Species Management Report and Plan ADF&G/DWC/SMR&P–2020–8

Deer Management Report and Plan, Game Management Unit 1C:

Report Period 1 July 2011–30 June 2016, and

Plan Period 1 July 2016–30 June 2021

Stephanie Sell

2020

Alaska Department of Fish and Game Division of Wildlife Conservation

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Species management reports and plans provide information about species that are hunted or trapped and management actions, goals, recommendations for those species, and plans for data collection. Detailed information is prepared for each species every 5 years by the area management biologist for game management units in their areas, who also develops a plan for data collection and species management for the next 5 years. This type of report is not produced for species that are not managed for hunting or trapping or for areas where there is no current or anticipated activity. Unit reports are reviewed and approved for publication by regional management coordinators and are available to the public via the Alaska Department of Fish and Game's public website.

This species management report and plan was reviewed and approved for publication by Stephen Bethune, Acting Management Coordinator for the Division of Wildlife Conservation.

Species management reports and plans are available via the Alaska Department of Fish and Game's public website (www.adfg.alaska.gov) or by contacting Alaska Department of Fish and Game's Division of Wildlife Conservation, PO Box 115526, Juneau, Alaska 99811-5526; phone: (907) 465-4190; email: dfg.dwc.publications@alaska.gov. The report may also be accessed through most libraries, via interlibrary loan from the Alaska State Library or the Alaska Resources Library and Information Services (www.arlis.org).

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Please contact the authors or the Division of Wildlife Conservation at (907) 465-4190 if you have questions about the content of this report.

Cover Photo: Male and female Sitka black-tailed deer along the Juneau road system. ©2016 ADF&G. Photo by Phil Mooney.

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Purpose of this Report

This report provides a record of survey and inventory management activities for deer in Unit 1C for the previous 5 regulatory years and plans for survey and inventory management activities in the 5 years following the end of that period. A regulatory year (RY) runs from 1 July through 30 June (e.g., RY10 = 1 July 2010–30 June 2011). This report is produced primarily to provide agency staff with data and analysis to help guide and record its own efforts, but is also provided to the public to inform them of wildlife management activities. In 2016 the Alaska Department of Fish and Game's Division of Wildlife Conservation launched this new type of 5-year report to more efficiently report on trends and describe potential changes in data collection activities over the next 5 years. It replaces the deer management reports of survey and inventory activities that were previously produced every 2 years.

I. RY11–RY15 Management Report

Management Area

Unit 1C encompasses approximately 7,600 mi^2 of mainland in northern Southeast Alaska from Cape Fanshaw to the latitude of Eldered Rock (Fig. 1). Maritime climates dominate most of the area with interior influences in river valleys. Unit 1C is comprised of glaciers, the Juneau Icefield, fjords, dense timber, tidelands, and estuaries. Land management in this area is complex, with a variety of state and federal agencies (Tongass National Forest and Park Service, Glacier Bay National Park) and private landowners playing roles.

Sitka black-tailed deer (*Odocoileus hemionus sitkensis*) habitat in Unit 1C consists primarily of productive uneven-aged old growth forest. Sitka Spruce (*Picea sitchensis*) and Western Hemlock (*Tsuga heterophylla*) are the dominant overstory species. Yellow cedar (*Chamaecyparis nootkatensis*) occurs in wetter habitats and the primary deciduous species in the area, red alder (*Alnus rubra*), dominates early successional phases. Important understory plants include salmonberry (*Rubus spectabilis*), devil's club (*Oplopanax horridus*), huckleberry (*Vaccinium spp.*), blueberry (*Vaccinium spp.*), and skunk cabbage (*Lysichiton americanus*).

The climate is typical of coastal rainforests with a strong maritime influence leading to cool wet summers and cold snowy winters. Annual snowfall averaged 79.2 inches (range 34.9–131.5 inches) during RY11–RY15, which was 37% lower than the previous 5-year average of 125.2 inches (range 65.6–190.4 inches). The total snowfall during the winter of 2006–2007 was one of the highest on record (190.4 inches) while the winter of 2015–2016 was very low in comparison at the Juneau International Airport (NOAA 2017; Fig. 2).

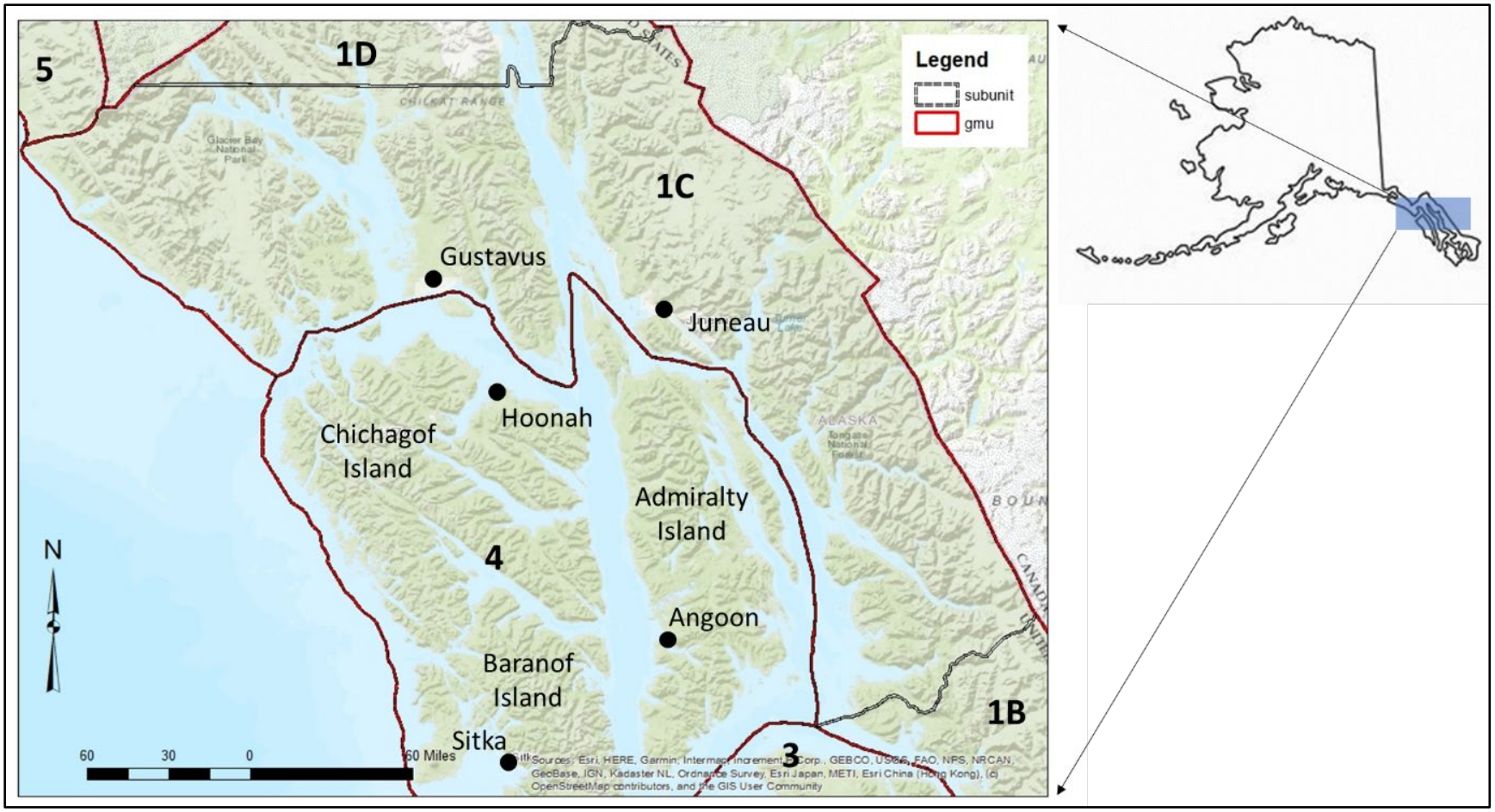

Figure 1. Map showing Game Management Unit 1C, Southeast Alaska.

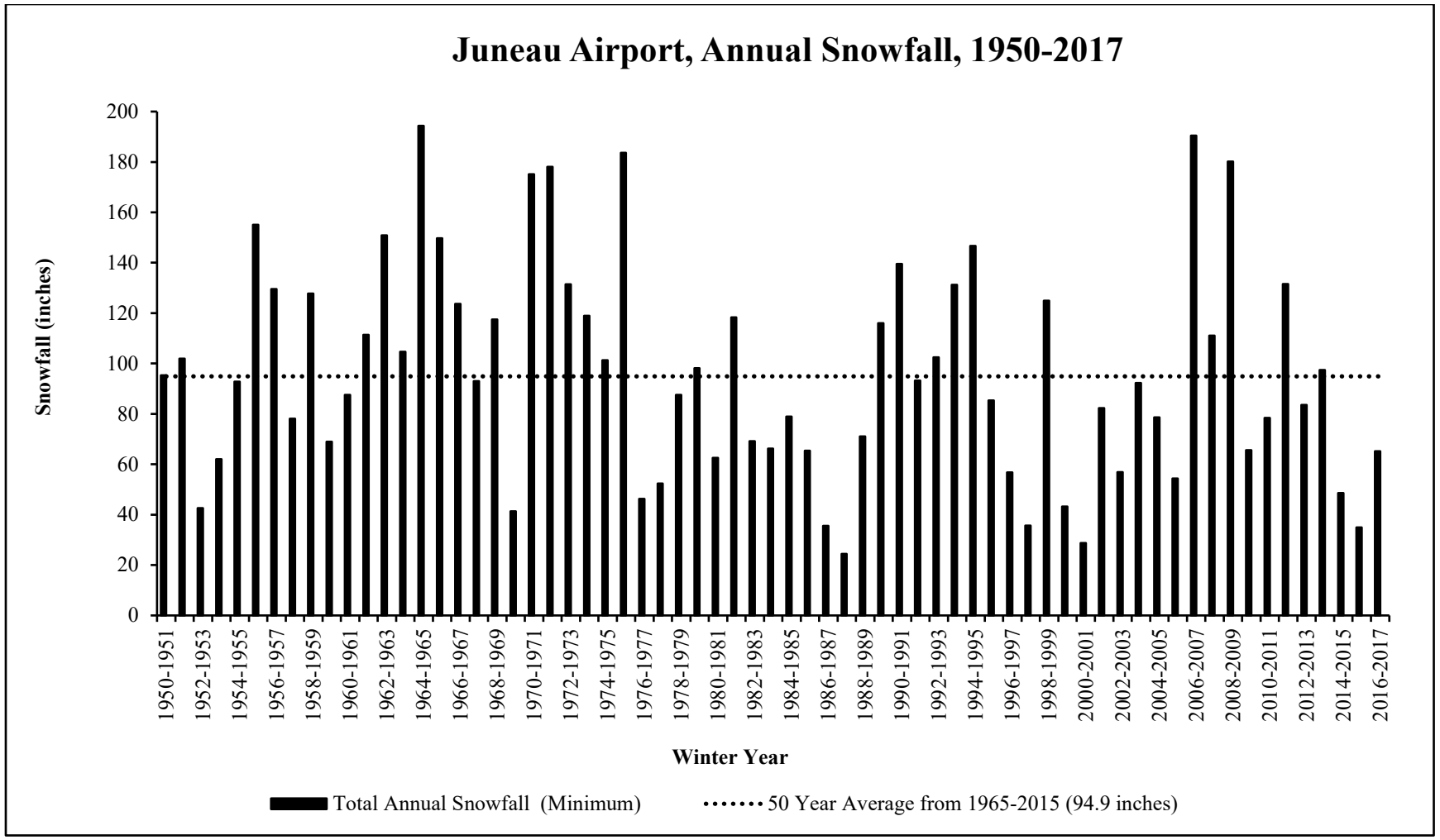

Figure 2. Annual winter snowfall measured at the Juneau, Alaska airport, 1950–2017 (NOAA 2017).

Summary of Status, Trend, Management Activities, and History of Deer in Unit 1C

Sitka black-tailed deer are indigenous to the mainland and islands of the Alexander Archipelago, south of Lynn Canal and Icy Straights, and have inhabited northern Southeast Alaska since their migration from southern refugia following the Pleistocene epoch (Klein 1965). A few successful transplants extended the Southeast Alaska deer range to Yakutat and Upper Lynn Canal (Sullivan Island) in 1951 and 1952 with varying success (Burris and McKnight 1973). Deep snow keeps the number of deer on the mainland lower than on adjacent islands.

A 1963 population estimate suggested about 200,000 deer inhabited Southeast Alaska (Merriam 1963). The region-wide 1962 harvest was estimated at 10,500 deer. Severe winters in 1969 and 1971 resulted in high overwinter mortality and reduced deer numbers across the region (Olson 1979). ADF&G began hunter surveys in 1970 and continued annually through 2010. Those surveys evolved from telephone contacts of a few hunters to a mail-out survey of a random list of hunters beginning in 1980. In 2011, the department switched from a mail-out survey to a harvest ticket report that all hunters are required to turn in. Pellet-group counts (Kirchhoff and Pitcher 1988) began in Unit 1C in 1984 and have been conducted on Douglas, Lincoln, and Shelter islands on a nearly annual basis, but rarely on mainland locations.

Winter severity, primarily deep and persistent snow, appears to limit deer populations in Unit 1C. Deer densities were relatively high throughout the early to mid-1990s but declined substantially following the severe winter of 1998–1999. With very mild winters from 2000 through 2005, deer populations across the region rebounded again to high densities. However, the winters of 2006–2007 and 2007–2008 were severe with record snowfalls recorded in Juneau (Fig. 2). Substantial snow accumulated during November 2006 driving deer to beaches where they were vulnerable to hunters; consequently, a substantial increase in harvest was reported in 2006. In addition, during March 2007, the Southeast panhandle received snow day after day throughout the month, and by early April, snow was at extreme levels throughout this area. The snowpack restricted deer movements and led to a substantial deer die off across the region including Unit 1C. The severity of winter 2006–2007 and associated deer mortality spurred the department to implement a doe closure in both Units 1C and 4 during December 2007 to protect female deer from further harvest.

The highest deer densities in Unit 1C occur on the larger islands including Douglas, Lincoln, and Shelter and have been occasionally known to support wolves. Douglas Island is the only island in Unit 1C to have been documented to support substantial numbers of black bears and recently wolf reports have increased slightly. Wolves are also known to occur on the mainland but are rarely observed, and they likely contribute to maintaining low densities of deer in these areas.

Logging has occurred historically in the Unit 1C portion of the Tongass National Forest with extensive logging in the Homeshore and Couverden area (1979–1992; USFS 2013), on Goldbelt, Inc. lands on the backside of Douglas Island, and in Hobart Bay (ADF&G 1991; Mackovjak 2010). Proposed road extensions on the North Douglas Highway will potentially affect the deer population and subsequently harvest by increasing hunter access, habitat loss, and the potential for motorized vehicle collisions.

Management Direction

Existing Wildlife Management Plans

Region I developed a wildlife management plan in 1976 (ADF&G 1976) which included objectives and management strategies for deer populations throughout the region. That plan was never formally updated, however a strategic plan for management of deer population objectives was developed to guide management through RY89 (ADF&G 1991).

Although the overall goals of the original plans are important, the management objectives and harvest management strategies have changed since the plan was written based on public comment, staff recommendations, and Board of Game actions. These periodic changes in management planning have been reported in the division's previous species management reports. The plan portion of this report contains the current management plan for deer in Unit 1C.

Goals

- Maintain a sustainable deer harvest.
- Provide an opportunity for nonconsumptive use (view and photograph) of deer.
- Promote forest management practices that enhance deer habitat in Unit 1C.

Codified Objectives

Amounts Reasonably Necessary for Subsistence Uses

The Board of Game has made a positive finding for customary and traditional use of deer in Game Management Unit 1C and set 30–40 deer as the amount necessary for subsistence (ANS). This unit-wide amount necessary for subsistence has been consistently achieved.

Intensive Management

As established by the Alaska Board of Game during its fall 2000 meeting, in response to the intensive management of game law [AS 16.05.255 (i) (4)], the Unit 1C management goal is to manage the deer population to achieve and maintain a population of 6,200 deer while supporting 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 general season harvest ticket reports
- Participate in annual deer-pellet surveys.

MANAGEMENT ACTIVITIES

Population Status and Trend

ACTIVITY 1.1. Traditional deer pellet-group surveys

Data Needs

Formal population estimates are not available for Unit 1C deer. Population information is needed to determine if management objectives are being met. Deer pellet surveys have been the primary method used by ADF&G to provide an index of general population trends.

Methods

Deer pellet surveys were conducted annually along traditional straight-line transects (Kirchhoff & Pitcher 1988) on the Douglas Island road system and Inner Point on the southwest side of Douglas Island. Additional surveys were conducted on alternating years between Shelter and Sullivan Islands. Transects surveyed were previously established mostly in old-growth forest because of its importance as winter habitat for deer (Schoen and Kirchhoff 1990).

After each traditional transect was surveyed we started conducting path sampling surveys in 2013 (Brinkman et al. 2010) by following the closest deer path along the reverse bearing on our return to the starting location. Instead of recording pellet groups in plots we recorded all pellet groups encountered along the trail transects.

Results and Discussion

Deer pellet surveys and harvest data are the only mechanisms currently used to monitor general trends in the Unit 1C deer population. Pellet densities on North Douglas Island averaged 1.08 groups per plot (range 0.77–1.56) during this report period (Table 1; McCoy 2017). Pellet surveys were not conducted at Inner Point in RY11; however, surveys were completed for all other years of the report period. Management objectives of 2.0 groups per plot were met during RY12 but fell below the objective during RY13–RY15 averaging 1.11 groups per plot (range 1.01–1.55). Pellet densities on Douglas Island in general declined during the report period, however we do not feel this is an indication of a decline in the deer population.

Shelter Island was only surveyed in RY2012 during this report period due to logistical challenges related to weather, and transitions during ADF&G's building remodel. Management objectives were met during the RY12 survey with 2.14 groups per plot, which was an 15% increase from the survey conducted in RY10 (Table 1). Sullivan Island was only surveyed during RY15 for this report period when 1.08 groups per plot were counted, which is down 27% from the previous count in RY11.

Pellet group surveys have biases and limitations as quantitative measures of deer abundance and were not originally designed to detect finer-scale (≤ 30%) changes in deer abundance. Deer pellet surveys allow biologists to get in the field and assess browse intensity and habitat condition in addition to investigate some degree of overwinter mortality. Mild winters during the reporting period allowed deer to move more frequently because the absence of snow did not restrict their movements (Figure 2). Observations and collections of wolf scat increased slightly

Table 1. Deer pellet-group surveys, RY86–RY15, Unit 1C, Southeast Alaska (McCoy 2017).

Area	Regulatory Year	Groups/Plot	Number of plots	Number 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)	2006	2.28	165	1.83–2.73
	2007	2.84	316	2.49–3.19
	2008	1.85	220	1.57–2.14
	2009	1.07	312	0.89–1.24
	2010	1.53	328	1.30–1.75
	2011	1.21	253	1.02–1.39
	2012	1.56	306	1.38–1.75
	2013	0.83	242	0.69–0.97
	2014	1.04	323	0.83–1.25
	2015	0.77	328	0.64–0.90
Inner Point (VCU 36)	2006	2.10	182	1.70–2.50
	2007	1.59	232	1.32–1.85
	2008	1.44	268	1.20–1.68
	2009	1.52	263	1.30–1.74
	2010	2.12	267	1.81–2.43
	2012	2.41	250	2.12–2.70
	2013	1.55	267	1.37–1.73
	2014	1.50	277	1.29–1.71
	2015	1.01	239	0.80–1.22
Rhine Creek (VCU 38)	1996	0.31	108	0.14–0.47
Harbor Island (VCU 65)	1986	1.76	262	1.53–2.00
Couverden (VCU 117)	1992	0.35	350	0.27–0.44
Shelter Island (VCU 124)	2006	1.10	321	0.97–1.41
	2007	1.05	321	0.90–1.21
	2008	0.71	250	0.57–0.84
	2009	1.27	325	1.10–1.44
	2010	1.86	333	1.66–2.07
	2012	2.14	294	1.89–2.39
Lincoln Island (VCU 124)	1997	1.52	207	1.27–1.77
	2006	0.84	213	0.62–1.06
Sullivan Island VCU(94)	1989	1.39	250	1.17–1.62
	2011	1.47	206	1.24–1.70
	2015	1.08	310	0.91–126

Note: Pellet surveys were not conducted at Inner Point in RY11. VCUs are the U.S. Forest Service (USFS) timber management units and are roughly equivalent to a watershed.

during this report period, especially in RY15 around the Inner Point area. Decreases in pellet-group densities on Douglas Island were likely influenced by increased mobility due to low snowfall in combinations with wolf presence avoidance.

Recommendations for Activity 1.1

Pellet-group transects are the most common method used to monitor deer population trends in specific watersheds throughout the unit and region. They are intended to document large changes (>30%) in deer density. The data also permit general comparisons of deer abundance among areas and years (McCoy 2011). 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 (Lowell 2013). Although some managers have expressed that deer pellet-group surveys provide little useful management information about deer numbers or distribution, we recommend pellet surveys be continued in Unit 1C with modifications. Douglas Island should continue to be surveyed annually as an index of deer populations because it accounts for ~70% of our total deer harvest in the unit. The frequency of pellet-group surveys on outlying islands (Shelter and Sullivan) could be reduced to every 3–5 years.

Mortality/Harvest Monitoring and Regulations

ACTIVITY 2.1. Analyze deer harvest data from mandatory deer hunt reports.

Data Needs

Hunt report data is required to determine if harvest objectives are being met. It provides information about the number of participants in the hunt, hunter effort and success, location of hunt and harvest, and modes of transport. Information collected about harvest trends can be indicative of population fluctuations.

Methods

Hunters in Unit 1C are required to obtain a general season harvest ticket before entering the field. Each harvest ticket requires the hunter's demographic information, including their hunting license number, and includes a series of punch tickets that hunters must validate upon successful harvest of a deer. Harvest tickets also contain a mail-in hunt report card which can also be completed online at www.hunt.alaska.gov for each trip they went on regardless of success.

Harvest data are summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g. RY12 = 1 July 2012–30 June 2013). During RY08–RY10, we estimated[1] total deer harvest by asking a randomly selected group of individuals who obtained deer harvest tickets (approximately 33% of hunters from each residence community) to voluntarily report their hunting activity. Follow-up letters were sent to nonresponders in an attempt to improve sample

[1] Note that the Unit 1C deer harvest estimates and summary statistics cited here for RY97–RY10 may differ slightly from those cited in previous Unit 1C Deer Management Reports. Discrepancies between the deer harvest estimates provided in this document and those provided in previously cited documents are the result of a recently completed reanalysis and rectification of Region I deer hunter survey data and annual harvest estimates dating back to RY97.

size. In order to obtain a total harvest estimate, the reported harvest was then multiplied by an expansion factor.

Since 2011, deer harvest data have been derived from mandatory hunt report cards issued in conjunction with deer harvest tickets, rather than by polling a random sample of hunters from each community. All deer hunters are now expected to report their hunting activities. Nonetheless, not all hunters submit the required hunt report. Therefore, in order to obtain total harvest estimates the reported harvest must still be multiplied by an expansion factor to account for nonrespondents.

Once hunt reports have been submitted, reported hunt and harvest locations are coded for data entry. Hunters often provide vague hunt or harvest locations in which case an attempt is made to contact them for more precise location data. A cutoff date of 15 June has been established for receipt of hunt reports. Any hunt reports not submitted or not received by 15 June are excluded from analysis. Once all hunt and harvest locations have been coded and data entry is complete, the results are analyzed and summaries of total harvest, hunter residency and success, harvest chronology, and transportation methods are derived for each unit.

Season and Bag Limit

Area of Unit 1C	Season	Resident and nonresident hunters
Douglas, Lincoln, Shelter, and Sullivan Islands	1 August–31 December	4 deer; antlerless deer may be taken only from 15 September–31 December
Remainder	1 August–31 December	2 antlered deer

Results and Discussion

Harvest by Hunters

The average annual harvest of Unit 1C deer for the report period was 376 deer (64% bucks; Table 2) which is below our management objective. The majority of the Unit 1C deer harvest comes from Douglas Island (71%) due to its proximity to Juneau, extensive road system, and higher densities of deer. There have been an increasing number of anecdotal and photo documented reports of wolves on the island. However, the total number of wolves occupying Douglas Island is unknown. Biologists assume there is some amount of predation on deer by wolves but to what extent is also unknown. The City and Borough of Juneau has been moving forward with permitting development on the backside of Douglas Island for residential housing and a golf course. An approximately 2.4-mile extension of the North Douglas Highway was completed in August of 2017, which opened access to hunters and subsequently deer habitat that is generally difficult to access. Another 1.1-mile extension was just approved by the city and will likely prompt more conservative management on the island, and potentially result in reductions of deer bag limits and/or reduced hunting seasons. Impacts to the deer population and changes in harvest will not be available until the next reporting period.

Deer harvest on Shelter and adjacent Lincoln Islands averaged about 49 deer annually during this reporting period. These islands generally receive less hunting pressure than Douglas Island.

Table 2. Estimated annual deer harvest, RY06–RY15, Unit 1C, Southeast Alaska.

Regulatory Year	Males	Females	Estimated Total
2006	371	267	638
2007	148	30	178
2008	207	123	330
2009	217	96	313
2010	346	163	509
2011	320	162	482
2012	257	113	370
2013	228	179	407
2014	176	103	279
2015	223	120	342

However, with increasing pressure occurring on Douglas Island, it is likely that more residents are and will continue to target new areas. Residents who live on or have cabins on Shelter Island have expressed concern about increased numbers of fawns without mothers. These anecdotal observations could be the result of high doe harvests.

The deer harvest on Sullivan Island increased, with 27 deer reported taken during the reporting period compared to 22 taken during RY06–RY10. Currently, the geographic unit used to monitor deer harvest in this area includes a portion of the Unit 1C mainland along the Sullivan River. Although it is possible that a few deer were taken from the mainland we are confident that the majority, if not all deer harvested in this area were taken on Sullivan Island.

Other less hunted areas, such as the mainland near Juneau, the Chilkat Range, Holkum Bay, and Cape Fanshaw, represent a small percentage (4%) of the Unit 1C deer harvest. No data are available concerning the deer population in these mainland areas, but low harvest and a significant number of days afield required to harvest a mainland deer suggest low numbers.

Hunter Residency and Success

The overall success rate for Unit 1C deer hunters averaged 28% during the report period. As is generally the case, local residents of Unit 1C represented the largest group of both successful and unsuccessful hunters. During the report period the overall success rate for local residents was 29%, nonlocal Alaska residents was 29%, while nonresidents had an overall success rate of 17% (Table 3).

Overall hunter success rates decreased slightly from 31% during the previous 5-year period (RY06–RY10; Table 3). Unit-wide, hunters spent an average of 8.1 days hunting per deer with an average of 0.4 deer per hunter (Table 4). Much of the variation between reporting periods could be attributed to the heavy snow fall in RY06 that pushed deer down to the beaches and a harvest of 638 deer was recorded. Similarly, above average snowfall in RY10 resulted in 509 deer being harvested, which inflated harvest success. During the current report period (RY11–RY15) Juneau had consecutive years with mild winters which gave deer the advantage of occupying different elevations; hunters, especially late season beach hunters, had to work for their harvest.

Table 3. Deer hunter residency and success, RY97–RY15, Unit 1C, Southeast Alaska.

	Successful						Unsuccessful						
Regulatory year	Local[a] resident	Nonlocal resident	Nonresident	Unknown	Total	(%)	Local[a] resident	Nonlocal resident	Nonresident	Unknown	Total	(%)	Total hunters
1997	232	4	0	0	236	(28)	557	40	9	0	606	(72)	842
1998	215	6	0	0	221	(24)	663	43	9	0	715	(76)	936
1999	202	25	0	0	227	(27)	573	49	0	0	662	(73)	849
2000	168	4	11	0	183	(23)	571	20	11	0	602	(77)	785
2001	236	15	0	0	251	(28)	559	62	10	0	631	(72)	882
2002	218	9	0	0	227	(29)	527	42	0	0	569	(71)	796
2003	293	14	8	0	315	(35)	541	49	0	0	590	(65)	905
2004	224	18	4	0	246	(29)	541	42	5	0	588	(71)	834
2005	239	25	5	0	269	(28)	623	48	14	0	685	(72)	954
2006	385	31	10	0	426	(47)	429	48	11	0	488	(53)	914
2007	116	13	5	0	134	(19)	520	42	10	0	572	(81)	706
2008	200	17	0	0	217	(26)	566	52	0	0	618	(74)	835
2009	197	14	0	0	211	(27)	512	50	13	0	575	(73)	786
2010	281	32	0	0	313	(35)	515	46	13	8	582	(65)	895
2011	283	28	2	1	314	(37)	472	44	27	3	546	(63)	860
2012	221	30	4	3	258	(27)	618	57	12	5	692	(73)	950
2013	245	25	2	2	274	(28)	621	63	31	7	722	(72)	996
2014	180	17	3	0	200	(22)	615	78	22	1	716	(78)	916
2015	206	20	9	1	236	(30)	499	52	9	2	562	(70)	798

[a] Resident of Unit 1C.

Table 4. Hunter effort and success, RY97–RY15, Unit 1C, Southeast Alaska.

Regulatory year	Hunters	Days hunted	Deer killed	Deer/hunter	Days/deer
1997	842	3,603	309	0.4	11.7
1998	936	3,378	359	0.4	9.4
1999	849	2,273	340	0.4	6.7
2000	785	2,235	239	0.3	9.4
2001	882	2,741	328	0.4	8.4
2002	796	2,567	359	0.5	7.2
2003	905	3,015	468	0.5	6.4
2004	834	3,122	307	0.4	10.2
2005	954	3,556	408	0.4	8.7
2006	914	3,127	639	0.7	4.9
2007	706	2,779	178	0.3	15.6
2008	835	3,557	330	0.4	10.8
2009	786	2,683	313	0.4	8.6
2010	895	3,289	509	0.6	6.5
2011	860	2,977	482	0.6	6.2
2012	950	3,279	371	0.4	8.8
2013	996	3,399	409	0.4	8.3
2014	916	2,818	278	0.3	10.1
2015	798	2,394	342	0.4	7.0

Douglas Island hunters averaged 8.5 days to take a deer, harvesting 0.4 deer per hunter. Shelter Island hunters spent less time (4.3 days on average) to take a deer, harvesting 0.5 deer per hunter. Slightly higher success rates on Shelter are most likely attributed to fewer hunters in the field compared to the significant pressure exhibited on Douglas Island. Sullivan Island hunters are primarily residents from Unit 1D near Haines who spent an average of 5.1 days hunting per deer with hunter success being relatively high with 0.6 deer per hunter. Annual rumors suggest more deer are potentially being harvested than are reported from Sullivan Island, however to what extent is unknown.

Transport Methods

Similar to previous reporting periods, 49% of hunters used highway vehicles for access, 28% used boats, 17% accessed hunting areas by walking, and approximately 5% used an airplane, all-terrain vehicle, or other mode of transportation (Table 5). Hunters most commonly used highway vehicle and foot access while hunting the east and north sides of Douglas Island as well as the mainland; boats were used for hunting on west Douglas, Shelter, Lincoln, and Sullivan Islands. As previously noted, Douglas Island accounted for the majority of the Unit 1C deer harvest; many of the Douglas Island hunting areas are accessible by road. Although the majority of hunters used highway vehicles to access hunting areas and enjoyed good success during the report period, the number of deer harvested by boat-based hunters was higher (0.6 deer per hunter) and the number of days per deer (4.4 days per deer) was lower than hunters using highway vehicles or by foot (10.4 and 10.5, respectively) to access hunting areas.

Table 5. Deer hunter days of effort by transport method, RY06–RY15, Unit 1C, Southeast Alaska.

Regulatory year	Airplane	Boat	All-Terrain Vehicle	Foot	Highway vehicle	Other	Unknown
2006	5	343	0	128	550	5	15
2007	5	241	0	58	480	0	19
2008	0	293	0	147	471	0	44
2009	10	227	0	108	508	0	30
2010	0	317	0	199	487	5	20
2011	10	297	3	207	409	8	31
2012	7	230	2	259	481	1	42
2013	1	336	2	185	508	1	48
2014	6	280	0	101	539	1	43
2015	6	239	5	98	488	0	26

Other Mortality

Winter mortality was minimal due to the mild winters during this report period. Numerous deer are killed by motor vehicle collisions annually on the Juneau and Douglas Island road systems. There has been an increase in wolf sightings around Douglas Island and the mainland of Juneau however the amount of predation by wolves during the report period is unknown. Although brown and black bears are also present in Unit 1C the extent of mortality on deer by these species has not been investigated. Illegal harvest of deer likely occurs in Unit 1C, but we do not know how prevalent it is, but it is suspected to be fairly low. We have no estimates of nonhunting mortality during the report period.

Alaska Board of Game Actions and Emergency Orders

During the 2013 Board of Game meeting, a proposal was submitted to increase the bag limit of deer on the mainland. This proposal was not passed by the board due to the low number of deer currently available. In 2015, a proposal was submitted to the Board of Game for Unit 1C on Lincoln, Shelter and Sullivan islands to increase the resident bag limit to 6 deer, of which the last 2 deer a person harvested would be required to be bucks. This proposal was also not passed by the board as it was determined by the board to be an unnecessary increase to current bag limits, and also the difficulty of determining sex after antler drop. No emergency orders were issued for deer during this report period.

Recommendations for Activity 2.1

Continue to monitor total harvest for comparison with management objectives.

Habitat Assessment/Enhancement

ACTIVITY 3.1 Conduct annual browse surveys.

Data Needs

Winter habitat in the form of low elevation, high volume old growth forests is the most important habitat factor for deer in Unit 1C. Deer habitat capability models were developed to estimate the capability of habitats in Southeast Alaska to support populations of Sitka black-tailed deer (Suring et al. 1988). The model provides an evaluation of habitat quality which is assumed to be

related to long-term carrying capacity. The model only used winter range because winter is assumed to be the most limiting season for Sitka black-tailed deer (Hanley and McKendrick 1985). Suring et al. (1988) determined that under low snow, intermediate snow, and deep snow situations deer carrying capacity is assumed to be 125 deer per mi^2 (0.5 deer per ha), 100 deer per mi^2 (0.4 deer per ha), and 50 deer per mi^2 (0.2 deer per ha) respectively for habitats with the highest coefficients. No habitat assessment or habitat enhancement has occurred in Unit 1C since the model was developed.

Methods

None.

Results and Discussion

None.

Recommendations for Activity 3.1

We recommend that some sort of habitat capability assessment or monitoring be completed within Unit 1C and Region I to better determine deer population estimates, and harvest objectives within each Unit.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

None.

Data recording and archiving

All records and data analysis related to deer pellet-group transects, harvest tickets, and hunter reports are archived on network servers in the Douglas, Region I office.

Agreements

During this reporting period a Memorandum of Understanding (MOU) between ADF&G and the USFS (14-MU-11100500-022) went into effect in June 2014. The expiration is June 30, 2019.

Permitting

Permitting options are available for disabled hunters allowing them to shoot from a boat as well as proxy permits allowing a hunter to harvest deer on behalf of other residents.

Conclusions and Management Recommendations

Pellet surveys were conducted on Douglas, Shelter and Sullivan Islands during this report period. Douglas Island was surveyed annually due to ~70% of the deer harvest originating from that area, however the other islands were less frequent due to variable marine weather and difficult field logistics. Only 2 transects in 2012 (Inner Point and Shelter Island) met the management objective of 2.0 pellet-groups per plot during the report period. Overall, the average density of deer pellets decreased during this reporting period. However, the Department does not believe that is an indication of a decline in the deer population (Table 1).

While pellet-group surveys have historically been used to monitor deer population trends in specific watersheds throughout the region, they are only useful for documenting large changes (≥ 30%) in deer density years after changes in deer numbers have occurred and only allow general comparisons of deer numbers from area to area in Southeast Alaska. The technique is generally considered of limited use for assessing small, short-term changes in deer density.

The harvest objective of 456 deer was not met during any year during the reporting period. A series of mild winters during the reporting period likely allowed deer to remain at higher elevations where they were less accessible to hunters. In years when deep snow accumulates at higher elevations deer concentrate at lower elevations, which can result in higher harvest during the hunting season. Still, the current harvest objective has only been met during 4 of the past 19 years, indicating it may be set unrealistically high. Deer populations in Unit 1C are largely driven by winter severity and probably to a lesser degree by predation. There are no workable options for improving habitat, predator numbers in areas where most people hunt are low, and under the current harvest strategy populations recover in a few years following a severe winter.

Considering that hunter effort and success remain within historical ranges and that we have no workable options for increasing deer abundance in this unit, we should consider reducing the harvest objective to a level that can be met during more years. Based on historical data, an annual harvest objective for Unit 1C in the range of 300–350 deer would be achieved in 89% of years.

The City and Borough of Juneau, and Goldbelt, Inc. are currently completing a 3.5-mile extension of the North Douglas road system to Middle Point. The extent of additional hunter access and effect of winter habitat loss on deer will not be known until the next reporting period. However, the department should manage conservatively by adjusting the season and bag limits of deer on Douglas Island. Increasing reports of wolves present on Douglas Island and the mainland will need to be monitored to determine what effect predation is having on the localized deer population.

II. Project Review and RY16–RY20 Plan

Review of Management Direction

MANAGEMENT DIRECTION

GOALS

- Provide sustained opportunity to participate in deer hunting.
- Provide an opportunity to view and photograph deer.
- Protect and maintain the deer population and deer habitat in Unit 1C.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Harvest

The Board of Game has made a positive finding for customary and traditional use of deer in Game Management Unit 1C and set 30–40 deer as the amount necessary for subsistence.

Intensive Management

As established by the Alaska Board of Game during its fall 2000 meeting, in response to the intensive management of game law (AS 16.05.255 (i)(4)), the Unit 1C management goal is to manage the deer population to achieve and maintain a population of 6,200 deer while supporting 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 general season harvest ticket reports
- Participate in annual deer-pellet surveys.

REVIEW OF MANAGEMENT ACTIVITIES

Population Status and Trend

ACTIVITY 1.1. Traditional deer pellet-group surveys.

Data Needs

No changes. Continue to conduct surveys annually when conditions allow.

Methods

Continue annual pellet surveys on Douglas Island. Shelter and Sullivan Island should be surveyed every 3 to 5 years.

ACTIVITY 1.2. Aerial Alpine Deer Surveys.

Data Needs

A reliable and cost-effective technique for assessing changes in deer abundance over both the short and long term is needed to aid deer harvest management, timber management, and wolf management programs in Southeast Alaska. Existing deer monitoring programs (harvest analyses and pellet-group surveys), and experimental monitoring programs (e.g. DNA mark–recapture deer pellet analysis) have major shortcomings that limit their usefulness for management, planning, and research.

Methods

The purpose of aerial alpine deer surveys is to determine if they can provide a better index to deer abundance than traditional pellet-group surveys in Unit 1C. We will use methods developed by R. Lowell (ADF&G) and P. Valkenburg (ADF&G, retired) in the Petersburg Area office as a framework to develop and implement appropriate survey methods in and around Juneau.

Routes should focus on alpine areas on Douglas Island and potentially areas on the mainland. Survey flights should be conducted in a Super Cub or similar aircraft from 22 July through 14

August (however before 1 August on Douglas Island due to alpine deer hunters) and should be consistent in length, ending at sunset. Evening surveys were preferred to morning surveys because evening surveys consistently resulted in more deer seen per survey hour and evening weather tended to be more predictable than morning weather, particularly because of early morning fog. Pilots and observers counted as many deer as possible while thoroughly covering established alpine survey areas. Unless deer abundance was high or very high, or deer were in difficult terrain, we should attempt to classify 4 categories of deer seen: large buck, small buck, doe, and fawn. Replicate surveys with a goal of 4 surveys per survey area should be conducted to account for variability in the number of deer observed during individual survey flights and to allow the department to eventually characterize the cause of variation in number of deer seen per survey hour. Ferry time, including travel time between mountain blocks within a survey area >2 minutes in duration will be deducted from survey time, so that only time spent actually searching for deer was included in the survey times. Deer per survey hour was previously selected as the standard metric for deer abundance.

A logistic regression model should be developed to explore the influence of environmental, pilot/aircraft, and other covariates on deer/survey hour. Such a model could have the potential to provide correction factors for annual surveys to improve tracking of deer abundance.

Mortality/Harvest Monitoring

ACTIVITY 2.1. Analyze deer harvest data from mandatory deer hunt reports.

Data Needs

No change. Continue to collect harvest data annually. Impacts to the deer population and changes in harvest on Douglas Island as a result of new road construction and timber harvest activities will be reported on in the next report.

Methods

The usefulness of information obtained from hunt harvest reports could be improved by increasing hunter response rates, and by conducting follow-up surveys of nonrespondents to evaluate the effects of nonresponse bias.

Habitat Assessment/Enhancement

ACTIVITY 3.1. Use GIS to assess current deer habitat capability (DHC) in Unit 1C to better determine population estimates.

Data Needs

The current IM population and harvest objectives for Unit 1C deer were established in 2000 based in part on the unit's estimated DHC during the mid to late 1990's. Given the significant amount of habitat alterations from development that have occurred in the unit since the IM population and harvest objectives were established, these objectives should be reevaluated and possibly modified in response reductions in deer DHC.

Methods

A landscape analysis of current deer habitat capability should be conducted using GIS technology and the U.S. Forest Service's Forage Resource Evaluation System for Habitat (FRESH) deer model (Hanley et al. 2012).

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Expansion of the North Douglas highway has resulted in loss of winter habitat, has opened additional access to hunters, and is likely to have an effect on the harvest. The road now crosses one of our historical deer pellet survey transects in 2 places. Winter habitat loss is likely to continue along the road corridor and has the potential to reduce the carrying capacity for deer in the area. An increasing number of wolf reports are likely to also impact deer in areas where deer are displaced from refugia on Douglas Island.

Data Recording and Archiving

All records and data analysis related to deer pellet-group transects, harvest tickets, and hunter reports are archived on network servers in the Douglas, Region I office.

Agreements

During this reporting period a Memorandum of Understanding (MOU) between ADF&G and the USFS (14-MU-11100500-022) went into effect in June 2014. The expiration is June 30, 2019.

Permitting

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