ALASKA DEPARTMENT OF FISH AND GAME
JUNEAU, ALASKA

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DEER REPORT

by

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WORK PLAN SEGMENT REPORT
FEDERAL AID IN WILDLIFE RESTORATION

STATE: Alaska TITLE: Big Game Investigations

PROJECT NO: W-15-R-1 and 2 TITLE: Sitka Black-Tailed Deer

WORK PLAN J

JOB NOS: 1, 2, 3, 4

PERIOD COVERED: January 1, 1966 to December 31, 1966

ABSTRACT

Deer populations in Southeast Alaska and Prince William Sound remain at relatively high levels of abundance except for a few small areas. There is evidence that on Kodiak Island populations are lower than in 1965. A large proportion of deer taken in the hunter harvest continues to consist of older-age animals.

Winter mortality in all regions was slightly higher than average in 1966; however, losses were not of sufficient magnitude in most localities to noticably affect success during the following hunting season.

On Coronation Island, where deer-wolf relationships are being studied, the wolf population has declined from about ten animals in the summer of 1965 to two or three in 1966. Intraspecific strife is apparently taking place in the wolf population. The reduction in wolf numbers was coincident with decreasing availability of deer, which were previously their major food source.

Winter range use of Vaccinium ovalifolium averaged 58 percent in Southeast Alaska and 78 percent in Prince William Sound. Deer appear in relatively good balance with winter range production in the southern portions of Southeast Alaska, but use is higher than desirable in the Juneau and Sitka districts and in Prince William Sound.

Condition and trend transects were located in 36 areas of Southeast Alaska and five areas of Prince William Sound. These will be checked every three years to determine long-term changes in deer habitat.

The hunter harvest was about 12,300 deer in Southeast Alaska, 1200 in Prince William Sound and 700 on Kodiak Island. Success was better than average for most areas of Southeast and Prince William Sound, but poorer than anticipated on Kodiak Island.

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OBJECTIVES

To obtain and evaluate information on Alaska's deer populations including population status and trends, mortality factors, habitat conditions and hunter harvest.

TECHNIQUES

Populations

Deer pellet group plots, established in 1964 and 1965, were checked to determine the validity of the technique as a measure of deer abundance on winter range. Clusters of four 100-square-foot plots were located at 100-foot elevation intervals along transects extending from sea level to 1200 feet in Southeast Alaska and to 800 feet in Prince William Sound. All groups were counted in each plot, regardless of age. A 1000-square-foot check plot was used to determine rate of decomposition of pellet groups.

Aerial surveys were flown on Kodiak Island during winter months when snow cover was present and in Prince William Sound during late summer when deer were concentrated on alpine ranges.

Jaws were obtained from deer killed by hunters to determine age composition. This information was correlated with hunter success per unit effort, habitat conditions and mortality factors to evaluate population status.

Natural Mortality

Winter deer losses were determined by checking established transects located at sea level in deer wintering areas. Seventy-one transects were checked in Southeast Alaska, nine in Prince William Sound and ten on Kodiak Island. In each location (except Kodiak Island) one-half mile of beach fringe timber was searched for deer carcasses; on Kodiak Island transects varied from 1.5 to 6.5 miles in length. Field work in Southeast Alaska and Prince William Sound was accomplished by U.S. Forest Service personnel. Each carcass was

examined to ascertain sex, age and condition at death. Transects were checked in March and April.

The study of deer-wolf relationships on Coronation Island was continued. Wolf and deer abundance was evaluated by track observations and visual counts in August and February. Changes in vegetation were measured by seven 50-foot line intercept transects. All plants on each transect were recorded. Wolf scats were collected and analyzed for food content and searches made for wolf dens. Wolves were captured and marked by use of foot snares and immobilizing drugs.

Habitat

Winter range utilization was evaluated by measuring plant use on transects located in the same areas as the mortality transects described above. Twenty plants (Vaccinium ovalifolium and V. parvifolium) were checked on each one-half mile transect. Use is considered the percent of the total current annual twigs which have been clipped by deer. Field work was accomplished by U.S. Forest Service personnel. Transects were checked in March and April.

Condition and trend transects were located and measured in five areas of Prince William Sound and 36 areas of Southeast Alaska. These transects are designed to measure long-term changes in vegetative cover. Two transects, each 50 feet in length, are located in each area. All vegetation occurring on each transect is recorded. Forbs are recorded only as hits; total height and cover is measured for shrubs. Readings were made in July and August.

Sites were examined on which logging has occurred in previous years to determine if they would be acceptable for a study of the effects of logging on deer habitat. No further work was accomplished on this project.

Samples of preferred deer food species (Cornus canadensis, Fauria crista-galli and Vaccinium ovalifolium) were collected at monthly intervals in the vicinity of Prince William Sound. These samples were air-dried, labeled and stored for future nutrient analysis.

Hunter Harvest

Throughout the hunting season jaws were obtained from deer killed by hunters. Interviews were made in all major towns immediately after the close of the hunting season. Approximately ten percent of the licensed hunters were queried re success, effort, number and sex of deer taken and dates and locations of kills.

Acknowledgments

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FINDINGS

Southeast Alaska

Populations

The deer population of Southeast Alaska has remained at about the same level of abundance for the past five years although there have been local variations. Losses during the winter of 1965-66 were light except for Douglas Island and northern Seymour Canal on Admiralty Island. There is indication that in Unit 3 fewer deer are present than from 1959 to 1961; however, this is offset by increases in the southern portion of Unit 1. The reduction in Unit 3 places deer in better balance with their habitat as evidenced by lower winter range use values for the past three years. Hunter harvest statistics show that present levels of abundance are sufficient to provide good hunting. In 1966 the average hunter success was 75 percent with a take of 2.0 deer and an effort of 2.6 days per deer. Since 1959 hunter success has varied from 73 to 83 percent, deer per hunter from 1.7 to 2.3 and effort per deer taken from 2.4 to 3.6 days.

Age composition of deer in the hunter harvest continues to be dominated by older age classes. Table 1 shows age composition by unit for 1966 and Table 2 compares age composition for all Southeast Alaska from 1959 to 1966. A review of Table 2 shows hunting is not reducing the proportion of older age animals in the population, in fact, age classes 3 1/2 years through 5 1/2 were higher in 1966 than for previous years. Deer are sufficiently abundant in Alaska to allow hunters to be selective, most preferring larger deer. For this reason age classes represented in the hunter harvest are not a true indication of population composition. The degree of bias appears to remain constant, for data obtained over a period of ten years has consistantly shown that dominant age classes or large winter losses are reflected in age composition during succeeding years. We have also found a direct correlation between winter range use and the proportion of yearling animals in the following deer harvest. In 1966 the proportion of 2 1/2 year old deer killed was lower than usual resulting from relatively large fawn losses during the winter of 1964-65.

In 1964 ten deer pellet group transects were established in the vicinity of Petersburg. Each transect contained 48 100-square-foot circular plots. In 1964 an average of 35.1 groups were found per transect. In 1965 the average increased to 57.6. This change was not attributable to an increase in deer numbers, but rather to longer time spent on winter ranges. In 1964 a 1000-square-foot check plot was established to determine rate of decomposition of deer pellets. By spring of 1966 little decomposition of pellets dropped in 1964 had occurred. There was also a great deal of difference in rates of decomposition depending on the plant species deer were utilizing. From this information it was apparent that pellet groups must be removed from plots each year to obtain measures of deer abundance. In 1966 an attempt was made to establish permanent plots, clearing all old pellets from each plot. It was found too time consuming to locate the necessary number of transects with the present man-power and time available. In addition, the difficulty of correlating the number of pellet groups per transect with variation in time spent on winter range limits the usefulness of the technique. Hunter harvest

Table 1. Age composition of deer in 1966 hunter harvest, Southeast Alaska.

Unit	Age Class (% of total sample)						Sample Size
	Fawn	1-1/2	2-1/2	3-1/2	4-1/2	5-1/2	
1	1	6	13	21	49	10	68
2							2
3	4	20	6	29	32	9	153
4	3	10	6	20	33	31	39
All SE	3	15	7	25	37	13	262

Table 2. Age composition of deer in hunter harvest for Southeast Alaska, 1959-1966.

Year	Age Class (% of total sample)						Sample Size
	Fawns	1-1/2	2-1/2	3-1/2	4-1/2	5-1/2	
1959	3	19	30	20	21	7	281
1960	4	24	21	27	14	10	412
1961	3	23	22	26	19	7	703
1962	2	11	32	24	24	7	183
1963	2	16	11	37	27	7	106
1964	1	20	30	20	22	7	87
1965	0	16	19	35	24	6	148
1966	3	15	7	25	37	13	262

statistics, correlated with habitat conditions, winter losses and age composition, remain the best measure of deer status in Southeast Alaska.

A few deer are tagged each year as opportunity permits. Table 3 gives locations and dates of tagging and recovery and the distance the animals traveled after being tagged. Fourteen tag returns showed 11 traveled one mile or less; the other three traveled 3, 12 and 15 miles. One buck tagged as a fawn in June, 1962, was killed in November, 1966, within one-half mile of the site where it was originally tagged.

Natural Mortality

The winter of 1965-66 was quite severe in northern portions of Southeast Alaska, but mild south of Petersburg. The average number of dead deer per mile of beach searched was 1.0 compared to 1.5 in 1964-65. This is slightly higher than normal, but is not considered excessive. In 1955-56, 2.7 deer per mile of beach were lost; however, in 1958 hunting success was the highest on record. Table 4 gives winter mortality by area and Table 5, sex and age composition of carcasses examined. Losses were highest in northern Seymour Canal (Admiralty Island) and on Douglas Island. Losses were also higher than average in the vicinities of Sitka and Wrangell. Vary low values were obtained for the Petersburg, Ketchikan, and Craig areas.

Examination of deer-wolf relationships was continued on Coronation Island. In October, 1960, two male and two female wolves were placed on the island. The wolves had been obtained from a den as pups and were about 19 months of age at time of release. Coronation Island supported a moderate deer population of about 300 deer (10 per square mile). Observations since the transplant indicate the original deer population estimate was low, probably approaching 15 to 20 deer per square mile. After wolves were introduced deer decreased rapidly. By 1964 it was difficult to locate deer tracks and no deer have actually been observed since July, 1964. Wolves increased to a peak of nine to twelve individuals in 1964 and 1965.

Thirty days were spent on the island during February and August, 1966. In February, over 75 miles were traveled on foot, at which time no deer tracks were observed and only three wolves were accounted for. In August, 1966, six deer tracks were observed in the high country but none at sea level. Little evidence of wolves was present. Tracks of single wolves were seen on several occasions but these could be attributed to only two or three individuals. In August, 1966, no wolves were actually seen, but two or three were heard howling on one occasion. This was the first time since the release in 1960 that no wolves were sighted during a period spent on the island. In 1965 much-used wolf trails were present on many parts of the island. In 1966 these trails showed little use. In 1965 tracks of two pups were observed; however, in 1966 no evidence of denning or pups was located.

Vegetation transects located in 1963 were checked in August, 1966. Table 6 lists plant occurrence on these transects for 1963, 1965 and 1966. Little change was noted in most plant species between 1965 and 1966, in fact, occurrence for some species was less in 1966 than in 1965. This is probably because of increased size (several very small plants from one root system recorded as individuals in 1965 becoming single plant aggregates in 1966).

Table 3. Deer tag returns in Southeast Alaska.

Tag No.	Date Tagged	Date Returned	Sex	Location Tagged	Location Recovered	Distance Traveled
AGC - 116	1-52	8-53	Male	Ward Cove	Ward Cove	1/2 mi.
162	2-55	10-55	Male	1 mi. S Ptbg. Ck.	Ent. Blind Slough	12 mi.
175	3-56	11-56	Female	1 mi. N Skoogs Ck.	Skoogs Ck.	1 mi.
178	3-56	11-57	Male	Wrangell Narrows - opp. Fur Farm	Same - 1 mi. back	1 mi.
131	7-58	10-58	Male	Fur Farm	Fur Farm	1/2 mi.
ADFG - 1	11-59	9-61	Female	Fur Farm	Fall Ck. Mt.	1 mi.
2001	2-61	11-61	Female	Tonka Ck.	1/2 mi. S Tonka Ck.	1/2 mi.
2009	2-62	11-63	Female	Wrangell Narrows - opp. Fur Farm	Mi. 25, Mitkof Hwy.	15 mi.
2016	3-62	12-63	Female	1 mi. S Skoogs Ck.	Skoogs Ck.	1 mi.
2020	3-62	8-65	Male	1 mi. S Peterson Ck.	Peterson Ck.	1 mi.
2028	3-62	11-64	Female	Green Rocks	Marys Lake	1 mi.
2040	6-62	11-66	Male	Mi. 10, Mitkof Hwy.	Mi. 10, Mitkof Hwy.	1/2 mi.
2044	6-62	11-66	Female	Mi. 9, Mitkof Hwy.	Mi. 12, Mitkof Hwy.	3 mi.
2054	6-65	10-66	Female	Mi. 24, Mitkof Hwy.	Mi. 24, Mitkof Hwy.	1 mi.

Table 4. Winter mortality of deer in Southeast Alaska, 1965-1966.

District	No. of Transects (1/2 mile in length)	Deaths/Mile
Ketchikan	10	0.2
Kasaan	12	0.0
Craig	8	0.0
Juneau	13	2.8
Sitka	12	1.3
Petersburg	9	0.7
Wrangell	8	1.8
All Southeast	72	1.0

Table 5. Sex and age composition of winter killed deer in Southeast Alaska, 1965-1966.

Sex	Number	Percent
Male	6	17
Female	3	8
Unknown	27	75
Total	36	100

Age	Number	Percent
Fawn	21	58
Adult	7	20
Unknown	8	22
Total	36	100

Table 6. Plant occurrence on seven 50-foot line transects, Coronation Island, 1963, 1965 and 1966.

Plant Species	Number of Plants 1963	1965	1966
Acontium delphinifolium	0	0	1
Blechnum spicant	0	0	1
Cornus canadensis	97	218	181
Dryopteris austriaca	55	75	94
Dryopteris linnaeana	1	109	100
Listera cordata	74	113	33
Lysichitum americanum	0	0	1
Maianthimum dilitatum	17	43	38
Menziesia ferruginea	17	22	17
Moneses uniflora	14	15	9
Oplopanax horridus	0	0	2
Osmorrhiza spp.	0	0	1
Picea sitchensis	7	6	9
Polypodium vulgare	0	0	1
Prenanthes alta	0	0	2
Rubus pedatus	245	423	562
Rubus spectabilis	0	2	3
Streptopus spp.	97	139	89
Tiarella trifoliata	392	515	540
Tsuga heterophylla	17	45	44
Vaccinium ovalifolium	43	54	39

This is particularly true of perennials such as Vacinium ovalifolium and Cornus canadensis. There was a definite increase in size of perennials in 1966 and also an increase in number of plant species present.

Seven wolf scats were collected in August, 1966, compared to 110 in February, 1966 and 213 in July, 1965. Table 7 gives frequency of food items in wolf scats for a six-year period. From 1961 through 1965 deer was the major food item. In late 1965 deer apparently became difficult to obtain and miscellaneous items began constituting a larger portion of wolves diet. The occurrence of harbor seal (Phoca vitulina) in scats on Coronation Island is of special interest as seal are not generally considered an important food item for wolves. I am not certain how wolves obtain seals. Some may be carcasses which drift in to beaches; however, it is improbable that the amounts present could all be obtained in this manner. On occasion I have observed seals hauled out on beaches of the island up to 50 yards from water. Under these circumstances, wolves could probably take them. Frequency of seal in scats decreased from 53 percent in 1963 to 8 percent in 1965. This decline is possibly attributable to increased wariness of seals and a concurrent reduction in seal numbers. High market values for seal hides in 1964 and 1965 resulted in greatly increased hunting pressure over previous years.

In February, 1966, six scats contained only wolf remains and in August, 1966, two of the seven scats collected contained only wolf material. In February a wolf trail was noted which contained a considerable amount of blood. When deer became difficult to obtain wolves turned to other food sources. At the same time intraspecific strife apparently took place and the wolf population was rapidly reduced. We do not know if wolves actually killed wolves or whether mortality was from other causes. We do know that wolves were feeding on other wolves.

In February, 1966, two male wolves were captured in foot snares. These were weighed, measured, tagged and released. One animal weighed 64 pounds and was emaciated, the other weighed 100 pounds and appeared in good condition. The smaller male was recaptured on two subsequent occasions. Succinylcholine-chloride was used for immobilization. Six mg per 100 pounds was an effective dose.

Habitat

Range use by deer for the winter of 1965-66 averaged 58 percent (percent of total current annual growth of Vaccinium ovalifolium). This is two percent less than the average use since 1956 and eight percent less than for 1964-65. The Juneau and Sitka districts were the only areas where use exceeded 60 percent. Table 8 gives the transect locations and the average use for each transect and district in Southeast Alaska.

In 1963, a plot was established near Petersburg where Vaccinium ovalifolium was artificially clipped to simulate use of 0, 20, 40, 60, 80, and 100 percent. The plot is clipped each year in April. In 1965, little change in vigor was noted. Plots simulating 80 and 100 percent use showed some decrease in vigor, but had not become decadent. In April, 1966, all plants exceeding 60 percent

Table 7. Frequency of food items in wolf scats from Coronation Island, 1961-1966.

Year	No. Scats	Frequency (% occurrence in total scats)			
		Deer	Harbor Seal	Wolf	Misc.
1961	146	78	43		2
1962	18	89	48		11
1963	45	89	53		27
1964	77	95	32		14
1965	213	97	8	7	17
1966					
Feb.	110	53	18	10	66
Aug.	7	0.	14	29	57

Table 8. Deer winter range use, condition index and plant height for Southeast Alaska, 1965-1966.

Transect Number and Location	Average Percent Utilization	Average Condition Index	Average Plant Height
Ketchikan District			
1 Helm Bay	73	2.1	24
2 Carrol Inlet	67	1.9	32
3 Carrol Inlet	62	1.9	25
4 George Inlet	59	2.4	33
5 Gravina Island	55	2.1	34
6 Traitors Cove	22	1.8	52
7 Neets Bay	69	1.6	33
8 Spacious Bay	48	2.2	40
9 Bostwich Inlet	41	2.1	40
10 Thorne Arm	31	2.2	36
District Average	53	2.0	35
Kasaan District			
21 Polk Inlet	36	2.1	43
23 Thorne Bay	36	2.1	33
24 Thorne Bay	69	2.5	29
25 Moira Sound	30	2.3	34
26 Chomly Sound	62	2.1	27
27 Karta Bay	30	2.1	37
28 Hollis	2	1.9	36
31 Coffman Cove	45	1.9	27
32 Whale Pass	18	2.2	32
33 Salmon Bay	43	2.1	27
34 Red Bay	48	2.0	32
35 Union Bay	51	2.2	29
District Average	39	2.1	32

Table 8. (Continued)

Transect Number and Location	Average Percent Utilization	Average Condition Index	Average Plant Height
Craig District			
41 Warm Chuck Inlet	72	2.0	39
42 Port St. Nicholas	54	1.9	37
43 San Alberto Bay	66	2.1	42
44 Halibut Harbor	60	2.0	27
45 Shakan Bay	34	2.0	44
46 Naukati Bay	62	2.0	43
47 San Fernando Island	51	2.0	42
48 Trocadero Bay	45	1.9	50
District Average	56	2.0	41
Wrangell District			
61 Woronkofski Island (So.)	26	2.2	33
62 Thom's Place	50	2.2	31
63 Dewey Anchorage	44	2.3	28
64 St. John Harbor	61	2.3	31
65 Woronkofski Island (No.)	9	2.3	33
66 Anita Bay	62	1.9	29
67 Meter Bight	52	2.3	26
68 Eastern Passage	65	1.6	34
District Average	46	2.1	31
Petersburg District			
81 Wrangell Narrows	66	2.0	34
82 Big John Bay	48	2.0	31
83 Duncan Canal (E.)	60	2.2	34
84 Five Mile Creek	58	2.2	30
85 Totem Bay	46	2.0	24
86 Portage Bay	40	1.9	32
87 Ideal Cove	57	2.1	29
88 Duncan Canal (W.)	83	2.1	28
89 Three Mile Arm	30	1.6	30
District Average	54	2.0	30

Table 8. (Continued)

Transect Number and Location	Average Percent Utilization	Average Condition Index	Average Plant Height
Sitka District			
101 Ushk Bay	96	2.2	27
102 Nakwasina Passage	92	2.3	25
103 Hood Bay	80	1.8	32
104 Fish Bay	63	1.9	25
105 Port Krestof	71	2.0	24
106 Hanus Bay	83	2.1	27
107 Hoonah Sound	73	2.2	21
108 Chiak Bay	55	1.7	31
109 Michell Bay	45	1.8	27
110 Crab Bay	91	2.1	27
111 Long Bay	74	2.0	33
112 Peril Strait	76	2.0	21
District Average	75	2.0	27
Juneau District			
121 Pybus Bay	68	2.6	21
122 Mole Harbor	84	2.7	27
123 Pt. Hilda	64	2.7	23
124 Eliza Harbor	83	2.4	22
125 Gambier Bay	70	2.3	27
126 King Salmon Bay	78	2.5	24
127 Young Bay	85	2.1	26
128 Eliza Harbor	80	1.6	31
129 Glass Peninsula	70	2.2	25
130 Whitestone Harbor	81	1.7	27
131 Neka Bay	65	2.2	21
132 Barlow Cove	80	2.5	20
District Average	77	2.2	26

Table 8-a. Summary of deer winter range use by district for Southeast Alaska, 1965-1966.

District	Average Percent Use	Average Condition Index	Average Plant Height
Ketchikan	53	2.0	35
Kasaan	39	2.1	32
Craig	56	2.0	41
Wrangell	46	2.1	31
Petersburg	54	2.0	30
Sitka	75	2.0	27
Juneau	77	2.2	26
Average for all Southeast Alaska	58	2.1	31

use showed a decrease in vigor and those simulating 100 percent use were beginning to die. It appears that Vaccinium ovalifolium can support continuous use of up to 60 percent. This is exactly the average use in Southeast Alaska for the past 11 years. Fortunately high use does not occur each year, allowing plants opportunity to recover.

In August and September condition and trend transects were located in 36 areas of Southeast Alaska. These transects are designed to measure long-term trends in deer habitat. Transects will be checked at three-year intervals. All vegetation on each transect is recorded. Table 8 gives the location of each transect (same as utilization transects), Table 9 records plant species present and their abundance in August and September, 1966, and Table 9-a summarizes data for each district.

Hunter Harvest

Deer hunting was better than average for most areas of Southeast Alaska. Hunter statistics are given in Tables 10 through 13. The kill in 1966 was 12,300 compared to 10,000 in 1965. Hunter success averaged 74 percent and was highest near Petersburg and lowest near Wrangell. The average hunter took 2.0 deer with an effort of 2.6 days per deer. Females constituted 40 percent of the total kill, increasing each year since the first either-sex season in 1956.

Hunting pressure has remained relatively constant in Southeast Alaska since 1959. License sales have increased from 6,160 in 1959 to 7,970 in 1966 but at the same time the proportion of license holders who actually hunt has declined at about the same rate. During this period the kill has varied from a low of 10,000 to a high of 12,400.

Most of the kill is taken in Units 1 and 4, which contain the larger towns of Juneau, Sitka, and Ketchikan. The majority of hunting activity takes place late in the season when snow forces deer to lower levels. In 1966, 19 percent of the kill was in October, 51 percent in November and 19 percent in December. Hunting pressure continues to have little impact on most deer populations in Southeast Alaska. With the present liberal seasons and bag limits (August 1 through December 31, four deer of either sex) most hunters are able to take all the deer they want as evidenced by the statistics in Table 12.

Prince William Sound

Deer populations in Prince William Sound remain at fairly high levels in spite of heavy winter losses in some localities. Alpine aerial counts made in July and August are comparable with those made in 1965 (Table 14).

The winter of 1965-66 was relatively severe with abnormally low temperatures accompanied by heavy snow accumulation. Deer losses averaged 2.2 dead deer per mile of transect checked. The majority of losses were confined to Rocky Bay (Montague Island) and Port Etches (Hinchenbrook Island), while losses in other areas were negligible. Results of mortality surveys are given in Table 15. Four new transects were established bringing the total to nine.

Table 9. Plant occurrence on condition and trend transects in Southeast Alaska, 1966.

Ketchikan District

		Transect Numbers						
	Woody Plants*	1	2	5	8	9	10	Totals
1	Gaultheria shallon			13.1				13.1
2	Malus fusca	0.2						0.2
3	Menziesia ferruginea	3.9	10.2	5.6	7.1			26.8
4	Oplopanax horridus							
5	Picea sitchensis				0.3			0.3
6	Ribes triste							
7	Rubus parvifolium							
8	Rubus spectabilis							
9	Tsuga heterophylla	0.3	0.5	2.1	3.2			6.1
10	Vaccinium ovalifolium	6.6		3.4	5.7		0.5	16.2
	Totals	11.0	10.7	24.2	16.3		0.5	62.7
	Conifer Seedlings*							
11	Picea sitchensis							
12	Thuja plicata							
13	Tsuga heterophylla	15	2		1			18
	Totals	15	2		1			18
	Forbs*							
14	Achillea borealis							
15	Circaea alpina							
16	Clintonia uniflora		17				5	22
17	Coptis spp.							
18	Cornus canadensis	33	1	30	110			174
19	Ferns spp.	9	49		13	9	6	86
20	Lathyrus martinimus							
21	Listera spp.	8			1	1		10
22	Lysichitum americanum	2	4		19	1		26
23	Maianthimum dilitatum		25	2	10	4	1	42
24	Moneses uniflora							
25	Prenanthes alta							
26	Rubus pedatus	23		2	22			47
27	Streptopus spp.		2	6	39			47
28	Tiarella trifoliata							
	Totals	75	98	40	214	15	12	454

* Woody plants are recorded as total coverage in feet per 100 foot transect. Forbs and conifer seedlings by number of plants per 100 foot transect.

Table 9. (Continued)

Kasaan District

	Transect Number						
Woody Plants	21	23	25	27	33	35	Totals
1			71.7				71.7
2							
3			1.7	1.7	2.5	0.3	6.2
4							
5							
6							
7							
8							
9	0.2		0.9	3.4	6.9		11.4
10	7.7	8.6		10.1	9.3	3.3	39.0
Totals	7.9	8.6	74.3	15.2	18.7	3.6	128.3
Conifer Seedlings							
11						1	1
12	2						2
13	4		1	23	2	3	33
Totals	6		1	23	2	4	36
Forbs							
14							
15							
16	12						12
17							
18	32				6		38
19	2		23		48		73
20							
21		1			3	1	5
22							
23	13		12	2	12		39
24							
25					1		1
26	2				5		7
27							
28							
Totals	61	1	35	2	75	1	175

Table 9. (Continued)

Craig District

	Transect Number							
Woody Plants	41	42	43	44	45	46	47	Totals
1								
2							1.5	1.5
3	3.1		0.1	0.1				3.3
4			10.4		1.1			11.5
5			2.3					2.3
6								
7						5.4		5.4
8					2.6			2.6
9	17.3				3.3			20.6
10	14.2	3.1	5.0	1.7	2.2	0.4	0.5	27.1
Totals	34.6	3.1	17.8	1.8	9.2	5.8	2.0	74.3
Conifer Seedlings								
11								
12								
13	1	2			1			4
Totals	1	2			1			4
Forbs								
14								
15								
16								
17								
18	49				1	217		267
19		1	11	40	1	96	4	153
20								
21								
22	1				2			3
23	13	1	64	7	48	54	1	188
24			4					4
25			13	50		7		70
26	3		11		7	24	1	46
27	11		80			11	10	112
28			4	31	4			39
Totals	77	2	187	128	63	409	16	882

Table 9. (Continued)

Wrangell District

Woody Plants	Transect Number 61	62	66	67	Totals
1					
2					
3	0.2	1.2	6.5	3.1	11.0
4				4.8	4.8
5				0.4	0.4
6					
7					
8					
9			0.3		0.3
10	3.2	9.0	10.0	2.8	25.0
Totals	3.4	10.2	16.8	11.1	41.5
Conifer Seedlings					
11				2	2
12					
13					
Totals				2	2
Forbs					
14					
15					
16				1	1
17		3			3
18		10	146		156
19	13		1	180	194
20					
21		2			2
22					
23	6	8	13	6	33
24			1	12	13
25					
26		6	7		13
27		1	8	7	16
28				15	15
Totals	19	30	176	221	446

Table 9. (Continued)

Petersburg District

	Transect Number			
Woody Plants	81	83	88	Totals
1				
2				
3	2.6	0.1	3.6	6.3
4		0.1		0.1
5				
6				
7				
8				
9				
10	11.8	2.3	9.4	23.5
Totals	14.4	2.5	13.0	29.9
Conifer Seedlings				
11	1	3		4
12				
13				
Totals	1	3		4
Forbs				
14				
15				
16	2			2
17	21			21
18	9	3		12
19	3	11	88	102
20				
21				
22	2		1	3
23		3	2	5
24	2			2
25				
26	18	4		22
27	5	9		14
28				
Totals	62	30	91	183

Table 9. (Continued)

Sitka District

Woody Plants	Transect Number 102	105	107	109	110	Totals
1						
2						
3	1.2	0.5				1.7
4			27.5			27.5
5					0.6	0.6
6			3.7			3.7
7			0.5			0.5
8						
9						
10	5.0	1.7		0.6	9.7	17.0
Totals	6.2	2.2	31.7	0.6	10.3	51.0
Conifer Seedlings						
11					1	1
12						
13	2				13	15
Totals	2				14	16
Forbs						
14						
15						
16			2	1		3
17	54					54
18	43	3		4		
19		8	4		37	49
20						
21						
22						
23	2		320			322
24		2			6	8
25	15	1	20			36
26	60	5		4	3	72
27	2	1	11	6		20
28	4	3				7
Totals	180	23	357	15	46	621

Table 9. (Continued)

Juneau District

	Transect Number					
Woody Plants	121	122	123	127	129	Totals
1						
2						
3	0.2	1.8	2.5	6.6	2.3	13.4
4		3.0	8.5	7.8	13.2	32.5
5						
6						
7						
8						
9						
10	4.4	0.1	1.0	4.5	42.2	52.2
Totals	4.6	4.9	12.0	18.9	57.7	98.1
Conifer Seedlings						
11	1	1				2
12						
13	12			4	5	21
Totals	13	1		4	5	23
Forbs						
14	1					1
15	7					7
16			1			1
17				5	27	32
18			3	4	152	159
19	34	95	73	161	50	413
20	2					2
21					4	4
22			4			4
23	4	19	29	98	37	187
24	9	6			1	16
25	21	3		2		26
26		1	20	3	39	63
27	3	12	19	8	3	45
28	4	3	1		5	13
Totals	85	139	150	281	318	973

Table 9-a. Summary of plant occurrence on condition and trend transects in Southeast Alaska, 1966.

	Districts							
	Ketchikan	Kasaan	Craig	Wrangell	Petersburg	Sitka	Juneau	
Woody Plants								**Totals**
1	13.1	71.7						84.8
2	0.2		1.5					0.2
3	26.8	6.2	3.3	11.0	6.3	1.7	13.4	68.7
4			11.5	4.8	0.1	27.5	32.5	76.4
5	0.3		2.3	0.4		0.6		3.6
6						3.7		3.7
7			5.4			0.5		5.9
8			2.6					2.6
9	6.1	11.4	20.6	0.3				39.9
10	16.2	39.0	27.1	25.0	23.5	17.0	52.2	185.8
Totals	62.7	128.3	74.3	41.5	29.9	51.0	98.1	485.8
Conifer Seedlings								
11		1		2	4	1	2	10
12		2						2
13	18	33	4			15	21	91
Totals	18	36	4	2	4	16	23	103
Forbs								
14							1	1
15							7	7
16	22	12		1	2	3	1	41
17				3	21	54	32	110
18	174	38	267	156	12	50	159	944
19	86	73	153	194	102	49	413	982
20							2	2
21	10	5		2			4	21
22	26		3		3		4	36
23	42	39	188	33	5	322	187	816
24			4	13	2	8	16	43
25		1	70			36	26	133
26	47	7	46	13	22	72	63	270
27	47		112	16	14	20	45	254
28			39	15		7	13	74
Totals	454	175	882	446	183	621	973	3734

Table 10. Deer harvest statistics for Southeast Alaska, 1966.

	Juneau	Ketchikan	Petersburg	Sitka	Wrangell	Other*	All SE
% Hunter Success	78	79	82	73	64		75
Deer/Hunter	2.0	2.1	2.4	2.0	1.4		2.0
Days/Deer	2.3	3.2	2.4	2.1	3.4		2.6
% Kill Female	45	38	39	35	43		40
License Sales	2740	2200	870	1120	520	520	7970
% Who Hunted	80	67	83	78	78	79	79
Actual Hunters	2190	1470	720	870	410	410	6070
Total Kill	4380	3090	1730	1740	570	820	12,330
Sample Size	100	100	100	100	100		500

*Sample from villages was too small to be used in 1966. Statistics are estimates based on averages for SE Alaska.

Table 11. Summary of deer harvest statistics for Southeast Alaska, 1959 - 1966.

Year	License Sales	Actual Hunters	Hunter[1] Success	Deer/ Hunter	Days/ Deer	% Kill Female	Total[2] Kill	Range[3] Use	Winter[4] Mortality
1959	6160	?	74	1.8	3.6	24	11,000	74	0.2
1960	6460	5800	83	2.3	2.9	21	12,400	66	0.1
1961	6620	5800	77	2.2	3.1	26	11,200	57	0.1
1962	6900	5800	74	2.0	3.2	34	11,000	75	1.0
1963	7100	5400	79	2.0	3.0	33	11,100	43	0.1
1964	7100	3500	80	2.0	2.4	31	10,000	52	0.7
1965	7430	5900	73	1.7	2.8	38	10,000	66	1.4
1966	7970	6100	73	2.0	2.6	40	12,300	58	1.0

[1]Percent of hunters taking at least one deer.

[2]Weighted by number of hunters in each town sampled.

[3]Percent use of current years growth.

[4]Dead deer per mile of beach fringe searched.

Table 12. Deer kill by town and unit for Southeast Alaska, 1966.

	Unit				
Town	1	2	3	4	All SE
Juneau	521		574	3285	4380
Sitka				1740	1740
Ketchikan	3090				3090
Petersburg	52		1564	114	1730
Wrangell	38		532		570
Other		500		320	820
All SE	3700	500	2670	5460	12,330

Table 13. Chronological distribution of 1966 deer kill, Southeast Alaska.

	% of Total Kill Taken in Each Month				
Town	August	September	October	November	December
Juneau	5	2	11	53	29
Sitka	4	1	19	61	15
Ketchikan	2	18	31	31	18
Petersburg	5	6	16	56	17
Wrangell	6	24	30	30	10
All SE	4	7	19	51	19

Table 14. Aerial deer counts for Prince William Sound, 1965 and 1966.

Date of Count	Location		
	Hawkins Island	Hinchenbrook Island	Montague Island
7-25-65	73	257	51
8-26-65	20	175	134
7-17-66		100	
7-19-66			74
8- 1-66	65		
8- 9-66		241	
8-13-66			166

Table 15. Winter range use and mortality for Prince William Sound, 1965 - 1966.

Transect Location	Utilization (%)	Condition Index	Plant Height	Winter Mortality (Deaths/Mile)
Windy Bay	85	2.2	33	0
Port Etches	63	2.5	25	6
Rocky Bay	88	2.5	25	12
Port Chalmers	71	2.4	28	0
Green Island	84	2.5	26	0
Canoe Pass	61	2.4	25	0
Ziakoff Bay	84	2.4	27	0
MacLeod Hbr.	70	2.4	31	2
Hawkins Cutoff	94	2.5	26	0
All PWS	78	2.5	27	2.2

Winter browse utilization averaged 78 percent with a low of 61 percent at Canoe Pass and a high of 94 percent on the Hinchenbrook Island side of Hawkins Cutoff. Utilization data is presented in Table 15. Use was higher in all areas than in 1965 except for Green Island. Browse species showed a decrease in vigor from 2.1 in 1965 to 2.5 in 1966, based on a scale of 1 to 3, with 3 being a decadent plant. A reduction of deer numbers on Hinchenbrook and Montague Islands would be beneficial because of the present deteriorating range conditions.

Poor weather conditions during the regular hunting season resulted in a lower kill than in 1965 (880 compared to 1,170). Consequently a special two-week season was opened in January, 1967; success was excellent, hunters taking an additional 340 deer. Hunter statistics for the 1966 season in Prince William Sound are given in Table 16 (does not include deer taken in special season). The average hunter took 1.7 deer with an effort of 2.3 days per deer. Kill distribution was: Hawkins Island, 48 percent; Hinchenbrook Island, 38 percent; Mainland, 9 percent; Montague Island, 2 percent; and Eastern Prince William Sound, 3 percent. Older age animals continue to be dominant in the kill. Age classes are shown in Table 17.

Kodiak Island

In the Kodiak area deer populations may be down somewhat from 1965. Aerial counts made in February, 1967, are much lower than those made in January and March, 1966. Hunter success was also lower in 1966 than in 1965. Summary of aerial counts is given in Table 18. The decrease in deer numbers is not attributable to excessive hunting pressure as success was lower in areas which receive little hunting as well as high pressure localities.

Winter mortality on Kodiak was higher than normal in 1965-66, averaging 1.1 dead deer per mile of transect. Mortality data is presented in Table 19. Most of the losses were on Chiniak Peninsula which also received the heaviest hunting pressure. Composition of mortality was: fawns, 30 percent; yearlings, 3 percent; five years and older, 34 percent; and unknowns, 34 percent. Sex composition of mortality was: females, 33 percent; males, 33 percent; and unknowns, 34 percent. Most of the unknowns were fawns.

Hunter harvest statistics for 1966 are given in Table 20, 21, and 22. Hunter success was only 42 percent compared to 64 percent in 1965. The average hunter took 0.6 deer with an effort of 9.3 days per deer. The estimated total kill was 720 compared to 1,050 in 1965. Females comprised 40 percent of the kill. The only area on Kodiak Island which produced more deer in 1966 than 1965 was along the road system which has been restricted to bucks-only since 1964. This area provided 3 percent of the total kill in 1965 and 12 percent in 1966. It appears that the deer population is increasing as a result of the restriction.

In view of the low counts and poor hunter success on Kodiak Island in 1966, this area should be closely watched to determine if further restrictions are necessary.

Table 16. Deer harvest statistics for Prince William Sound, 1966.

% Hunter Success	69
Deer/Hunter	1.7
Days/Deer	2.3
% Kill Female	38
License Sales	630
Actual Hunters	520
Total Kill*	880

* An additional 340 deer were taken in a special two week season in January, 1967.

Table 17. Age composition of deer kill in Prince William Sound, 1966.

Age Class	% of Kill
Fawns	18
1-1/2	9
2-1/2	20
3-1/2	27
4-1/2	18
5-1/2	7

Table 18. Deer aerial counts on Kodiak Island, 1966 - 1967.

		Date of Count		
		1-66	3-66	2-67
Plot No.	Area	No. Deer	No. Deer	No. Deer
1	Chiniak	48	12	2
2	"	5	5	4
3	"	8	16	2
4	"	2	9	0
5	"	0	0	0
6	Sharatin	22	14	0
7	"	28	8	9
8	Kekur Point	17	30	2
9	Kupreanof	11	8	8
10	"	6	5	0
11	"	4	4	0
12	Monaska	3	1	1
13	"	0	5	0
14	Heitman	4	1	3
15	Broad Point	1	3	0
16	Salonie	2	0	0
17	Cliff Point	10	12	2
18	Portage	10	12	20
19	Kalsin	2	0	0
Total Count		183	154	53

Table 19. Winter deer mortality statistics for Kodiak Island, 1965 - 1966.

Transect Location	Transect Length (Miles)	Deaths/ Mile
Portage Bay	3.0	0.7
Uganik Island	1.5	0.7
Chiniak Peninsula	8.5	2.1
Womens Bay	2.5	0.8
Sharatin Peninsula	6.5	0.5
Monaska Bay	5.0	0.8
All Kodiak	27.0	1.1

Table 20. Hunter harvest statistics for Kodiak Island, 1965 and 1966.

	1965	1966
% Hunter Success	64	42
Deer/Hunter	1.1	0.6
Days/Deer	5.9	9.3
% Kill Female	38	40
License Sales	1200	1480
Actual Hunters	950	1180
Total Kill	1050	720

Table 21. Deer kill by area for Kodiak Island, 1966.

Area	% of Kill	Total Kill
Monaska-Spruce Island	13	95
Road System	12	85
Chiniak	44	315
Sharatin-Kupreanof	26	185
Afognak-Whale Island	6	40
Total Kill		720

Table 22. Age composition of deer kill on Kodiak Island, 1966.

Age Class	% of Kill
Fawns	11
1 1/2	26
2 1/2	14
3 1/2	10
4 1/2	20
5 1/2	19

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