.0	0.3	32
Revilla Island	2004	418	149	36	1,599	3.8	0.6	232
	2005	324	140	43	1,210	3.7	0.6	195
	2006	335	185	55	1,106	3.3	1.0	323
	2007	298	129	43	1,193	4.0	0.8	251
	2008	279	85	30	1,875	6.7	0.4	125
	2009	345	103	30	1,156	3.4	0.5	172
	2010	243	69	28	858	3.5	0.4	98
	2011	257	102	40	721	2.8	0.5	141
	2012	393	125	32	1406	3.6	0.5	182
	2013	403	136	34	1695	4.2	0.5	211
	$\bar{x}$	329	122	37	1282	4.0	0.6	193

	Regulatory Year	No. hunters expanded <sup>a</sup>	No. successful hunters expanded <sup>a</sup>	Percent successful	Hunter days expanded <sup>a</sup>	Average days per hunter	Average deer per hunter	Deer killed
Cleveland Peninsula	2004	58	16	28	100	1.7	0.6	32
	2005	46	17	37	264	5.7	0.6	26
	2006	21	3	14	24	1.1	0.2	4
	2007	37	0	0	80	2.2	0	0
	2008	26	1	4	50	1.9	0	0
	2009	31	5	16	81	2.6	0.2	5
	2010	33	21	64	102	3.1	0.8	25
	2011	14	6	43	53	3.8	0.5	7
	2012	17	6	35	112	14.0	0.5	8
	2013	18	3	17	94	18.8	0.3	5
	$\bar{x}$	30	8	26	96	5.5	0.4	11

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

Table 3. Unit 1A reported and estimated deer harvest/mortality, regulatory years 2004 through 2013.

Regulatory year	Reported harvest			Unreported & illegal harvest <sup>a</sup>	Estimated total harvest	Estimated No. road kills
	Male	Female	Total			
2004	342	5	347	174	521	1–5
2005	271	8	279	140	419	1–5
2006	461	0	461	231	692	1–5
2007	305	1	306	153	459	1–5
2008	149	5	154	77	231	1–5
2009	216	5	221	111	332	1–5
2010	189	3	154	77	231	1–5
2011	170	6	221	111	332	1–5
2012	236	0	236	118	354	10–15
2013	264	2	266	133	399	10–15
$\bar{x}$	260	4	265	140	405	3–7

<sup>a</sup> Unreported and illegal harvest is estimated at 50% of reported harvest

Table 4. Unit 1A deer hunter residency and success, regulatory years 2004 through 2013.

Regulatory year	Successful				Unsuccessful			
	Local resident <sup>a</sup>	Nonlocal resident	Nonresident	Total	Local resident <sup>a</sup>	Nonlocal resident	Nonresident	Total
2004	179	16	0	194	346	5	0	351
2005	170	23	5	198	225	19	25	269
2006	206	46	10	262	193	17	4	214
2007	139	8	6	153	216	31	10	257
2008	88	18	0	106	233	50	0	283
2009	99	22	24	145	246	26	15	287
2010	88	38	13	139	240	2	10	252
2011	115	7	9	131	197	15	7	219
2012	128	20	12	160	302	24	27	353
2013	145	22	5	172	317	48	25	390
$\bar{x}$	136	22	8	166	252	24	12	288

<sup>a</sup> Local resident includes all hunters living in Unit 1A.