Federal Aid in Wildlife Restoration
Annual Report

1999 Report

Deer Pellet-Group Surveys in Southeast Alaska

by

Mark J. Kirchhoff

Alaska Department of Fish and Game
Division of Wildlife Conservation
Douglas, Alaska

March 2000

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INTRODUCTION

This report summarizes the deer pellet-group survey work conducted by the Alaska Department of Fish and Game and the United States Forest Service during 1999. Pellet-group data are used by biologists to monitor deer population trends in specific watersheds throughout the region. The data also permit general comparisons of deer numbers from area to area within the region. The reader is referred to Kirchhoff and Pitcher (1988) for a more detailed discussion of objectives, sample design, and field methodology of this program.

RESULTS

During 1999, 25 watersheds, (or value comparison units - VCUs), were surveyed. The winter of 1998-99 was one of the most severe in the last thirty years and deer mortality was high. Generally, pellet group densities remained about the same in milder areas of Southeast Alaska (Prince of Wales Island, Sitka, and southern Mitkof Island), and decreased in colder areas closer to the mainland (Douglas Island, Cleveland Peninsula). Complete results for each VCU are found in Table 1. A brief summary of deer population trend by game management unit follows:

Subunit 1A and Unit 2 - Southern Southeast Alaska. In 1999 four VCUs were surveyed in Subunit 1A and six VCUs were sampled in Unit 2. Deer pellet densities in Subunit 1A declined sharply, with record lows in Port Stewart and Spacious Bay. Survey crews working there in mid-April found knee deep snow between 200 and 600 feet elevation on the mountains. Several starved deer were found along the shoreline, and we assume many more deer also perished during the winter.

Although deer were hard hit in Subunit 1A, they seemed to fare better in Unit 2. Prince of Wales Island has milder winter weather than the Cleveland Peninsula, and pellet group counts in most of the six VCUs surveyed showed deer populations to be stable. There was still considerably more snow than usual on Prince of Wales however. A research station on Heceta Island, on the west coast of Prince of Wales, reported in early March that snow there was waist-high at 800 feet elevation, and that four of the 51 radio-collared deer on the island had died of starvation.

Unit 3 - Central Southeast Alaska. In 1999 four VCUs were surveyed in Unit 3. Most of the work was concentrated on small islands in Sumner Strait: Big Level Island, Little Level Island, Sokolof Island, and Rynda Island. Pellet group densities were about the same on the Level Islands and Rynda as in past surveys, and were much lower on Sokolof. For a further discussion of counts on these islands, please see the narrative section. Work in Unit 3 was also conducted on Mitkof Island and Woronkofski Island. Deer pellet-group density remained moderate on Mitkof and very low on Woronkofski.

Unit 4 - Northern Southeast Alaska. In 1999 seven VCUs were surveyed in Unit 4. Deer densities in most of these VCUs were the same or higher than in previous years surveyed. Snow depths and deer winter mortality varied widely across the unit. The outside coast around Sitka was generally open all year and biologists reported seeing many healthy-looking deer on the beach. The northeast coast of Chichagof Island, however, had much more persistent snow and transects there were shortened because of the low elevation snow pack that persisted into May. Similarly, considerable snow and deer winter mortality was observed in Seymour Canal on the east side of Admiralty Island. A survey there in early March counted 18 dead deer along just three miles of beach.

Subunit 1C - Juneau and Mainland. Four VCUs were surveyed in Subunit 1C in 1999 including two on Douglas Island. Douglas Island is the most important area in Unit 1C for Juneau deer hunters and VCUs on the island are regularly surveyed to track deer population trends. In 1999 both North Douglas (VCU 35) and Pt. Hilda (VCU 36) were surveyed and the results show that deer numbers are declining. Snow started falling in Juneau in early January and persisted into late March, at which time it was the second deepest snow pack ever recorded. Crews working at Pt. Hilda in early May found snow patches still lingering in the beach fringe. Most of the skunk cabbage (a favorite deer food in spring) was untouched, indicating a substantial winter die-off. Many of the pellet groups counted along the transects were probably deposited earlier in the winter by deer that subsequently perished. Although many deer died around Juneau in 1998-99, the Sitka black-tail is resilient, and given the mild winter of 1999-2000 the population is expected to rebound quickly.

Unit 5 - Yakutat. No VCUs were surveyed in Yakutat in 1999.

NARRATIVES

North Douglas (VCU 35) - Douglas Island is located immediately opposite the City of Juneau and is heavily used by local hunters. Three transects were established at the end of the road system in 1991. The transects rise to over 1,000 feet in elevation and traverse low to moderate volume hemlock stands. Deer pellet-group density in 1999 was 1.03 pellet groups per plot, down 33% from the previous year.

Inner Point (VCU 36) - This drainage, located on the west side of Douglas Island, is popular with Juneau deer hunters. It is a small VCU containing mostly low-volume forest; it is also brushy, particularly at lower elevations. Access is sometimes difficult because of high winds and sea conditions in Stephens Passage. Pellet-group densities measured since 1985 have usually been moderate, between one and two pellet groups per plot. The 1999 results were at the low end of this range at 1.06 pellet groups per plot.

Sullivan Island (VCU 94) – Three transects were established on Sullivan Island in upper Lynn Canal in 1990. Transect 1 starts on the east side of the island and travels through mid- to high volume timber until it reaches the highest point on the island (1030 feet). Transects 2 and 3 are located at the heads of two bays situated on the southern end of the island. Both lines traverse lowland brushy habitat before climbing into heavier timber. Excessive snow curtailed sampling this year and only 66 plots were measured. Deer pellet-group density was low.

Shelter Island (VCU 124) – Located north of Juneau in lower Lynn Canal, this VCU is composed of Shelter and Lincoln islands and is a popular destination for Juneau hunters. Shelter Island, the larger of the two, is primarily forested, while Lincoln Island contains more muskeg. The maximum elevation is 1,170 feet on the northern end of Shelter Island. This VCU was sampled intensively from 1984 to 1986, but this practice was discontinued in 1987, and now only transects 4, 5, 6, 7, 8, and 18 on the north end of Shelter Island are sampled. Pellet-group density on Shelter Island in 1999 was moderate at 1.63 pellet groups per plot.

Hawk Inlet (VCU 128) - Hawk Inlet, on the NW shore of Admiralty Island, is a good baseline VCU for deer pellet sampling as it has been surveyed frequently since 1982. Access to Hawk Inlet is easy from Juneau by either plane or large vessel. All three transects traverse mid-volume timber on the west side of the inlet. Data collected at Hawk Inlet in 1999 indicate that deer populations remain stable at moderate levels.

Pleasant Island (VCU 185) - Pleasant Island is located in Icy Strait close to the community of Gustavus and is a main source of deer to that town's residents. Three transects were established here in 1991. Pleasant Island is a low-lying island with extensive muskeg; the highest point on the island is 600 feet. Most of the good quality forest (volume class 5) is found along the beach fringe and creeks. Deer pellet-group density in 1999 remained stable at 1.82 pellet groups per plot.

Suntaheen (VCU 209) - Three transects were established in Whitestone Harbor on northern Chichagof Island in 1988. These transects traverse a lot of muskeg and scrub; most of the better habitat in the VCU is found along the beach fringe and creeks. Pellet-group density in 1999 was moderate at 1.02 pellet groups per plot, but few plots were sampled because of excessive snow.

Pavlof (VCU 218) - Three transects were established in this VCU on eastern Chichagof Island in 1988. Two start near the falls at Pavlof Harbor and the third starts from the beach at Wachusetts Cove. A wide variety of habitat types are encountered. Pellet-group counts reached high levels in 1999, but that was probably more a function of the deer compressed into a narrow coastal band by abundant snow rather than an unusually high number of deer.

Finger Mountain (VCU 247) - The Finger River drainage, in lower Hoonah Sound, has consistently exhibited some of the highest deer pellet-group densities in all of Southeast. Three transects were established here in 1983. Transect 1 is a nice hike to an 1100 foot knob, then it undulates up and down from there. Transect 2 parallels the Finger River and usually has a tremendous amount of deer sign. Transect 3 is short and steep to 1500 feet elevation. All three transects have a SW facing aspect. Deer pellet-group density remained high at Finger Mountain in 1999.

Nakwasina (VCU 300) - This VCU, north of Sitka, is a popular local hunting area which has been sampled almost every year since 1984. All three transects traverse mid-volume forest to 1500 feet elevation and have a southerly aspect. Typically, deer pellet-group densities have been very high at Nakwasina, and 1999 was no exception at 3.20 pellet groups per plot. This was the highest recorded density in Southeast Alaska this year.

South Kruzof (VCU 308) – Three transects were established at the SE tip of Kruzof Island in 1993. This is a favorite hunting spot for many Sitka hunters. The topography of all three transects is gentle and rolling – the highest elevation reached is 200 feet. Vegetation is mostly low-volume cedar and pine interspersed with muskeg. Deer pellet-group density was moderate in 1999 at 1.38 pellet groups per plot.

Big Level Island (VCU 434a) – Seven transects were established on Big Level Island in Sumner Strait in 1981. The objective was to determine the relative deer density on the island, and to establish a baseline for comparison with future densities following canopy closure. The island was extensively clearcut in the late 1950s and early 1960s.

From 1983 to 1986, the Forest Service pre-commercially thinned 252 acres of clearcuts on Big Level Island at spacing ranging from 12' X 12' to 18' X 18'. These clearcuts are now 36 – 41 years old.

In 1999, deer pellet-group density on Big Level Island was 2.00 pellet groups per plot, compared to 2.16 pellet groups per plot in 1991. Pellet group counts in the thinned clearcuts averaged about 2.1 pellet groups per plot compared to 0.6 per plot in similar-aged unthinned clearcuts. The lower pellet counts in the unthinned stands were attributed to declining understory as a result of canopy closure.

Little Level Island (VCU 434b) – Five transects were established on Little Level Island in Sumner Strait in 1981. The objective was to determine the relative deer density on the island, and to establish a baseline for comparison with future densities following canopy closure. The island was extensively clearcut in the early 1960s.

From 1983 to 1984, the Forest Service precommercially thinned 120 acres of clearcuts on Little Level Island in spacing ranging from 12' X 12' to 16' X 16'. These clearcuts are now 33 – 36 years old.

In 1999, deer pellet-group density on Little Level was 2.8 pellet groups per plot, compared to 3.6 per plot in 1991. Pellet group counts in the thinned clearcuts averaged 2.9 pellet groups per plot compared to 2.0 per plot in similar-aged unthinned stands. The higher observed use in the thinned clearcuts suggest that thinning has improved deer use in these stands in the short term.

Little Level Island differed from Big Level Island in that there was much more use by deer of unthinned clearcuts on Little Level than Big Level. This use is attributed to what appears to be slower growing conditions for conifers on Little Level. Forage is generally still present in both thinned and unthinned clearcuts, and deer are utilizing both types of stands.

Woewodski (VCU 448) - Three transects were located on southwestern Mitkof Island in 1984. They are all well-marked and easily accessible by skiff from Petersburg. All climb to 1500 feet through moderate volume timber. Deer pellet-group density in 1999 was moderate at 1.36 pellet groups per plot, about the same as the previous year surveyed. Deer mortality on southern Mitkof Island seemed to be relatively minor this year – only one of 33 adult deer the Forest Service had radio-collared died of starvation.

Sokolof Island (VCU 455a) – Seven transects were established on Sokolof Island in Sumner Strait in 1981. The objective was to determine the relative deer density on the island, and to establish a baseline for comparison with future densities when the canopy closed over. Much of Sokolof Island was clearcut from 1963 to 1971.

In 1999, a joint crew from ADF&G and the Forest Service visited Sokolof Island and ran transects 1, 3, and 6 for a total of 360 plots. Deer pellet-group densities on Sokolof declined from 1.7 pellet groups per plot in 1981 to 0.9 per plot in 1999. Pellet groups in clearcuts averaged 0.4 pellet groups per plot. Clearcuts sampled were 28 to 36 years old and had not been thinned. Low deer use in the clearcuts was attributed to loss of understory from canopy closure. The observations from Sokolof are consistent with other Southeast wildlife studies that show deer use declines dramatically in clearcuts older than 30 years of age.

Rynda Island (VCU 455b) – Eleven transects were established on Rynda Island in 1981, although transects 1 through 5 were not completed. The soil is thin and poorly developed; gravel and boulders are in many places overstrewn by little more than a thin mossy mat. The timber is predominately spruce, small to average in size, and relatively even-aged. There is a conspicuous absence of large, dominant trees. The understory is dominated by Devil's club and foamflower, both of which are typically associated with spruce stands.

In 1999, a joint crew from ADF&G and the Forest Service completed transects 1, 2, 6, 10, and 11 for a total of 280 plots. Deer pellet group density was nearly identical to 1981 at 0.27 pellet groups per plot.

Woronkofski Island (VCU 461) – This island VCU, located near Wrangell, was first sampled in 1985. Twelve transects were run that ringed the island, but it was found that the transects on the south side of the island offered the most agreeable terrain and snow-free conditions; consequently, after 1985 only transects 10, 11, and 12 have been run. These three transects run to 1500 feet elevation through mid- to high volume old-growth forest. Deer pellet-group density on Woronkofski was high in the late 1980s, but has plummeted since then to 0.11 pellet groups per plot in 1999. Biologists believe the root cause for the decline to be wolf predation.

Mt. Calder (VCU 528) – Mt. Calder on northern Prince of Wales was first surveyed in 1988. The area is important to Point Protection and Point Baker residents for subsistence use. Timber volume is generally high on all three transects which traverse southwest facing slopes to 1500 feet elevation. The transects are hard to access except in absolutely calm sea conditions because of the reef strewn Barrier Islands nearby. In 1999 deer pellet-group density was low, down from the moderate levels of 1997.

Sarheen (VCU 549) - Three transects were located at Sarheen on the NW coast of Prince of Wales in 1989. Sarheen was selected because it is mostly unlogged, protected from rough seas, and hunters reported good success here. The transects traverse mostly low volume timber and reach approximately 800 feet elevation. Deer pellet-group density in 1999 was 0.64 pellet groups per plot, slightly higher than the previous year surveyed.

Sarkar (VCU 554) – Three transects were established at Sarkar Lake on Prince of Wales Island in 1988. All three transects start at the Sarkar Rapids bridge. Transects 1 and 3 travel through a combination of old growth and second growth, some of which is now impenetrable. Transect 2 is in old growth entirely. Deer pellet-group density in 1999 remained low at 0.74 pellet groups per plot.

Thorne Lake (VCU 575) – Four transects were established along the Thorne River drainage in 1992. All four transects start along Road 3015 and are accessed by vehicle from Thorne Bay. The vegetation on Transect 1 is mostly a red cedar-western hemlock overstory and a blueberry understory. (This transect was not completed this year because of excessive snow and inclement weather). Transect 2 starts in a muskeg and low volume forest, but soon encounters the edge of a clearcut. Timber is mostly low to mid-volume with muskegs scattered throughout. Transect 3 is an easy transect through mostly moderate to high volume hemlock. Transect 4 is a steady climb to 1500 feet. The first half is dominated by western red cedar, the second half is spruce-hemlock forest. Deer pellet-group density in 1999 was slighty higher than the previous year surveyed at 1.02 pellet groups per plot.

Snakey Lakes (VCU 578) – This VCU, located on Prince of Wales Island, encompasses part of the Thorne River drainage. Four transects were established here by the Forest Service in 1986. Since then, roads and clearcuts have drastically altered the landscape and passage through the slash and second growth is difficult. We recommend dropping this VCU until conditions improve. Deer pellet-group density in 1999 was about the same as 1998 at 0.86 pellet groups per plot.

Tuxekan (VCU 587) – This VCU, located just south of Staney Creek on the west coast of Prince of Wales Island, was first sampled in 1988. Four transects were established which sample a wide variety of habitat types, from clearcuts to high volume old growth. Pellet-group density in 1999 was considerably higher than the previous year surveyed at 1.26 pellet groups per plot.

Helm Bay (VCU 716) - Helm Bay is located on the Cleveland Peninsula north of Ketchikan. Three permanent transects were established here in 1984. Transect 1 is long, flat, and traverses extensive muskeg and scrub forest. Transects 2 and 3 reach to 1500 feet elevation and traverse mid-volume forest. Deer pellet-group density in 1999 remained low at 0.70 pellet groups per plot.

Port Stewart (VCU 719) – Three transects were established at Port Stewart on the Cleveland Peninsula in 1993. Transect 1 starts on the west side of Port Stewart at the mouth of a large stream. The first fifty plots traverse a non-commercial, brushy forest. The next forty plots ascend a steep hillside to 1500 feet elevation through mid- to high volume forest. Transect 2 starts in the bight on the east side of the bay. The first 60 plots are side-hill walking through volume class 4 and 5 timber. The remainder of the transect traverses a mixed conifer forest with blueberry understory. Transect 3 also starts in the bight on the east side of the bay. Scrubby non-commercial forest is the predominant habitat type with a few large cedar found along the way. Deer pellet-group density at Port Stewart in 1999 was a record low at 0.77 pellet groups per plot.

Spacious Bay (VCU 722) – Three transects were established at Spacious Bay on the Cleveland Peninsula in 1993. Transect 1 starts on the north side of the bay about 200 yards west of a large stream. The transect runs to 1500 feet through a low volume cedar forest and then a medium volume hemlock-spruce forest. Transect 2 also starts on the north side of the bay at the mouth of a six-foot wide stream. The transect runs to 1500 feet elevation through a mid-volume forest with a brushy blueberry understory. Transect 3 starts on the north shore of Spacious Bay at the head of the first sizeable cove west of Bluff Point. The transect goes over a low pass to Yes Bay and traverses low to mid-volume cedar stands. Deer pellet group density at Spacious Bay in 1999 was a record low at 0.09 pellet groups per plot.

Margaret (VCU 738) – This VCU on northern Revilla Island was first sampled by the Forest Service in 1985. The three transects traverse low to mid-volume forest. Pellet-group density in 1999 remained about the same at 0.47 pellet groups per plot.

LITERATURE CITED

Kirchhoff, M.D., and K.W. Pitcher. 1988. Deer pellet-group surveys in Southeast Alaska, 1981-1987. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-22-6, Job 2.9 Juneau. 113pp.

Table 1. Pellet-group count statistics from southeast Alaska, 1981-99.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
20	Comet	9,662	12%	1994	180	0.00	0.00-0.00
27	Auke Bay	15,245	45%	1987	381	0.99	0.87-1.12
35	North Douglas	4,430	49%	1991	300	0.80	0.65-0.96
				93	324	0.74	0.62-0.87
				94	315	0.91	0.74-1.09
				95	306	0.86	0.70-1.02
				96	323	0.97	0.81-1.12
				97	323	1.43	1.24-1.62
				98	321	1.54	1.32-1.77
				99	**273**	**1.03**	**0.86-1.19**
				00	292	0.95	
36	Inner Point	3,965	44%	1985	256	1.30	1.10-1.51
				86	235	1.97	1.68-2.25
				87	262	1.76	1.53-2.00
				88	200	1.21	1.02-1.39
				89	258	1.31	1.08-1.53
				92	204	2.05	1.75-2.36
				95	254	1.41	1.21-1.60
				96	240	1.68	1.45-1.91
				97	252	2.36	2.08-2.64
				98	280	0.84	0.69-0.98
				99	**239**	**1.06**	**0.87-1.25**
				00	290	1.04	
38	Rhine Creek	6,357	2%	1997	108	0.31	0.14-0.47
65	Sumdum Glacier	40,906	15%	1987	262	1.76	1.53-2.00
82	Negro Creek	12,212	31%	1989	312	0.21	0.13-0.29
89	Farragut Bay	na	na	1994	314	0.02	0.00-0.04
94	Sullivan Island	3,985	78%	1990	250	1.39	1.17-1.62
				99	**66**	**0.64**	**0.35-0.93**
117	Couverden	9,933	10%	1993	350	0.35	0.27-0.44
124	Shelter Island (All Transects)	6,162	43%	1984	713	1.46	1.33-1.60
				85	774	1.82	1.67-1.97
				86	727	2.20	2.02-2.37

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
124	Shelter Island (Trans. 4-8, 18)			1984	300	1.52	1.34-1.70
				85	296	2.52	2.24-2.81
				86	292	3.24	2.91-3.57
				87	288	2.91	2.57-3.24
				88	130	3.16	2.62-3.70
				89	300	1.43	1.23-1.62
				90	300	1.60	1.37-1.82
				93	250	2.00	1.73-2.26
				95	297	1.38	1.20-1.56
				97	312	2.51	2.23-2.78
				99	**290**	**1.63**	**1.42-1.85**
124	Lincoln Island			1998	207	1.52	1.27-1.77
125	Barlow Cove	13,712	24%	1982	2,567	1.07	1.01-1.12
				84	347	1.69	1.46-1.92
				85	347	1.55	1.35-1.76
				90	270	1.42	1.18-1.65
127	Calm Station	4,941	66%	1982	1,054	1.65	1.53-1.77
128	Hawk Inlet	14,318	57%	1982	1,605	1.21	0.99-1.42
				84	339	1.42	1.22-1.63
				85	270	1.69	1.43-1.95
				86	286	1.92	1.64-2.19
				87	278	2.54	2.19-2.89
				89	364	1.82	1.56-2.08
				90	250	2.24	1.94-2.53
				92	319	1.61	1.38-1.83
				96	325	1.26	1.07-1.46
				99	**176**	**1.25**	**1.00-1.50**
140	Dorn Island	9,485	81%	1984	230	1.27	1.02-1.53
148	Lake Kathleen	14,693	57%	1987	207	2.13	1.76-2.49
150	Lake Florence	21,342	52%	1988	294	1.48	1.27-1.69
162	Thayer Lake	25,342	79%	1987	313	2.81	2.49-3.12
				89	283	2.04	1.75-2.32
				94	282	2.27	1.98-2.56
				98	308	2.13	1.87-2.38

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
171	Hood Bay	44,355	79%	1987	358	2.31	1.99-2.63
				89	366	1.77	1.54-2.00
				90	375	1.85	1.61-2.09
				92	360	1.91	1.64-2.18
				94	371	1.64	1.41-1.88
				00	349	1.04	
182	Pybus Bay	41,501	62%	1981	390	1.34	1.16-1.52
				84	300	1.02	0.86-1.18
				85	269	1.86	1.60-2.12
				86	235	2.00	1.70-2.29
				87	242	2.03	1.69-2.37
				89	199	2.00	1.63-2.36
				90	221	1.72	1.44-2.01
				92	236	1.13	0.97-1.30
				95	205	1.48	1.23-1.74
				98	256	1.37	1.16-1.59
185	Pleasant Island	8,738	16%	1991	311	1.38	1.18-1.57
				92	210	1.34	1.09-1.59
				93	305	1.77	1.52-2.02
				94	356	1.22	1.04-1.40
				97	300	1.80	1.54-2.06
				99	**223**	**1.82**	**1.55-2.08**
189	Port Althorp	8,040	27%	1988	195	1.80	1.47-2.13
				91	223	1.92	1.55-2.29
				92	261	1.36	1.11-1.60
				93	248	1.39	1.15-1.62
				94	253	1.31	1.06-1.56
				98	281	1.48	1.27-1.70
190	Idaho Inlet	53,183	22%	1988	258	1.34	1.09-1.60
				92	219	0.94	0.69-1.19
				93	305	0.56	0.45-0.68
				94	294	0.71	0.58-0.84
				98	273	1.11	0.92-1.30
202	Port Frederick	16,619	52%	1988	242	1.87	1.62-2.13
				96	226	1.02	0.82-1.23
208	First No. 2	6,613	32%	1983	1,155	1.12	1.01-1.22

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
209	Suntaheen Cr.	13,198	49%	1988	272	1.22	1.00-1.44
				92	271	1.13	0.94-1.33
				93	265	0.73	0.58-0.88
				94	272	1.05	0.81-1.29
				96	276	0.98	0.77-1.18
				97	263	1.50	1.23-1.77
				99	**112**	**1.02**	**0.69-1.34**
211	Point Augusta	4,688	63%	1983	757	1.78	1.62-2.01
				93	286	2.08	1.80-2.36
				97	234	3.30	2.90-3.70
218	Pavlof River	18,866	50%	1988	325	1.78	1.50-2.06
				92	341	1.56	1.32-1.81
				96	349	1.50	1.30-1.70
				97	313	1.71	1.47-1.94
				99	**213**	**2.24**	**1.83-2.67**
221	Whip Station	4,708	53%	1981	193	0.86	0.64-1.08
222	Sand Station	12,231	50%	1981	253	0.60	0.48-0.73
223	Upper Tenakee	3,833	54%	1988	253	1.47	1.24-1.70
				92	265	0.58	0.47-0.70
				93	249	0.47	0.36-0.58
				94	319	0.61	0.48-0.74
				96	263	0.56	0.38-0.75
231	Saltery Bay	18,478	31%	1988	256	2.02	1.69-2.35
				92	256	0.96	0.79-1.14
				93	227	0.76	0.56-0.96
				94	193	0.97	0.79-1.15
				96	152	1.90	1.47-2.33
				97	170	1.99	1.59-2.39
234	Inbetween	6,002	62%	1981	35	0.49	0.08-0.89

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
235	Kadashan	33,641	53%	1981	96	0.54	0.32-0.76
				88	221	2.67	2.18-3.16
				92	282	1.62	1.38-1.86
				93	385	1.12	0.95-1.30
				94	294	1.39	1.18-1.60
				95	195	2.64	2.20-3.07
				96	204	2.36	1.96-2.76
236	Corner Bay	10,930	66%	1981	60	0.35	0.17-0.53
				92	206	2.27	1.91-2.64
				93	50	1.72	1.25-2.19
				94	198	1.69	1.41-1.98
246	Broad Island	17,145	38%	1981	209	1.41	1.18-1.63
247	Finger Mountain.	15,918	38%	1983	2,145	1.17	1.11-1.24
				84	302	1.83	1.57-2.09
				85	279	3.23	2.79-3.67
				86	277	2.88	2.57-3.19
				87	236	3.11	2.71-3.52
				89	305	2.99	2.57-3.40
				90	225	3.36	2.99-3.74
				91	150	3.93	3.36-4.51
				92	207	2.85	2.48-3.22
				93	179	3.03	2.60-3.47
				94	275	2.29	1.96-2.62
				96	221	2.62	2.20-3.04
				97	227	3.53	3.05-4.02
				99	**169**	**3.04**	**2.59-3.50**
				00	217	2.87	
249	Lisianski	19,677	24%	1988	255	0.97	0.79-1.14
				91	170	1.53	1.22-1.84
				95	317	0.70	0.56-0.85
				98	321	0.88	0.75-1.02
254	Soapstone	17,695	29%	1988	274	1.92	1.67-2.17
				91	270	2.05	1.77-2.33
				93	243	1.88	1.59-2.16
				94	310	1.34	1.16-1.52
				95	283	1.48	1.27-1.69

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	Pellet-Group 95% CI
271	Chichagof	20,680	10%	1991	301	1.39	1.19-1.58
				95	303	0.98	0.83-1.14
				98	319	1.34	1.16-1.53
275	Cobol	14,618	49%	1984	224	1.15	0.92-1.37
				91	185	2.96	2.37-3.54
				95	218	1.45	1.16-1.74
				98	219	2.19	1.86-2.51
279	Rapids Point	7,637	65%	1983	2,734	0.77	0.73-0.81
281	Ushk Bay	20,770	38%	1981	94	0.63	0.41-0.85
288	Range Creek	6,929	33%	1983	1,788	0.51	0.46-0.55
				84	303	0.71	0.61-0.92
				85	224	1.32	1.02-1.62
				97	353	1.44	1.21-1.67
295	Lake Eva	12,362	65%	1987	172	1.81	1.46-2.15
296	Portage Arm	16,101	59%	1981	213	0.53	0.39-0.68
				90	214	3.09	2.70-3.48
				97	39	1.59	0.86-2.32
298	Middle Arm Kelp Bay	28,424	21%	1990	306	2.68	2.35-3.01
				97	100	2.67	2.04-3.30
300	Nakwasina (All Transects)	19,575	48%	1984	196	2.51	2.14-2.88
				85	1046	3.92	3.67-4.17
				86	715	3.50	3.26-3.76

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
300	Nakwasina (Trans. 2,3,8)			1984	138	2.51	2.10-2.93
				85	218	3.65	3.13-4.17
				86	205	3.38	2.91-3.84
				87	195	2.31	1.90-2.71
				89	244	2.32	2.00-2.65
				90	255	2.98	2.56-3.40
				91	175	3.98	3.39-4.57
				92	223	1.64	1.37-1.90
				93	188	3.15	2.70-3.60
				94	230	1.46	1.24-1.68
				95	216	1.75	1.48-2.10
				96	210	2.82	2.35-3.29
				97	188	2.79	2.31-3.27
				98	217	2.99	2.48-3.49
				99	**146**	**3.20**	**2.64-3.76**
				00	121	2.44	
305	Sealion Cove	9,293	69%	1984	320	1.36	1.15-1.58
				85	292	2.57	2.23-2.91
				86	235	2.87	2.44-3.29
				87	226	3.31	2.82-3.80
				89	303	1.75	1.50-2.00
				90	227	2.03	1.71-2.35
				91	219	1.63	1.36-1.91
				92	239	1.30	1.08-1.51
				93	198	1.70	1.38-2.02
				94	221	1.29	1.09-1.48
				95	210	1.30	1.08-1.52
				96	225	1.63	1.35-1.90
				97	223	1.76	1.43-2.10
				98	241	1.71	1.44-1.99
				00	201	1.42	
308	South Kruzof	71,158	25%	1993	345	1.62	1.41-1.83
				94	370	1.71	1.52-1.90
				99	**365**	**1.38**	**1.16-1.58**

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
315	Basin Kelp Bay	8,460	60%	1990	151	1.85	1.41-2.28
321	Redoubt Bay	9,045	58%	1989	304	2.17	1.88-2.47
339	Cape Ommaney	13,725	32%	1988	172	1.74	1.43-2.05
				00	270	1.26	
348	West Crawfish	57,434	16%	1989	360	1.35	1.36-1.57
				00	211	1.34	
361	Knight Island	10,419	40%	1991	100	0.81	0.61-1.01
				92	100	0.95	0.74-1.16
				94	90	0.44	0.25-0.64
				96	153	0.00	0.00-0.00
				97	192	0.03	0.01-0.05
363	Humpback	7,721	74%	1991	118	0.01	0.00-0.03
368	Yakutat Islands	1,021	99%	1991	415	0.32	0.24-0.39
				92	243	0.48	0.37-0.58
				93	106	1.07	0.81-1.32
				94	251	0.66	0.52-0.80
				96	379	0.59	0.48-0.69
				97	344	0.59	0.48-0.70
369	Ankau			1991	116	0.03	0.00-0.05
400	Security Bay	28,040	79%	1984	360	0.02	0.01-0.04
				89	304	0.25	0.16-0.34
				95	268	0.22	0.15-0.29
				2000	200	0.10	
403	Pillar Bay	28,227	65%	1988	337	0.16	0.10-0.22
				2000			
408	Malmesbury	18,151	68%	1990	206	0.11	0.05-0.18
				2000	254	0.06	
417	Conclusion Island	12,561	99%	1987	207	2.66	2.32-3.01
				89	200	0.95	0.72-1.18
				91	200	0.71	0.53-0.88
				96	191	1.45	1.19-1.70
344	Rakoon			00	260	1.40	

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
427	Big John Bay	32,711	29%	1994	300	0.38	0.29-0.48
428	Rocky Pass	49,403	35%	1989	298	0.40	0.27-0.53
431	Point Barrie	22,187	27%	1988	357	0.23	0.17-0.29
				93	375	0.77	0.64-0.90
434a	Big Level Island	727	61%	1981	399	1.54	1.45-1.63
				83	336	1.56	
				86	382	1.66	1.41-1.90
				89	227	1.07	
				91	456	2.16	1.90-2.41
				99	**427**	**2.00**	**1.74-2.26**
434b	Little Level Island	263	92%	1981	114	2.48	2.02-2.94
				83	136	2.34	
				86	122	1.39	1.07-1.70
				89	137	1.52	
				91	132	3.59	3.07-4.11
				99	**123**	**2.84**	**2.28-3.40**
435	Castle River	32,724	36%	1984	312	0.19	0.12-0.26
				87	305	0.51	0.37-0.65
				89	312	0.40	0.25-0.56
				94	310	0.32	0.24-0.40
				98	281	0.36	0.28-0.44
437	E. Duncan	23,744	55%	1990	227	1.12	0.92-1.32
				92	213	0.78	0.63-0.94
				98	153	1.04	0.77-1.30
442	Portage Bay	11,269	49%	1993	282	0.43	0.31-0.56
				95	277	0.43	0.33-0.53
				98	285	0.39	0.29-0.49

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
448	Woewodski	20,931	53%	1984	295	0.88	0.69-1.08
				85	209	1.00	0.82-1.19
				87	195	1.65	1.85-2.61
				88	433	1.33	1.16-1.51
				89	417	1.35	1.24-1.73
				90	355	1.46	1.28-1.64
				91	316	1.80	1.52-2.07
				92	248	0.79	0.62-0.97
				93	230	1.06	0.85-1.27
				94	152	1.14	0.82-1.46
				95	157	1.38	1.08-1.67
				96	243	2.25	1.95-2.55
				97	282	1.56	1.27-1.84
				98	282	1.10	0.91-1.29
				99	**196**	**1.36**	**1.11-1.60**
				00	226	1.27	
448a	Woewodski Island	20,931	53%	1991	461	1.86	1.66-2.05
				94	510	1.30	1.15-1.46
449	Frederick	6,835	70%	1981	945	0.08	0.06-0.11
				90	180	0.55	0.36-0.74
				92	227	0.54	0.42-0.65
452	Blind Slough	30,655	55%	1990	324	1.35	1.15-1.56
				92	114	1.04	0.77-1.30
				93	265	1.28	1.04-1.51
				97	245	1.61	1.34-1.88
454	Dry	11,033	74%	1981	91	0.92	0.56-1.28
				93	210	1.44	1.17-1.72
				97	188	1.26	0.88-1.39
455	Vank	8,437	99%				
	a) Sokolof			1981	900	1.73	1.61-1.85
				99	**360**	**0.92**	**0.76-1.08**
	b) Rynda			1981	281	0.25	0.18-0.32
				99	**280**	**0.27**	**0.18-0.36**
	c) Greys			1981	284	0.25	0.18-0.32
458	Snow Passage	31,572	46%	1994	345	0.58	0.45-0.70
				97	315	0.98	0.80-1.16

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
461	Woronkofski (All Transects)	14,500	63%	1985	646	1.63	1.45-1.81
461	Woronkofski (Trans. 10,11,12)			1985	218	2.01	1.62-2.39
				87	201	2.23	1.85-2.61
				89	223	2.52	2.18-2.85
				91	203	1.59	1.32-1.85
				93	225	0.22	0.13-0.31
				94	224	0.26	0.18-0.34
				99	**216**	**0.11**	**0.06-0.17**
467	Mosman	25,573	54%	1993	304	0.07	0.03-0.11
473	Onslow	28,947	55%	1984	321	0.37	0.28-0.46
				85	334	0.59	0.48-0.70
				86	347	0.72	0.59-0.84
				87	336	0.42	0.31-0.55
				88	329	0.44	0.32-0.55
				91	322	0.66	0.51-0.80
				93	341	0.68	0.55-0.82
				94	340	0.88	0.74-1.02
				97	346	0.73	0.59-0.86
480	Fools Inlet	30,906	44%	1994	194	0.54	0.38-0.70
489	Muddy River	40,275	37%	1996	348	1.53	1.26-1.80
490	Horn	9,815	55%	1998	250	0.60	0.47-0.74
524	Frosty Bay	17,959	41%	1991	266	0.70	0.55-0.86
527	Protection	6,257	100%	1997	332	1.15	0.99-1.30
				98	281	0.59	0.47-0.71
				06	323	0.56	
528	Mt. Calder	9,232	83%	1988	252	2.14	1.78-2.49
				97	272	1.17	0.96-1.39
				99	**165**	**0.48**	**0.31-0.62**
532	Red Bay	15,145	66%	1987	177	0.32	0.18-0.47
				94	256	0.94	0.74-1.14
				96	281	1.19	0.97-1.41
				97	248	1.07	0.89-1.25
				98	283	0.73	0.59-0.88

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
539	Exchange Cove	10,406	74%	1988	266	1.39	1.15-1.64
				92	125	1.10	0.83-1.38
				97	303	1.25	1.04-1.46
549	Sarheen	11,875	52%	1989	310	1.73	1.44-2.01
				96	334	1.00	0.83-1.16
				97	330	1.00	0.85-1.14
				98	355	0.42	0.33-0.51
				99	**284**	**0.64**	**0.51-0.78**
554	Sarkar	32,183	60%	1988	298	1.28	1.06-1.50
				92	125	1.10	0.83-1.38
				94	292	0.92	0.77-1.07
				97	263	0.61	0.48-0.74
				98	312	0.29	0.21-0.37
				99	**281**	**0.74**	**0.60-0.88**
561	Warm Chuck	12,348	85%	1984	326	1.02	1.02-1.38
				85	295	1.60	1.36-1.84
				89	302	2.21	1.91-2.50
				91	291	2.05	1.73-2.37
				96	276	1.39	1.17-1.61
				97	247	1.21	1.01-1.41
				98	246	1.29	1.08-1.51
				[illegible]	[illegible]	[illegible]	
564	Coronation	19,107	69%	1983	696	1.20	1.04-1.36
				85	228	2.34	
				88	408	1.41	1.17-1.66
				89	293	1.63	1.28-1.98
				97	289	0.44	0.34-0.55
569	Baker	31,802	68%	1991	256	0.08	0.04-0.12
				97	250	0.14	0.08-0.20
575	Thorne Lake	17,970	68%	1992	334	1.20	1.03-1.37
				94	293	0.76	0.62-0.91
				95	299	1.27	1.09-1.45
				97	303	0.84	0.66-0.96
				98	316	0.87	0.71-1.03
				99	**231**	**1.02**	**0.83-1.21**

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
578	Snakey Lakes	6,431	84%	1986	279	0.62	0.51-0.73
				88	300	1.05	0.84-1.26
				89	200	1.56	1.26-1.86
				93	356	0.77	0.61-0.93
				97	310	1.39	1.17-1.60
				98	225	0.71	0.55-0.87
				99	**250**	**0.86**	**0.67-1.05**
581	Luck Lake	19,818	67%	1986	178	1.74	1.41-2.07
				88	300	2.11	1.80-2.41
				93	175	1.10	0.87-1.32
584	Little Ratz	12,392	65%	1992	272	0.94	0.76-1.13
				97	255	1.93	1.64-2.21
				98	282	0.78	0.64-0.91
587	Tuxekan	12,129	77%	1988	300	1.06	0.84-1.28
				97	314	1.04	0.87-1.22
				98	353	0.48	0.37-0.58
				99	**328**	**1.26**	**1.03-1.49**
621	12 Mile	23,344	59%	1985	196	0.31	0.19-0.43
				86	300	0.64	0.48-0.81
				87	370	0.65	0.49-0.81
				88	302	0.62	0.46-0.77
				89	235	0.78	0.59-0.98
				90	176	1.18	0.84-1.52
				91	231	1.84	1.48-2.21
				92	250	0.43	0.32-0.55
				93	258	0.84	0.63-1.05
				94	324	0.93	0.76-1.09
				97	202	1.45	1.10-1.79
				98	280	0.83	0.63-1.02
625	Trocadero	16,624	75%	1995	235	1.74	1.41-2.06
				97	235	1.18	0.97-1.38
				98	267	0.97	0.78-1.16
628	Pt. Amagura	10,477	26%	1997	255	1.04	0.83-1.24
				98	325	0.93	0.78-1.08

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
635	Port Refugio	9,118	50%	1985	317	2.69	2.27-3.12
				86	324	2.52	2.09-2.96
				87	369	1.76	1.46-2.07
				88	270	1.15	0.90-1.40
				89	507	0.80	0.68-0.93
				90	232	1.25	1.03-1.48
				91	367	1.13	0.95-1.32
				92	254	0.76	0.57-0.95
				93	213	1.35	0.98-1.71
				94	280	1.85	1.51-2.19
				97	276	0.82	0.65-1.00
				98	315	0.78	0.61-0.96
				00	272	0.90	
679	Kitkun Bay	15,359	75%	1988	240	0.31	0.20-0.42
				89	273	0.89	0.71-1.07
				95	264	0.40	0.28-0.52
				97	261	0.31	0.19-0.44
685	Nutkwa	17,079	73%	1988	234	0.09	0.02-0.16
716	Helm Bay	16,127	57%	1981	704	0.16	0.12-0.19
				84	302	0.54	0.44-0.65
				85	181	0.85	0.65-1.05
				88	247	1.66	1.38-1.95
				91	240	1.63	1.35-1.92
				92	169	1.25	0.96-1.53
				93	286	1.37	1.16-1.59
				95	284	1.31	1.09-1.52
				97	265	0.79	0.65-0.99
				98	232	0.44	0.34-0.55
				99	**182**	**0.70**	**0.53-0.87**
719	Port Stewart	21,482	55%	1993	289	1.22	1.03-1.42
				95	278	1.61	1.35-1.87
				97	289	1.29	1.08-1.50
				99	**182**	**0.77**	**0.57-0.97**
722	Spacious Bay	31,461	44%	1993	300	0.54	0.43-0.64
				95	283	0.45	0.35-0.54
				97	276	0.43	0.33-0.53
				99	**161**	**0.09**	**0.04-0.13**

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
738	Margaret	19,286	67%	1985	515	0.57	0.47-0.66
				86	251	0.84	0.69-1.00
				88	110	1.31	0.96-1.67
				89	129	0.62	0.44-0.80
				90	274	0.56	0.44-0.68
				91	272	0.76	0.58-0.94
				93	281	0.31	0.23-0.39
				95	304	0.70	0.56-0.84
				97	297	0.56	0.43-0.68
				99	**264**	**0.47**	**0.98-1.45**
748	George Inlet	19,448	28%	1981	110	0.21	0.09-0.33
				84	344	0.27	0.19-0.35
				85	313	0.52	0.39-0.65
				89	169	1.41	1.08-1.75
				90	240	1.03	0.82-1.25
				91	168	1.49	1.15-1.84
				92	195	0.65	0.49-0.81
				94	309	0.95	0.79-1.11
				96	305	0.98	0.76-1.19
				98	314	0.52	0.40-0.65
				00	175	0.51	
752	Whitman Lake	6,015	38%	1981	45	0.18	0.02-0.33
				87	187	0.16	0.09-0.23
				90	193	0.46	0.32-0.59
				92	189	0.20	0.12-0.28
				97	181	0.81	0.63-0.98
				98	209	0.47	0.33-0.61
758	Carroll Pt.	11,629	34%	1985	118	0.66	0.46-0.86
				86	118	0.75	0.56-0.95
				88	85	1.15	0.81-1.48
				92	87	0.28	0.14-0.41
				94	125	0.70	0.49-0.90
				98	125	0.51	0.38-0.64
759	Moth Bay	7,652	23%	1985	140	0.59	0.42-0.74
				86	156	0.98	0.79-1.17
				88	78	0.71	0.46-0.97
				92	136	0.48	0.30-0.66
				94	136	0.94	0.71-1.17
				98	176	0.68	0.53-0.82

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
760	Lucky Cove	12,377	43%	1985	335	1.16	1.00-1.33
				86	258	1.16	0.95-1.32
				88	65	1.01	0.68-1.34
				90	263	1.10	0.92-1.27
				91	271	1.39	1.07-1.70
764	Blank Inlet	3,640	19%	1981	108	1.24	0.89-1.59
765	Dall Head	4,803	63%	1981	69	0.52	0.31-0.74
				96	295	1.07	0.90-1.24
				98	287	0.84	0.67-1.01
				00	295	0.94	
767	Duke Island	39,171	17%	1996	294	0.05	0.02-0.09
					281	0.12	
769	Alava Bay	13,563	60%	1985	311	0.52	0.39-0.65
				86	326	0.85	0.68-1.01
				91	143	1.64	1.22-2.05
				94	326	0.79	0.64-0.94
				96	324	0.93	0.77-1.09
				98	335	0.66	0.52-0.79
				00	329	0.71	
772	Wasp Cove	4,882	90%	1985	271	0.41	0.31-0.51
				86	300	0.50	0.38-0.62
				89	145	0.58	0.39-0.77
				91	207	0.13	0.07-0.18
821	Winstanley Island	14,104	45%	1991	49	0.27	0.11-0.42
999	Gravina (All Transects)			1981	226	1.06	0.89-1.22
				84	1,087	0.86	0.78-0.94
				85	1,172	1.23	1.13-1.32
				86	1,267	1.40	1.30-1.50

Table 1. continued.

VCU	Name	Land Acres	% CFL	Year	Plots	Pellet-Group Mean	95% CI
999	Gravina (Trans. 1,2,3)			1984	376	0.88	0.73-1.03
				85	224	1.44	1.20-1.67
				86	346	1.62	1.43-1.81
				87	334	1.63	1.41-1.84
				88	278	2.06	1.78-2.35
				89	182	1.13	0.86-1.41
				90	279	1.40	1.12-1.68
				91	154	1.12	0.80-1.43
				92	302	1.22	1.05-1.38
				94	331	1.58	1.37-1.79
				96	338	1.47	1.28-1.67
				97	274	1.71	1.47-1.95
				98	307	1.34	1.12-1.56
				00	267	1.24	

APPENDIX II

Winter Weather Conditions

1999

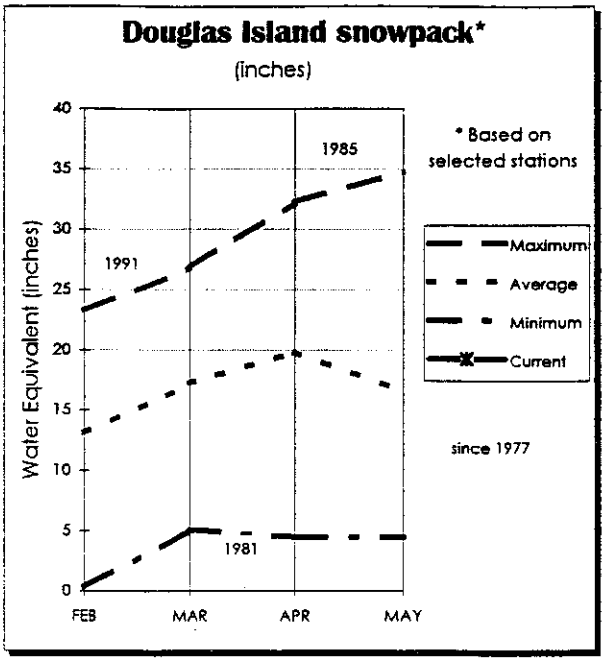
Winter Weather Conditions

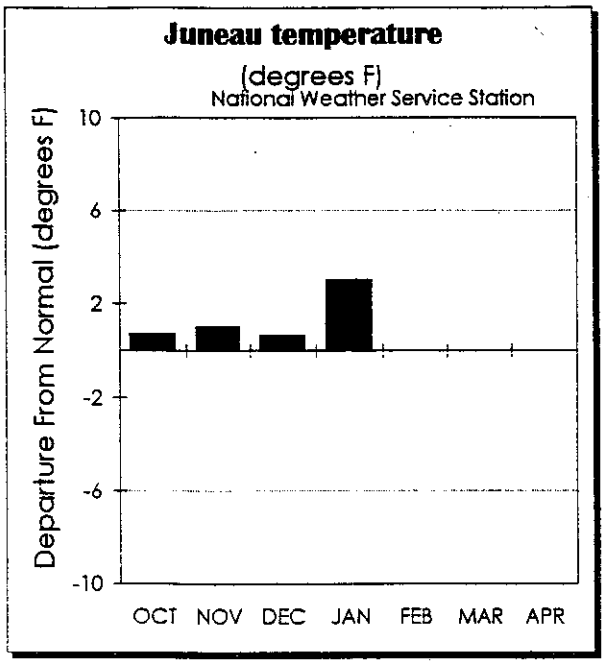
January - April 1999

Data from: Alaska Snow Surveys, USDA Soil Conservation Service, Anchorage, AK.
Monthly reports on file, ADF&G, Douglas.

Southeast

February 1, 1998





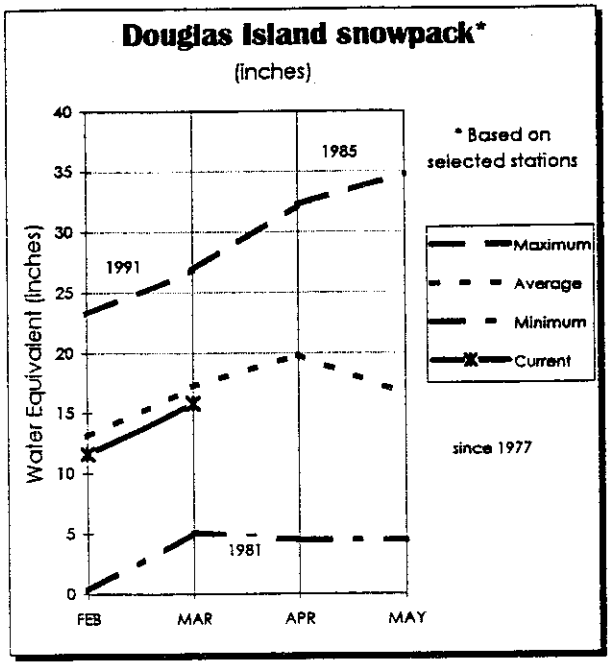
SNOWCOVER:
The Moore Creek Bridge snow course on the south side of White Pass near Skagway had 72 inches of snow depth compared to 44 inches last year. The snow water content was essentially the same as last year.

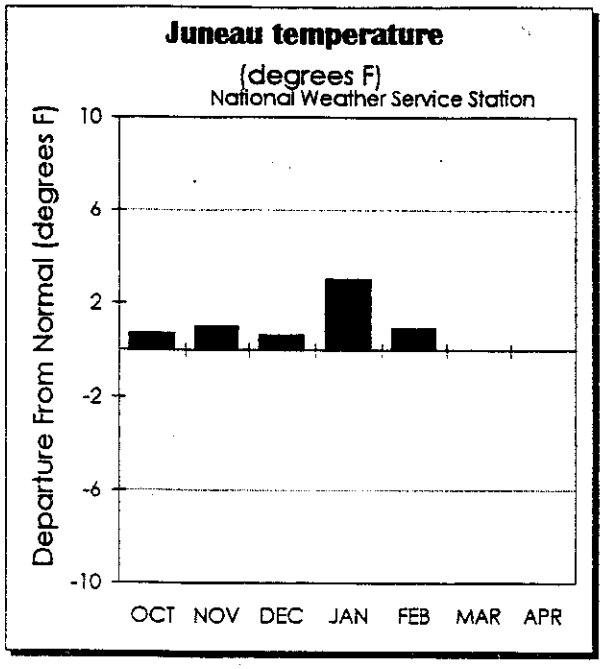
The Petersburg Ridge and Petersburg Reservoir snow course water contents are right at normal, this is quite unusual for normal generally never occurs. However the snow depths are much greater than normal with the Ridge course being 145 percent and the Reservoir course being 176 percent of normal snow depth.

For more information contact your local Natural Resources Conservation Service in Anchorage:
(907) 271-2424

Southeast

March 1, 1999





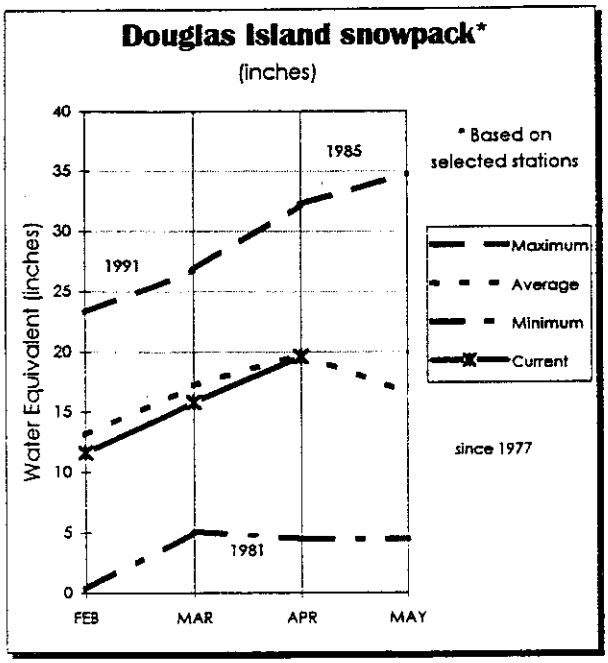
SNOWCOVER:
Southeast

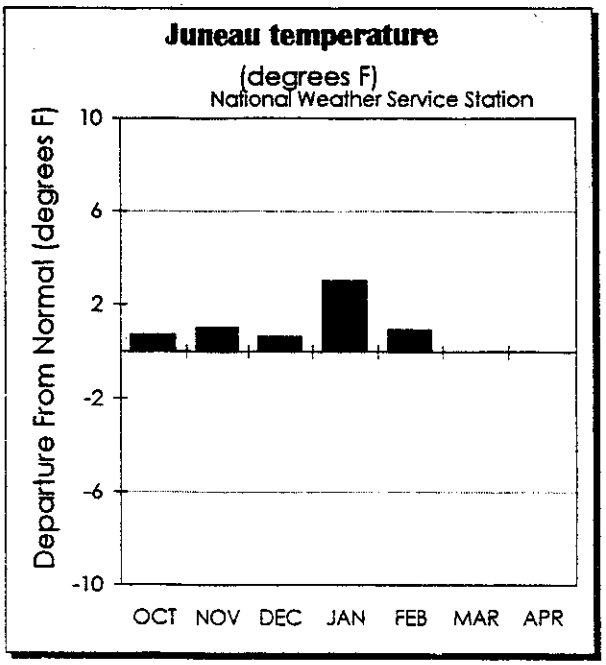
The Eagle Crest snow course depth is 72 inches with water content of 16.5 inches, 111percent of normal. Reducing elevation on Douglas Island, Fish Creek goes up in percent of normal water content (129 percent) and increasing elevation Cropley Lake goes down in percent of normal water content (77 percent).
The Speel River snow course near Snettisham is 139 percent of normal water content.

For more information contact your Natural Resource Conservation Service office in Anchorage: (907)271-2424.

Southeast

April 1, 1999





SNOWCOVER:

The Speel River snow course water content of 43.2 inches near the Snettisham hydroelectric power plant has only been exceeded twice since 1965. The two greater years were 1975, 43.8 inches and 1991, 44.8 inches of water content.

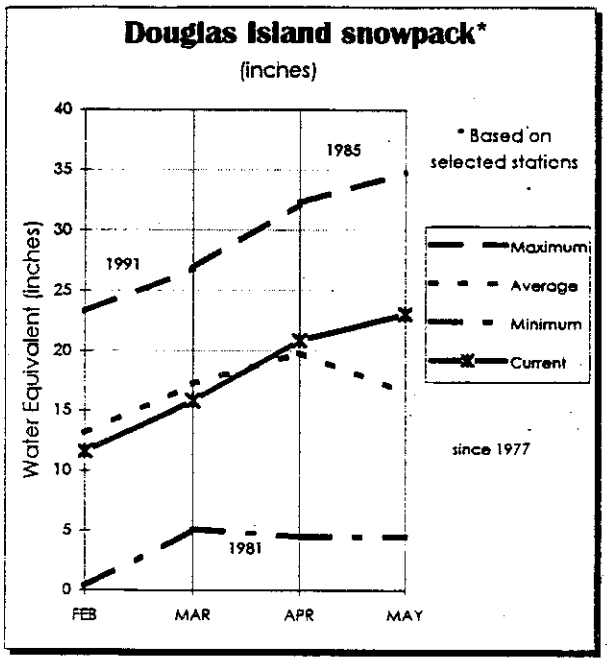
The Petersburg Ridge snow course water content of 37.4 inches has been exceeded twice, 1985 at 38.7 inches and 1991 at 40.0 inches.

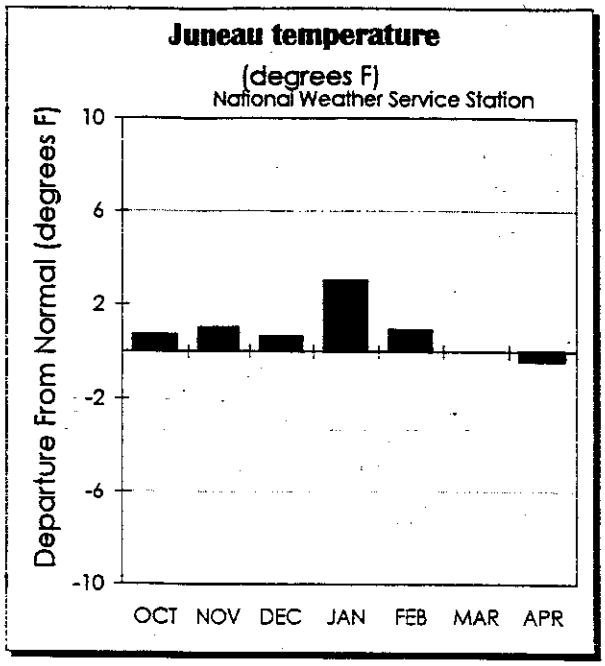
The Swan Lake snow course measurements have been delayed until the middle of April. Most of the precipitation this year came as snow and we anticipate record snow water contents.

For more information contact the Anchorage Natural Resources Conservation Service office in Anchorage at 271-2424.

Southeast

MAY 1, 1999





SNOWCOVER:

The snow courses at Swan Lake were measured the middle of April. A record snow depth and water content were recorded at Lake Grace Pass where the depth was 241 inches and the water content was 97.9 inches. The Petersburg courses are 147 percent of normal. The Douglas Island courses are 139 percent of normal.

For more information contact the Anchorage Natural Resources Conservation Service office in Anchorage at 271-2424.

APPENDIX III

Pellet-Group Densities
Reported by Transect and Elevation

Table 2. Mean pellet-group densities, by VCU, by transect, Spring 1999

VCU	Transect	Mean	Std. Deviation	N
North Douglas	1	.93	1.07	55
	2	1.44	1.64	100
	3	.72	1.15	118
	Total	1.03	1.37	273
Inner Point	1	1.02	1.22	53
	2	1.01	1.41	125
	3	1.21	1.87	61
	Total	1.06	1.50	239
Sullivan Island	1	.95	1.41	40
	2	.19	.54	16
	3	.10	.32	10
	Total	.64	1.20	66
Shelter Island	4	1.96	1.92	50
	5	.93	1.25	40
	6	1.72	1.65	50
	7	.80	1.32	50
	8	2.06	2.32	50
	18	2.18	2.03	50
	Total	1.63	1.87	290
Hawk Inlet	1	.62	1.17	85
	2	1.63	1.76	41
	3	2.00	1.98	50
	Total	1.25	1.69	176
Pleasant Island	1	2.19	2.39	102
	2	1.55	1.56	65
	3	1.45	1.56	56
	Total	1.82	2.01	223
Suntaheen Cr.	1	1.36	2.40	22
	2	1.00	1.69	70
	3	.70	1.08	20
	Total	1.02	1.77	112
Pavlof	1	2.80	4.16	55
	2	1.98	2.19	90
	3	2.16	3.20	68
	Total	2.25	3.13	213
Finger Mountain	1	5.26	3.32	27
	2	3.02	2.99	104
	3	1.53	1.70	38
	Total	3.04	3.02	169

Table 2. Mean pellet-group densities, by VCU, by transect, Spring 1999

VCU	Transect	Mean	Std. Deviation	N
Nakwasina	2	1.36	1.34	33
	3	4.02	4.06	65
	8	3.35	3.11	48
	Total	3.20	3.45	146
South Kruzof	1	2.12	2.72	125
	2	1.06	1.51	125
	3	.90	1.55	115
	Total	1.37	2.08	365
Big Level	1	2.11	2.41	35
	2	.69	1.19	54
	3	2.27	3.40	62
	4	3.32	3.05	72
	5	2.05	2.48	96
	6	1.20	1.86	65
	7	2.05	3.10	43
	Total	2.00	2.71	427
Little Level	1	2.00	2.15	27
	2	3.50	3.12	28
	3	2.89	2.96	35
	4	1.27	1.71	15
	5	4.28	4.79	18
	Total	2.84	3.16	123
Woewodski	1	1.64	2.05	72
	2	.95	1.23	58
	3	1.41	1.79	66
	Total	1.36	1.77	196
Sokolof	1	1.10	1.68	115
	3	.94	1.61	140
	6	.70	1.20	105
	Total	.92	1.53	360
Rynda	1	.40	1.04	42
	2	.67	1.14	63
	6	.10	.34	71
	10	.02	.13	57
	11	.17	.43	47
	Total	.27	.75	280

Table 2. Mean pellet-group densities, by VCU, by transect, Spring 1999

VCU	Transect	Mean	Std. Deviation	N
Woronkofski	10	.12	.33	81
	11	.06	.24	50
	12	.13	.53	85
	Total	.11	.41	216
Mt. Calder	2	.57	1.09	90
	3	.34	.90	75
	Total	.46	1.01	165
Sarheen	1	.84	1.38	105
	2	.38	.76	125
	3	.87	1.43	54
	Total	.64	1.18	284
Sarkar	1	.79	1.30	125
	2	.81	1.22	115
	3	.41	.74	41
	Total	.74	1.21	281
Thorne Lake	2	.83	1.32	102
	3	1.09	1.73	100
	4	1.45	1.30	29
	Total	1.02	1.52	231
Snakey Lakes	1	.73	1.21	125
	2	.99	1.80	125
	Total	.86	1.54	250
Tuxekan	1	2.44	2.91	66
	2	1.09	1.66	125
	3	.38	.90	50
	4	1.11	2.04	87
	Total	1.26	2.09	328
Helm Bay	1	.77	1.31	109
	2	.56	1.05	39
	3	.62	.89	34
	Total	.70	1.19	182
Port Stewart	1	1.14	1.88	21
	2	.50	1.19	66
	3	.87	1.30	95
	Total	.77	1.35	182
Spacious Bay	1	.19	.40	31
	2	.04	.20	26
	3	.07	.29	104
	Total	.09	.30	161

Table 2. Mean pellet-group densities, by VCU, by transect, Spring 1999

VCU	Transect	Mean	Std. Deviation	N
Margaret	10	.31	.86	58
	11	.69	1.04	105
	25	.34	.83	101
	Total	.47	.94	264

Table 3. Mean pellet-group densities, by VCU, by elevation, Spring 1999

VCU	Elevation Category	Mean	Std. Deviation	N
North Douglas	0-500 feet	1.02	1.41	91
	500-1000 feet	1.14	1.39	130
	over 1000 feet	.75	1.23	52
	Total	1.03	1.37	273
Inner Point	0-500 feet	.96	1.41	183
	500-1000 feet	1.33	1.55	43
	over 1000 feet	1.69	2.25	13
	Total	1.06	1.50	239
Sullivan Island	0-500 feet	.68	1.27	56
	500-1000 feet	.40	.70	10
	Total	.64	1.20	66
Shelter Island	0-500 feet	1.75	1.92	254
	500-1000 feet	.81	1.17	36
	Total	1.63	1.87	290
Hawk Inlet	0-500 feet	1.27	1.65	90
	500-1000 feet	1.23	1.74	86
	Total	1.25	1.69	176
Pleasant Island	0-500 feet	1.82	2.01	223
	Total	1.82	2.01	223
Suntaheen Cr.	0-500 feet	1.02	1.77	112
	Total	1.02	1.77	112
Pavlof	0-500 feet	2.38	3.21	197
	500-1000 feet	.69	1.01	16
	Total	2.25	3.13	213
Finger Mountain	0-500 feet	3.16	3.09	142
	500-1000 feet	2.50	2.60	26
	over 1000 feet	.00	.	1
	Total	3.04	3.02	169
Nakwasina	0-500 feet	3.33	3.27	94
	500-1000 feet	3.41	4.06	41
	over 1000 feet	1.27	1.49	11
	Total	3.20	3.45	146
South Kruzof	0-500 feet	1.37	2.08	365
	Total	1.37	2.08	365
Big Level	0-500 feet	2.00	2.71	427
	Total	2.00	2.71	427
Little Level	0-500 feet	2.84	3.16	123
	Total	2.84	3.16	123

Table 3. Mean pellet-group densities, by VCU, by elevation, Spring 1999

VCU	Elevation Category	Mean	Std. Deviation	N
Woewodski	0-500 feet	1.04	1.34	79
	500-1000 feet	1.42	2.13	50
	over 1000 feet	1.69	1.87	67
	Total	1.36	1.77	196
Sokolof	0-500 feet	.91	1.52	328
	500-1000 feet	1.09	1.63	32
	Total	.92	1.53	360
Rynda	0-500 feet	.22	.66	181
	500-1000 feet	.40	.93	91
	over 1000 feet	.00	.00	8
	Total	.27	.75	280
Woronkofski	0-500 feet	.01	.10	105
	500-1000 feet	.18	.62	60
	over 1000 feet	.24	.43	51
	Total	.11	.41	216
Mt. Calder	0-500 feet	.23	.72	104
	500-1000 feet	1.00	1.53	31
	over 1000 feet	.73	.98	30
	Total	.46	1.01	165
Sarheen	0-500 feet	.69	1.26	234
	500-1000 feet	.44	.67	50
	Total	.64	1.18	284
Sarkar	0-500 feet	.74	1.21	281
	Total	.74	1.21	281
Thorne Lake	0-500 feet	.96	1.56	158
	500-1000 feet	.96	1.40	57
	over 1000 feet	1.81	1.33	16
	Total	1.02	1.52	231
Snakey Lakes	0-500 feet	.73	1.51	211
	500-1000 feet	1.67	1.65	30
	over 1000 feet	1.22	.83	9
	Total	.86	1.54	250
Tuxekan	0-500 feet	.93	1.69	249
	500-1000 feet	2.08	2.38	62
	over 1000 feet	3.12	3.89	17
	Total	1.26	2.09	328
Helm Bay	0-500 feet	.69	1.19	177
	500-1000 feet	.80	1.10	5
	Total	.70	1.19	182

Table 3. Mean pellet-group densities, by VCU, by elevation, Spring 1999

VCU	Elevation Category	Mean	Std. Deviation	N
Port Stewart	0-500 feet	.79	1.37	175
	500-1000 feet	.14	.38	7
	Total	.77	1.35	182
Spacious Bay	0-500 feet	.09	.30	161
	Total	.09	.30	161
Margaret	0-500 feet	.50	.97	242
	500-1000 feet	.21	.43	14
	over 1000 feet	.13	.35	8
	Total	.47	.94	264
Total	0-500 feet	1.20	2.02	5043
	500-1000 feet	1.15	1.86	877
	over 1000 feet	1.12	1.76	283
	Total	1.19	1.99	6203

MEMORANDUM **STATE OF ALASKA**
DEPARTMENT OF FISH AND GAME

To: Distribution **Date:** 5 June 1998

From: Mark Kirchhoff **Phone:** 465-4329
Wildlife Biologist
Div. Wildlife Conservation **Subject:** 98 Deer Survey
Douglas Results (preliminary)

1998 DEER PELLET SURVEY RESULTS

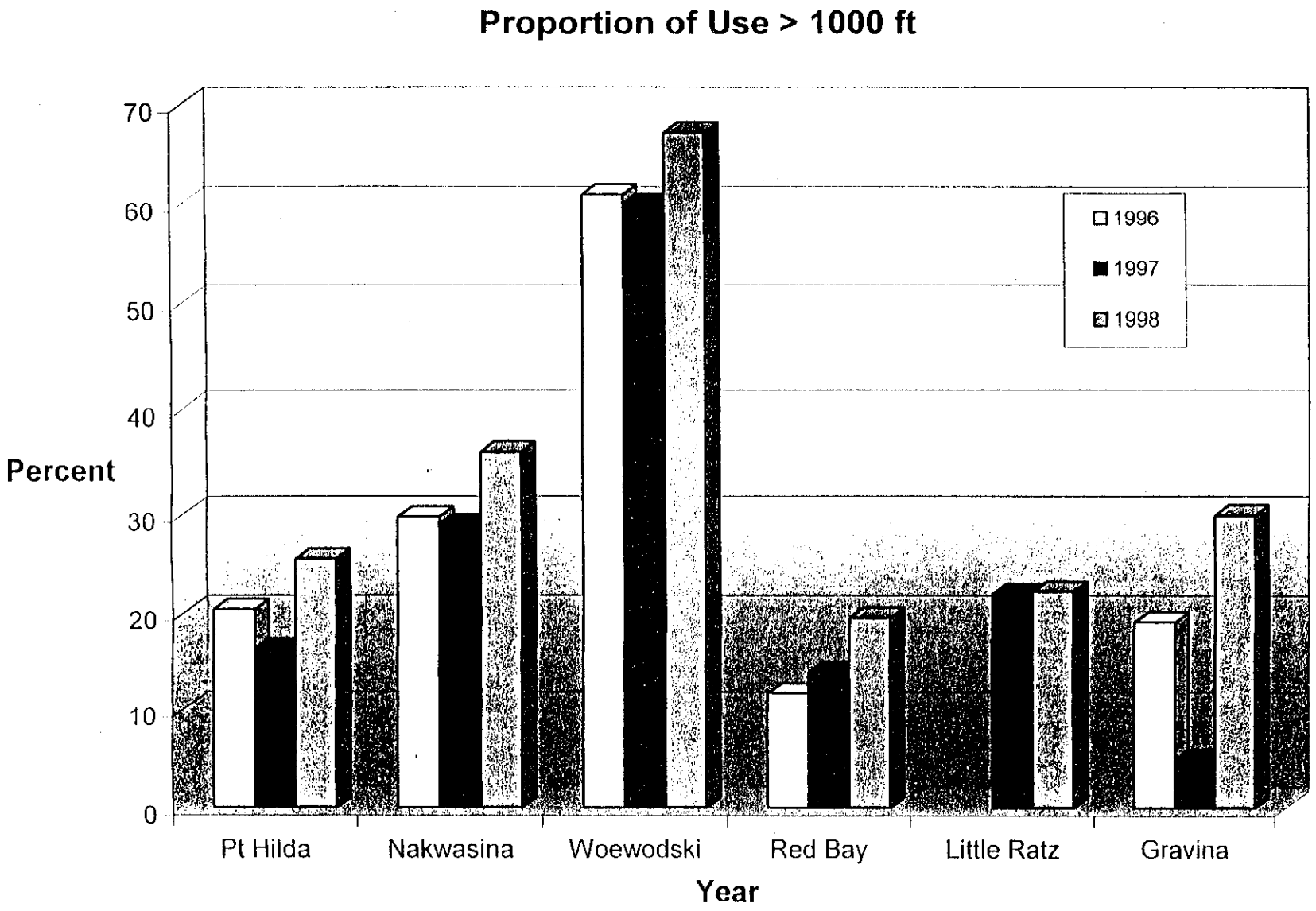
VCU	NAME	PLOTS	1998	PREVIOUS YEAR SURVEYED	PREVIOUS MEAN (PG/PLOT)
35	North Douglas	321	1.55	1997	1.43
36	Inner Point	280	0.84	1997	2.36
124	Lincoln Island	207	1.57	New	
162	Thayer Lake	308	2.13	1994	2.27
182	Pybus Bay	256	1.37	1995	1.48
189	Port Althorp	281	1.48	1994	1.31
190	Idaho Inlet	273	1.15	1994	0.71
249	Lisianski River	321	0.88	1995	0.70
271	Chichagof	309	1.39	1995	0.98
275	Cobol	219	2.19	1995	1.45
300	Nakwasina	217	3.00	1997	2.79
305	Sealion Cove	241	1.71	1997	1.76
435	Castle River	281	0.36	1994	0.32
437	E. Duncan	153	1.04	1992	0.78
442	Portage Bay	285	0.37	1995	0.43
448	Woewodski	282	1.10	1997	1.56
490	Horn Cliffs	250	0.59	New	
527	Protection	281	0.58	1997	1.15
532	Red Bay	283	0.73	1997	1.07
549	Sarheen	355	0.48	1997	1.00
554	Sarkar	312	0.29	1997	0.61
561	Warm Chuck	246	1.28	1997	1.21
575	Thorne Lake	316	0.87	1997	0.84
578	Snakey Lakes	225	0.71	1997	1.39

VCU	NAME	PLOTS	1998	PREVIOUS YEAR SURVEYED	PREVIOUS MEAN (PG/PLOT)
584	Little Ratz	282	0.78	1997	1.93
587	Tuxekan	353	0.48	1997	1.04
621	12 Mile	280	0.83	1997	1.45
625	Trocadero	267	0.97	1997	1.18
628	Pt. Amagura	325	0.93	1997	1.04
635	Port Refugio	315	0.73	1997	0.82
716	Helm Bay	232	0.44	1997	0.79
748	George Inlet	314	0.52	1996	0.98
752	Whitman Lake	209	0.47	1997	0.81
758	Carroll Point	125	0.54	1994	0.70
759	Moth Bay	176	0.68	1994	0.94
765	Dall Head	287	0.84	1996	1.07
769	Alava Bay	335	0.68	1996	0.93
999	Gravina	307	1.34	1997	1.71

Summary

During 1998, 38 watersheds, (or value comparison units - VCUs) were surveyed in Southeast Alaska. Overall, deer pellet-group densities were higher in Unit 4 (northern Southeast), about the same in Unit 3 (central Southeast), and lower in Units 1A and 2 (southern Southeast).

Although counts were down in southern Southeast, this appears to be the result of record mild winter weather which allowed deer to spend more time at higher elevations than usual. Analysis by VCU shows the proportion of deer use above 1,000 feet was consistently higher this year relative to previous years (Fig. 1). Therefore, direct comparisons with previous year's data will be confounded by this anomaly.


Proportion of Use > 1000 ft
70
60
50
40
30
20
10
0
Percent
1996
1997
1998
Pt Hilda
Nakwasina
Woewodski
Red Bay
Little Ratz
Gravina
Year

(Fig. 1)