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CHAPTER 6: DEER MANAGEMENT REPORT

From: 1 July 2012
To: 30 June 2014

LOCATION

GAME MANAGEMENT UNIT: 4 (5,820 mi^2)

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

BACKGROUND

Game Management Unit 4 (Unit 4) provides a substantial proportion of the deer hunting opportunity and harvest in Southeast Alaska. Significant changes in deer density over time are normal in the unit. Periodic declines are attributable to severe winter weather; most importantly deep snow (Olson 1979). Deer populations were low in the late 1940s following years of high winter mortality. By 1956 deer increased to exceed carrying capacity (Klein and Olson 1960). In recent history severe winters appear to be on roughly an 11-year cycle, with intervening mild winters. Most winters in Unit 4 were mild from the mid 1970s through 1987–1988, with high survival of fawns and adult deer. However, during the winter of 1988–1989 persistent deep snow caused significant deer mortality. A series of mild winters beginning in 1999, extending through 2005–2006, again allowed the population to build to a point that it likely exceeded the habitat capability needed during even a moderate winter.

Subsequently, the winters of 2006–2008 set records for snow depth not only in Unit 4 but throughout Southeast Alaska. Information from a number of sources including aerial and boat surveys for live deer, walked shoreline mortality transects, and accounts of hunters and guides, indicated very high mortality, particularly on heavily logged northern Chichagof Island where over 80% of deer may have died. Further, following the record snows of winter 2006–2007 it was common to see carcasses of winter-killed deer on northern Chichagof Island beaches and floating in bays. Other areas within the unit with more intact winter habitat (i.e. little industrial clearcut logging) and favorable topographic features appeared to have lower deer mortality.

The winter of 2009–2010 had substantially less snowfall than the previous 3 winters, and it appeared that few deer in this reduced population succumbed to winter mortality. Beginning in spring 2010 we saw noticeable increases in the numbers of fawns and yearlings during our survey and research work, as did hunters during this period. Above average snowfall with a persistent snowpack extending into early May occurred again in 2011 and 2012. However, it appeared that the snow accumulation was more gradual and allowed deer to maintain open paths from the beach fringe timber and the shoreline.

This reporting period was characterized by mild winters with little winter mortality and continued recovery of the Unit 4 deer population. Some deer wintering habitat is beginning to

show evidence of heavy browsing, indicating the population may again be approaching carrying capacity.

Deer densities in some portions of Unit 4 are expected to decline due to habitat alteration caused by commercial clearcut logging and construction of logging roads that allow hunters access to previously inaccessible areas. In Southeast Alaska important winter habitat for deer is productive old-growth forest below 800 feet elevation. Because of the variety of tree sizes and uneven canopy of old-growth forest, sunlight penetrates to ground level allowing shrubs and forbs to grow, and the tree canopy intercepts snowfall making those foods available to deer even during periods of deep snow. Kirchhoff (1994) pointed out that following clearcut logging browse and forbs are usually abundant for 20–30 years, but decline and disappear as the regenerating forest forms a dense canopy that shades-out shrubs and forbs. He also noted that snow accumulation in clearcuts and regenerating forest precludes use by deer, resulting in a reduction of the number of deer the landscape can support through the winter. Farmer and Kirchhoff (1998) reiterated that differences in habitat use and mortality of deer 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). Second-growth thinning may be able to delay the decline in browse availability in regenerating stands, but no mechanisms to restore old-growth forest structure exist other than natural regeneration, which may take several hundred years.

Hunting in Alaska is managed under state regulations, and beginning in 1990 under federal subsistence regulations. The Alaska Board of Game adopts state regulations that apply on all lands in Unit 4. The Federal Subsistence Board promulgates regulations that apply only on federal lands and provide federally-qualified subsistence hunters more liberal season dates and bag limits. Although the two sets of regulations were initially similar, they have diverged over time.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

As established by the Alaska Board of Game during its fall 2000 meeting in response to the intensive management of game law [AS 16.05.255 (k)(4)], the management goal for deer in Unit 4 is to maintain a population of 125,000 deer and an annual harvest of 7,800 deer.

MANAGEMENT OBJECTIVES

- Maintain a population capable of sustaining a mean reported harvest of at least 1.5 deer per hunter.

- Maintain a population capable of providing a minimum reported success rate of 1 deer killed per 4 days hunting effort.

- Maintain the male component of the deer harvest at a minimum of 60%.

METHODS

We collected information on the Unit 4 deer population using spring pellet-group count surveys, deer body condition surveys, fawn detection surveys, and spring mortality transects. In addition, a new technique for estimating deer abundance was further evaluated during this report period. Brinkman et al. (2010) developed a technique to identify individual deer using fecal DNA and used a DNA-based capture-recapture technique to estimate deer density in distinct watersheds on Chichagof Island. Managers are optimistic about this new technique that may provide us with a practical tool to estimate deer densities in specific watersheds throughout the region.

In RY10 we collected harvest data using a questionnaire mailed to a random sample of 33% of all hunters who were issued deer harvest tickets. To estimate total harvest and hunter effort we expanded findings from the questionnaire to account for all harvest ticket holders. To learn more about the ongoing effects of recent severe winters on northeast Chichagof Island deer population, we sampled 100% of the harvest ticket holders in the community of Hoonah

In RY11, we changed our harvest assessment technique from the hunter questionnaire used since the early 1980s to a mandatory harvest report. Under this new strategy, all hunters who acquire harvest tickets are required to turn in a harvest report indicating their effort and success.

Harvest data are stored as Region I deer harvest reports on the Alaska Department of Fish and Game Division of Wildlife Conservation's internal Wildlife Information Network (WinfoNet).

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

During winter 1998, we developed and field-tested methods to document the condition of deer that were physiologically stressed due to severe winter conditions. During periods of heavy snowfall, deer avoid deep snow by concentrating on beaches, and we established specific boat routes to examine the physical condition of these deer. We viewed deer through binoculars at ranges of 25–200 meters, and assigned each individual to 1 of 7 condition classifications. We documented changes in deer condition through the late winter. These surveys have been repeated periodically, including during this report period (see Table 7 for the classification and *Other Mortality* section for results.)

We conducted fawn surveys (presence or absence of tracks) in late June through the end of July 2010 at 14 tidal flat locations in the unit. We repeated surveys at 6 locations in June 2011 and June 2012. Although we have not conducted this type of survey regularly, we believe it can be used as an indicator of recruitment immediately following a severe winter. We only surveyed 2 areas in 2012 and 2013.

Data in this report are compiled by regulatory year (RY), with the current report period pertaining to RY12 and RY13. A regulatory year begins on 1 July and ends on 30 June of the following calendar year (e.g. RY12 = 1 July 2012–30 June 2013).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

The severe winter of RY06 was immediately followed by 2 more moderately severe winters, which led to a dramatic decline in the deer populations throughout SE Alaska.

Habitat quality and winter severity vary significantly throughout the unit because of local climatic factors, topography, and the extent of logging activities. Northern and eastern portions of the unit generally experience greater snow depths and sustain higher winter mortality. Areas clearcut prior to 1980 are entering the stem-exclusion stage where regenerating second-growth forest forms a dense, even canopy shading out shrubs and forbs and dramatically reducing food available to deer. Because of the extent of clearcut logging and the many decades before regenerating forest is again productive for deer, future carrying capacity for deer in logged areas will be lower than pre-logging levels. Many popular deer hunting areas will not be capable of sustaining harvest levels seen in the last decade.

No pellet group surveys were conducted in Unit 4 during this reporting period. However, pellet-group surveys during RY06—RY11 (McCoy 2011) indicated a slowly increasing deer population (Table 1). Severe winter conditions beginning in fall 2006 and above average snow fall extending through the following 2 winters resulted in a severe decline. Although there have been relatively few pellet group surveys since RY08, they generally indicate a growing population. Evaluation of the deer population status for management purposes should continue to be based on a variety of indicators, including pellet-group surveys, beach mortality transects, shoreline deer condition surveys, fawn-track tidal flat surveys, hunter contacts, field observations, and harvest reports.

Population Size

Due to budget restrictions, a persistent late spring snowpack, and scheduling conflicts, few traditional pellet surveys were completed during RY10 thru RY13. Instead, we used discussions with deer hunters and other observers, deer hunter harvest reports, incidental observations during aerial mountain goat surveys and browse observations to assess the status of the deer population. The milder winters during this report period provided the deer population an opportunity to rebound following the drastic decline in RY06–RY08 and this appears to be what is happening.

Population Composition

Because of dense forest we are unable to estimate ratios of bucks to does with aerial composition counts and instead focus on sex ratio of the harvest. Prior to RY11 sex composition of the legal harvest (Table 2) was estimated using data from deer hunter questionnaires mailed to about one third of harvest ticket holders. Beginning in RY11 all deer hunters were required to turn in a report distributed with all deer harvest tickets. Preliminary analyses indicate the 2 methods produce comparable results. During the RY11 season, bucks made up about 75% (5,176 bucks) of the estimated total legal harvest of 6,932 deer. For RY12, estimated legal harvest was 4,866 deer including 3,815 bucks (78%), and RY13 estimated legal harvest was 5,436 deer including 3,964 bucks (73%).

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 August–31 December	3 deer; however, antlerless deer may be taken only from 15 September–31 December
Remainder of Unit 4	1 August–31 December	4 deer; however, antlerless deer may be taken only from 15 September –31 December

Board of Game Actions and Emergency Orders. The doe harvest was closed within the Northeast Chichagof Controlled Use Area (NECCUA) for both state and federal seasons during RY10 and RY11 by joint state emergency orders and Federal Subsistence Board actions. In RY12, the antlerless deer season in the NECCUA and an adjacent area north of Pelican was again closed in late October by emergency order and Federal Subsistence Board action to help the deer population recover further. We issued no emergency orders in RY13 after late summer deer surveys found sufficient numbers of deer and late fall weather was in a normal range.

Hunter Harvest. Responses from the hunter harvest surveys indicated there were 2,064, and 2,331 successful deer hunters in Unit 4 during RYs 2012 and 2013, respectively (Table 3). The number of successful hunters increased to a peak in RY11 and then declined as the deer population continued to grow. Weather during the deer hunting season influences hunter effort (Faro 1997), and likely success. Hunter success is usually higher in years when early snow is sufficient to concentrate deer at lower elevations. Winters of RYs 2012 and 2013 were relatively mild with little snow during early winter. Illegally shooting from boats can result in high crippling rates and loss of deer. Crippling loss, unreported kills, and illegal kills are difficult to estimate, but we believe those sources of mortality may equal 25% of the reported harvest (Whitman 2003). Based on that assumption, the total estimated illegal harvest was 1,218 and 1,359 deer during RY's 2012 and 2013, respectively (Table 2).

Hunter Residency and Success. During RY12 a total of 3,135 people hunted in Unit 4 and 2,064 (66%) hunters harvested at least 1 deer (Table 3). Residents of Unit 4 made up 46% of the successful hunters, Alaska residents from outside Unit 4 made up 50% of successful hunters, and nonresidents made up the remaining 4% of successful hunters. The number of nonlocal hunters increased from the previous season, probably due to their expectations of a rebounding deer population. The majority of the nonlocal hunters were from adjacent communities in Southeast Alaska. During RY12, 73% of Unit 4 residents, 62% of nonlocal Alaska residents, and 48% of

nonresidents were successful at taking at least 1 deer. The management objective of providing a minimum reported success rate of 1 deer killed per 4 days of hunting effort was achieved (Table 4).

In RY13 a total of 2,331 Unit 4 hunters were successful (Table 3) and harvested an estimated 5,434 deer (1.6 deer/successful hunter; Tables 2 and 4). Residents of Unit 4 made up 39% of the hunters in RY13, Alaska residents from outside Unit 4 made up 53% and nonresidents made up 6% of the hunters. During this same period, 75% of Unit 4 residents, 68% of nonlocal Alaska residents, and 57% of nonresidents were successful in taking at least 1 deer. The management objective of providing a minimum reported success rate of 1 deer killed per 4 days of hunting effort was achieved (Table 4).

Harvest Chronology. Most hunters continue to target November for deer hunting, typically resulting in the highest harvest for any month. During RY12, the November harvest was 2,453 deer, or 40% of the total harvest (Table 5). December had the next highest deer harvest (36%) followed by October (10%). More deer may have been harvested later in the year, but doe closures were implemented in late October under both state and federal management for the Northeast Chichagof Controlled Use Area (NECCUA) and an adjacent area north of Pelican. The federal season in January had a harvest of 283 deer (5% of the reported annual harvest); its variability is often related to the amount of snowfall.

In RY13, the November harvest was 2,868 deer, or 42% of total harvest (Table 5). The December harvest accounted for the next highest percentage (34%) followed by an October harvest of 10%. The federal season in January saw take of 220 deer (3%) of the reported annual harvest. During RY13 there were no doe closures in Unit 4.

Transport Methods. Deer hunters used similar forms of transportation as in the past (Table 6). During RY12–RY13 boats were used for 69% and 73%, respectively, of the harvest. Aircraft were used for 8–10% of the harvest. Hunters who walked from their respective residences took 3-4% of the harvest, and hunters using highway vehicles took 9–11% of the harvest over the 2 years. Hunters using an off-road vehicle (ORV; 3 or 4-wheelers) took 3% of the harvest. Transport methods have changed little since the RY88 when data were first collected.

Other Mortality

During RY12–RY13 winters were relatively mild with little snow accumulation at low elevations. We conducted 16 1-mile beach mortality transects during the springs of RY12 and RY13 and tallied 0.01 mortalities per mile in both years. In contrast, following the record-setting snows of RY06 we found 3.8 mortalities per mile in spring 2007.

During February thru late April, we completed 5 boat surveys along more than 150 miles (RY12 and RY13) of beach shoreline in areas north of Sitka, Peril Strait, west Admiralty Island, Tenakee Inlet, and Freshwater Bay in an effort to quantify physical condition of wintering deer. During those shoreline deer assessment surveys we classified 444 deer (RY12) and 481 deer (RY13). Mean condition of deer seen during those surveys was 4.4 (see the classification guideline scale at Table 7). Three wounding loss deer were found in spring 2012 and 4 were found in spring 2014. In spring 2013 we found no dead deer on 5 miles of beach mortality

surveys. For this reporting period we saw many deer on the beaches during spring surveys including a greater percentage of fawns and yearlings than during the previous report period.

Parasites

Incidental observations of deer lungs reveal that lungworm (*Dictyocaulus viviparous*) does occur in Unit 4 deer, but we think it is rarely fatal (Whitman 2003). Incidental examinations of additional deer indicated 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 they have overcome. Secondary problems associated with fluid in the lungs (lungworm-pneumonia complex) were not evident. Although presence of roundworms (*Metastrongylidae*) does not noticeably affect healthy deer, nutritionally stressed individuals may be compromised. 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 (Whitman 2003).

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

HABITAT

Assessment

During the report period incidental data (field notes and photographs) were collected during pellet-group and other field surveys noting the overall browse condition in the lower elevation areas. Many browse species favored by deer, such as red huckleberry and blueberry, exhibited very good leader growth. On northeast Chichagof Island, the browse leader growth was remarkable not only at low elevations but also at subalpine elevations. The decline in deer from the severe winter of RY06 allowed the deer forages to proliferate, and the deer population continues to rebound with ample forage available.

CONCLUSIONS AND RECOMMENDATIONS

All management objectives were met during both years of this report period. The average harvests per hunter during RY12 and RY13 were 1.6 and 2.4 deer, both above the objective of at least 1.5 deer per hunter. The minimum objective for a success rate of 1 deer killed per 4 days of hunting effort was also achieved during this report period. The harvest of bucks comprised 78% and 73% of the harvest in RY12 and RY13 respectively, exceeding the objective of 60%.

A major management concern continues to be the diverging hunting regulations promulgated by the Federal Subsistence Board and the Alaska Board of Game. Different regulations for separate groups of hunters using the same resource make enforcement difficult, confuse hunters, and reduce the credibility of management agencies. In addition, conflicting regulations may make management of the resource more difficult in the future. Wherever possible, the division should assist the 2 regulatory entities in standardizing deer hunting regulations. The state and the Federal Subsistence Board did work closely together in issuing emergency closures related to restricting the harvest of does in the NECCUA during the previous and current reporting period.

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

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While this unit report was actually published in 2016, it is part of the set of 2015 unit species management reports, so we suggest citing the report as a 2015 report to maintain its relationship to the other 2015 unit reports.

Product names used in this publication are included for completeness but do not constitute product endorsement.

Table 1. Unit 4 deer population trends as indicated by pellet-group surveys, regulatory years 2005 through 2011. No surveys conducted in Unit 4 during this report period.

VCU Area	Regulatory year	Mean pellet groups/plot	Number of plots
128 – Hawk Inlet			
	2005	2.69	322
	2007	1.19	305
	2008	1.33	290
	2009	1.35	207
171– Hood Bay			
	2006	2.76	355
	2008	1.62	301
185 – Pleasant Island			
	2005	1.33	312
	2009	0.72	291
209 – Suntaheen Creek			
	2005	1.46	329
	2009	0.51	202
	2010	1.36	265
218 – Pavlof River			
	2005	2.30	323
	2009	0.90	192
	2010	1.48	216
247 – Finger Mountain			
	2005	2.79	299
	2006	2.58	280
	2007	1.89	248
	2008	3.32	199
	2010	2.53	217
	2011	4.13	209
271 – Chichagof	2007	0.81	275
275 – Cobol	2007	2.13	176
288 – Range Creek	2006	1.82	359
	2010	1.06	341
298 – M. Arm Kelp Bay	2006	2.10	248

Table 1. continued

300 – Nakwasina			
	2005	2.22	254
	2006	3.91	205
	2007	3.40	167
	2008	3.17	166
	2010	2.77	183
	2011	3.87	192
305 –Sea Lion Cove			
	2005	1.40	252
	2006	1.41	245
	2007	0.95	221
	2008	1.44	159
	2010	1.04	249
	2011	1.58	232

Table 2. Unit 4 deer harvest, regulatory years 2009 through 2013.

	Estimated legal harvest[a]						Estimated illegal	
Regulatory year	M	(%)	F	(%)	Unk	Total	harvest[b]	Total
2009	2,710	(78)	773	(22)	0	3,483	871	4,354
2010	3,775	(81)	912	(19)	0	4,688	1,172	5,860
2011	5,130	(75)	1,738	(25)	0	6,868	1,717	8,585
2012	3,818	(78)	1,054	(22)	0	4,872	1,218	6,090
2013	3,964	(73)	1,470	(27)	0	5,434	1,359	6,793

[a] From hunt report.

[b] Includes crippling loss estimate.

Table 3. Unit 4 deer hunter residency and success, regulatory years 2009 through 2013.

	Successful					Unsuccessful					
Regulatory year	Local resident	Nonlocal resident	Nonresident	Unk	Total	Local resident	Nonlocal resident	Nonresident	Unk	Total	Total hunters
2009	810	637	50	13	1,510	289	494	56	14	854	2,364
2010	895	878	67	25	1,865	301	495	40	8	844	2,709
2011	1,163	1,203	108	21	2,495	193	420	54	1	668	3,163
2012	945	1,025	78	16	2,064	351	618	85	17	1,071	3,135
2013	960	1,197	111	63	2,331	325	566	85	20	996	3,327

Table 4. Unit 4 deer hunter success; deer harvest by days of effort, regulatory years 2009 through 2013.

Regulatory year	Hunters	Successful	Deer/hunter	Days/deer
2009	2,366	1,511	1.5	2.9
2010	2,710	1,864	1.7	2.8
2011	3,165	2,493	2.2	2.0
2012	3,136	2,064	1.6	2.5
2013	3,327	2,333	1.6	2.4

Table 5. Unit 4 deer harvest chronology, regulatory years 2009 through 2013 (Includes 25% estimated illegal harvest).

	Harvest periods												
Regulatory year	August	(%)	September	(%)	October	(%)	November	(%)	December	(%)	January	(%)	Other	Total harvest
2009	219	(5)	223	(5)	326	(7)	2,063	(47)	1,105	(25)	143	(3)	275	4,354
2010	266	(5)	270	(5)	811	(14)	2,585	(44)	1,435	(24)	174	(3)	318	5,859
2011	416	(5)	443	(5)	790	(9)	4,693	(55)	1,618	(19)	519	(6)	108	8,587
2012	271	(4)	274	(4)	595	(10)	2,453	(40)	2,176	(36)	283	(5)	40	6,092
2013	310	(5)	371	(5)	708	(10)	2,868	(42)	2,283	(34)	220	(3)	31	6,791

Table 6. Percent of Unit 4 deer harvest by transport method, regulatory years 2009 through 2013.[a]

	Percent of harvest						Number of hunters
Regulatory year	Airplane	Foot	Boat	ORV[b]	Highway Vehicle	Unknown[c]	
2009	11	5	69	1	11	4	2,366
2010	11	9	65	2	11	2	2,710
2011	8	5	76	2	6	3	3,165
2012	10	4	69	3	11	3	3,136
2013	8	3	73	3	9	3	3,327

[a] This compares harvest only, not effort of unsuccessful hunters. Number of hunters = successful and unsuccessful.

[b] 3-and 4-wheelers included.

[c] "Other" included.

Table 7. Scale for Unit 4 Shoreline Deer Assessment Classification Guidelines.

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