FWLB 1234



1954 SUMMER REPORT

by: W.K. CLARK Biological Aid

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Alaska Resources Library & Information Services Anchorage Alaska BEAR STUDY - KARLUK LAKE, 1954

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BEAR STUDY - KARLUK LAKE, 1954

I. INTRODUCTION

The 1954 season was spent mainly in attempting to census and mark bear to study movement. Also bear-salmon relationship and food studies were continued.

II. BEAR DATA

POPULATION DETERMINATION

1. SIGHTINGS

As in 1952, records of all bear sighted were kept by the writer, as well as by other FWS and FRI employees. And as before, there were many duplications recorded. Sightings by the author totalled 242. Details of individual bear or groups were noted in an attempt to prevent counting the same bear more than once. In the following table the only chance of the same bear being counted twice would occur due to its traveling considerable distances in a short time.

1. Clark, W.H. Bear-Salmon Study - Karluk Lake, 1952

TABLE I.

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A. BEAR SIGHTINGS BY WRITER

	Large No ² cubs	Sub-Adult	Sub-AdAd.	Adult	
AREA	age	2 yrs. 3 yrs	e (Med. Size)	(M Prob.)	TOTAL
Canyon - O'Malley	F&l ¹	2			4
Cascade	F& 3 ²	1		· · · · ·	6
Barabara Pt.				1	1
Long Pto				1	1
Meadow	F & 1 ¹ F & 2	2	1		8
Halfvay					
	F & 3 ²	4 1	1	1	18
Grassy	F & 4 ¹	1	1		7
Moraine			1	,	1
Cottonwood	F & 1 ³	1 3	2	3	11
Alder	F & 1 ²	, · · ·			2

TABLE I.

A. BEAR SIGHTINGS BY WRITER (CONTINUED)

		Large Noz cubs	Sub-A	dult	Sub-Ad-Ad.	Adult	
AREA	La seconda de la constante de la	r & Small NOT year age	01. <u>2 yrs.</u>	<u>3 yrs.</u>	(Med. Size)	(M. Prob.)	TOTAL
Thursb	(Lower)	$F \& 2^{1}$ $F \& 3^{1}$ $F \& 2^{2}$ $F \& 2^{2}$					
		F & 2 ³	2	5	3	3	29
Thumb	(Upper)	F & 2 ² F & 2 ²		2	6	Ą	18
GRA <u>CT</u>	,	7 F & 16 ¹ 8 F & 17 ² 2 F & 3 ³	ад Маар иши из цермация (АМари VIII-740). 19	an Underste und Stagenannen under Anfrei		2019-00-09-09-09-09-09-09-09-09-09-09-09-09	105
		17 F & 36 53	7	17	16	13	106

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TABLE I.

B. BEAR SIGHTINGS BY OTHERS²

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52

	F &	Large	No2	cubs			Sub-l	ådul (Ŀ	Sub-A	d-Ad	Adult	
AREA		Small	Noz ;	age		<u>2 y</u>	rs.	3	vrs.	(Ned.	Size)	(M.Prob.)	TOTAL
Terluk Liver	ø				** * * ,	е (,	•			1. A. 1. 1		1 ^{₩?}	2
Tent Pt.	F	& 1 ²				~			•	•			, 2
Canyon - O'Malley	F	$\frac{32}{44}$								۰.		3 ·	11
Cascade	F	& 2?								× .			3
Meadow	F	& 2 [?]											3
Long Pt.	F	& 2 [?]									•		3
Moraine				*				2					2
antitionen en et an antite fan antite het en en antite en antite en antite en antite en antite en antite en anti	2 F 3 F	& 8 ² & 6 [?]	a ing ang ang ang ang ang ang ang ang ang a	nta (1999) - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -			n Ohrling with a real parts				1990/1975-12902-1994-1994 -1994	RADULE HILL SHALL SHA	Ref. III Tanacio (Il jungi) (III Ta
	5 F	& 14 19		¥	· .				2		1	4	26

F Killed by Wysor June 24^(?)1954

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2. Walker, Charles. Fisheries Research Institute, Observations

One of the main areas of concentration, Canyon -O'Nalley, was not visited as often as desirable and a low count resulted, Luckily, sight records were kept by Fisheries personnel. The data taken from the last of May until August first by Charles Walker of Fisheries Research Institute totaled 49 sightings. Of these, 26 were unduplicated bear seen in Canyon - O'Malley and other areas where tracks were numerous but few animals observed by the writer. To the moment no records have been received from other personnel, and even so would be quite duplicative since FWS and FRI combined stream surveys and other trips.

Thus with the addition of the 26 to 106 the number 132 approximates the apparent population - reckoned before September 16, the start of the hunting season.

2. COMPARISON

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> In the following table comparison of sightings and estimates for 1952-54 is shown.

TABLE II.

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a. BEAR POPULATION ESTIMATES - KARLUK LAKE, 1952 - 1954

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Year	Period	Sightings by Total	Investigator Total Less Duplications	Sightings of Other Bear By Othors Tracks, etc.	Estimate	Bear per Sq. Mile
1952	july 27 - Oct. 15	239	124		124	1.55
1953 ³	July 11 - Aug.31	76	64	51	115	1.44
1954	July 7 - Oct. 1	242	106	26	132	1.65

The estimates would indicate that the population is apparently holding its own. It is felt by the writer that the figures are minimum, since some areas showed tracks where few or no bear ware seen e.g. Spring Creek, Moraine Creek, etc. It is noted that the 1953 estimate included nearly one-half the total based on "track" data chiefly.³ Also, during that season bear were scarce on the streams probably because of the early ripsning of elderberries.

The difference in length of time spent means little, as long as most of July and August are included. This is when most bear are seen and individualism noted. During September and early October bear are hard to find and hardly a new one is added to the list. Also growth of new fur changes characteristics and might result in duplication.

b. DENSITY

Bear per square mile was reckoned by taking the figure of 80 as approximately the area that surrounds the lake and used by the animals. The lake is 12 miles long and roughly a distance of $2\frac{1}{2}$ miles on each side of it figured as range. 4 miles were added to the length to cover 0 Malley Lake and the Karluk River

3. Grogan, Frank. Bear-Salmon Study, Karluk Lake 1953

section. Thus multiplication of 16 by 5 gives an area of 80 square miles.

The density varies little for the three years, roughly l_2^1 bear per square mile.

c. HUNTING PRESSURE

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Bear kill for the three years has not varied greatly and although that for the current year is not final it appears not to be higher, as shown below.

> TABLE III. BEAR KILL

 1952
 19

 1953
 23

 1954
 15 (not complete)

The present shorter season should help to keep the pressure from becoming excessive of the present trend to heavier hunting continues.

3. COMPOSITION

a. GROUPS AND SINGLES

Table I (A & B) has been used to determine the apparent composition of the present Karluk Lake population as shown below.

TABLE IV.

a. GROUPS

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•				Sub-adults
	No. of Group	<u>No. of</u> Sows	<u>Individuals</u> Cubs	No.Groups No. Indiv.
l cub family	4 (1)	*4(1)	4(1)	
2 cub family	8 (3)	8(3)	16(6)	1(1) 2(2)
3 cub family	41	41	12(3)	1 3
4 cub family	1(1)	1(1)	4(4)	
	17 &(6)	17 &(5)	36 &(14)	2 &(1) 5 &(2)
	23	22	50	3 7
			TOT	AL 26 groups 79 bear
b	SINCLES	· , ,		
Sex	Sub-adults	Sub-ac	dult-Adult	Adult
Unknown Male, probabl	19 T		16(1)	13(4)
· · · · · · · · · · · · · · · · · · ·	19		16 &(1) 17	13 & (4) 17
☐ Killed by W * No parent Parenthes	ýsor heses - obser es - observed	ved by au I by C. Wa	uthor alker, etc	TOTAL 53 singles GREND TOTAL 132

As in 1952, females with 2 cubs were most numerous eleven of the total of 23, while five had 3 and also singles whereas two were seen with 4 young. The cub/female ratio for 1954 is 2.17 which compares with 2.13 for 1952. Probably 2.1[&] would be a better figure to use for practical purposes.

Again as in 1952 the crop of cubs approximates two dozen per year. If hunter-kill does not go above 20 per year (allowing at least 4 that may die from other causes) then the population should be sustained; providing the sex-ratio of the take is at least 1 to 1. If too many females are taken, of course decimation will result. A way to prevent this would be to prohibit the taking of any members of a sow-cub group. This procedure would help maintaina breeding stock of females as the hunting pressure increases.

An even more drastic measure would be to allow only the shooting of lone bear. Besides protecting the females, higher sporting standards would be enhanced resulting in larger trophies for it appears that the older and larger a bear the more solitary, except of course during the breeding season. The only other time gregariousness seems evident is during the fishing period when one tolerates another on the same stream if not too close. It is noted by the writer that resident hunters usually try for the first bear available and often this means a sow or cubs. Mon-residents are generally after a larger trophy.

The inclusion of a sub-adult-adult class in Table IV b was necessary to take care of a number of lone bear seen under poor conditions of light, distance, etc., resulting in indefinite indications of size. Due to their medium size, some cubless adult females might be included in this class, as well as in the subadult class.

The adult (large) class should contain chiefly males.

b. BEAR UNITS

In 1952 the writer, using the total population divided by the number of groups and individuals, "bear units" - tried to evolve a constant that might be used in other areas on plane, beat or other fast surveys/ On these surveys each mother - cub family and each lone bear would be counted as one, to be multiplied by this constant to allow for smaller cubs, etc., possibly missed on these rapid surveys. In 1952 the constant was 1.8, this year 1.7. Thus, if three lone bear are seen in a drainage 3 x 1.7 would indicate 5.1 whereas a sow with 2 cubs would show as 1.7. This constant would be most valuable when an extensive area is covered in a short time. The more bear seen, the nearer this method would come to an actual count.

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From further intensive surveys another figure could be worked out to allow for bear not seen at all on these fast surveys. This would be variable according to time of year, time of day, weather, condition and type of vegetation, food supply, human activity, etc.; in other words, complicated and practically impossible to find true figures to cover all conditions, but approximations could be found. The value would be low in April and May when visibility is good due to less foliage, in July and August when bears on streams; and after mid-October when foliage decreases again. Within these periods it would very according to the other conditions as time of day, weather, etc.

To arrive at usable figures, many test surveys coupled with continuing ground counts would need to be made.

c. AGE CLASSES

The various classes are the same ones used in 1952 plus the sub-adult-adult mixed as follows.

TABL	S V.
THE ALCOLOGY PRIME	

	<u>1952</u>		<u>19</u>	54
	No.	×	No.	56
In 1st & 2nd years - cubs	51	41	50	38
In 3rd & 4th years sub-adults	37	30	26	20
In 4th year & 4 ^{&} -sub-adults- adults			17	13
Beyond 4th year - adults (24) (12	36 F and M)	29	39 (22 F and (17 M)	29
	124		132	

Of the 50 cubs seen with sows,

16 were of the current year.

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25 were yearlings - in their necond year

3 were probably in their third year

6 were not assigned but presumed to be of this season (Table I,B)

In addition 7 motherless small bear were thought to be in their second year because of their size, although of course there was no way of comparing with an adult female. In the Table above these 7 are included in the sub-adult group. No lone bears were observed this year that seemed younger than yearlings. The writer feels that yearling cube easily get along all right if they should lose their mother. Younger cubs probably would have a harder time but should be able to survive as long as food is available.

A heavily lactating female died on September 25, after running a considerable distance from where it was first hit. Hunters said they heard cubs crying the next day, but not close to the mothers body. When the author was in the vicinity on the second day, the cub or cubs were neither seen nor heard. If more than one they should be alright, for other motherless couples and tries have been seen. If a lone cub, probably loneliness would be a factor affecting survival. The greatest dangers to these little fellows are man and the bears.

Comparison of 1952 and 1954 figures (Table V.) shows the percentage of the various age groups to be similar.

The number of females can be expressed quite accurately because of the presence of cubs. When cubless, old females can be told by slow movements and stocky appearance. The same plus largeness usually indicates old males. The lankiness, faster actions and medium size of the sub-adult group is characteristic. Probably the majority are males. This group appears to bear the brunt of hunting pressure due to their activity and roaming tendencies.

4. NEARBY AREAS

Trips into adjoining drainages by the author indicated fair populations, but with few exceptions not as high as that in Karluk Lake area. The exceptions were Dog Salmon Creek, Connecticut Creek, and an area north west of Karluk Lake that drains into Karluk River.

Fraser, Akalura, Ayakulik (Red River) and Bare Lakes were checked as well as nearby sections of Uyak Bay and Dog Salmon Creek. These hikes took place during late July and the month of August, when "vegetative" trails are noticoable on the slopes and bear are concentrated near salmon streams.

B. MOVEMENT

1. GENERAL

The bear generally seemed to behave in this respect no different than they did in 1952.

Early in July they were seen at and above alder line, as well as along the lake shore. From mid-July until mid-August most were observed in stream areas. Then they seemed to disappear, But as in 1952 this period coincided with ripening of elderberry, Sambucus racemosus pubens.

A few climbs through the alder-elderberry tangles indicated intensive ussine use of the plentiful berries. With no frost until late September the fruits remained in good condition and seemed to hold the bear close by, in spite of numerous beach and Thumb - Canyon - O'Malley stream spawning fall run red salmon.

2. DAILY

Amount of daily travel depended on type of food being used. In the early spring grazing period, continual roaming appeared to be the rule although the distance covered was usually short and done in a rambling manner. Time of rest probably found the animals little more than a mile or two from the start of an ordinary day's wandering.

During the fishing period, generally hardly more than round trips from a secluded spot in heavy cover to a favorite fishing area were made. Rarely was more than a mile of stream visited.

During the berry season daily travel was probably less

than at any other time except in winter. With plenty of berries close to dense cover there was little need for much exertion.

3. SEASONAL

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Again food seemed to be the determining factor. Higher slopes used for grazing were vacated as salmon spawned and died in the streams. Then the immediate vicinity of creeks was forsaken for the thick alder-elderberry thickets, of the slopes. As the berries above ripened, those below deteriorated and the bear ranged upwards where fruits were the best.

4. MIGRATIONAL

During the period spent at the lake by the author, little travel in or out of the area was noted. The permanent trails of high saddles and ridges were little used. In the writer's opinion these are traveled considerably in the spring and possibly late fall to some extent.

A short trail from O'Malley Lake to Dog Salmon Greek showed much use during fishing season. At appears that bear visit Dog Salmon as there are few salmon in the area at the south end of O'Malley Lake. This might be termed a temporary migration, more seasonal, and similar to other movements within the Karluk Lake drainage. When the trail was surveyed, July 30, tracks showed direction of travel to be both ways. At this time there were but few chums left in Dog Salmon Creek.

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C. FOOD

1. GENERAL

In general, foods used were the usual, although one new one, nettle, <u>Urtica</u> was noted. A good salmonberry, <u>Rubus</u> <u>spectabilis</u>, crop was produced and much use was made of it. The relished elderberry was as abundant as usual. No heavy frost occurred until September 26 so berry crops remained in good condition.

2. SIGHT FEEDINGS

By using a 20 power Bausch and Lomb scope, bear were observed grazing, but usually at such distance that identification of plants was impossible. Visits to the area later showed Angelica, grasses, sedges to have been taken. Of course bear were seen taking salmon, usually found to be easy-to-catch spawn outs, and often carcasses lying in the streams. The bear seen fishing used the usual method of dashing after a fish or occasionally standing quietly then taking a swipe when a fish came close. One good-sized one used the novel method of standing on its hind legs and wading short distances then coming down with a lunge after a fish. When wading on its hind legs the resemblance to a heavyweight wrestler was striking. This method was observed but once and was used when fish were scarce and in the deeper pools. Other bear using more conventional methods were having much less luck in the same area.

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Later bear were observed reaching up with a forepaw to bring elderberry fruit to their mouth, while sitting on their haunches.

Only one bear was observed in the act of drinking water, although others that were seen in water may have taken some. The one in question came down a slope to a lake then immediately returned, even though there was a well-used trail along the shore. In other words, it appeared to have made the trip just for the drink.

3. FEEDING SIGNS

TABLE VI.

Date

1

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Name

Part

July 8 - 15	Large Sedge, <u>Carex lyngbei</u>	Leaf tips
	Grasses, <u>Graminae</u>	Leaves
	Meadow Barley, Hordeum nodosum ?	
	Beach Rye, Elymus mollis	Leaf tips
	Cow Parsnip, Heraclsum lanatum	Hearts
	Common Angelica, Angelica lucida	Leaves
	Bent-leaved Aggelica, <u>Angelica</u> <u>genuflexa</u>	Flowers and stems
	Curly Dock, <u>Rumex</u> crispus	Leaves
	Nettle, Urtica lyalli ?	Plant tips
	Red Salmon, Oncorhynchus nerka	All but jaws and gonads

July 16 - 31

Horsetail, <u>Equisetum sp</u>. Large Sedge Grasses Meadow Barley Common Angelica Bent-leaved Angelica Curly Dock

Stens

TABLE VI. (CONT'D)

Date	Name	Part
July 16 - 31	Salmonberry, <u>Rubus spectabilis</u>	Fruits
- 9 0	Elderberry, Sambucus racemosus pubens	Fruits, green
	Willow, Salix 320	Branch tips
:	Mushroom (sp?)	Entire
	Red Salmon	
	Chum Salmon, <u>Oncorhynchus keta</u>	All but jaws and gonads
	Bumblebees, Bombus sp.	Entire & honey
	Yellowjackets	n # B
August 1 - 15	Grass	•
	Beach Rye	
	Meadow Barley	

Salmonberry

Elderberry

Red Salmon

Dolly Varden, Salvelinus malma

Skin and part of bódy

August 16 - 31

Elderberry

Salmonberry

Red Salmon

Date

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Part

Date

Name

September 1 - 15

Elderberry Salmonberry Red Salmon Pink Salmon

September 16 - 30

Red Salmon Pink Salmon

Elderberry

The variety of foods taken early in the season dwindled to but a few in September. Elderberry was the big favorite; plentiful, easy to get, fills stomach fast.

4. SCAT EXAMINATION

Field examination of bear droppings generally indicated, as in 1952, use according to availability, amount, ease of procurement, and possibly partiality. Components and rough estimates (percentages) of each were recorded. Results are tabulated in the following tables. Items arranged according to earliest apparance chronologically and to some extent taxonomically.

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					3	ABLE	VIII.				•							
APPEARANCES AND PERCENTAGES	of F	OODS	IN 1	.76 E	EAR	SCATS	- KA	RLUK	LAKE	DRA	INAG	e and	NEAF	YBY	(JUI	Y 8 1	[0	
*T = 100%	, ¹²			C	CTOE	BER 1,	1954)	ł					•					
100 - 75 75- 50 50 - 25	Ju	ly 8	- 19	5 (61	. Sea	ats)	Jul	y 16	- 31	. (32	Sca	ts)	Aug	ust :	1 - 1	5 (31	3 Sc	ats)
29 - 9 Tr - 5 - Trace	Ţ	100	75	50	25,	5 ^{Tr}	T	100	75	50 -	25	5 ^{Tr}	T	100	75	50	25	5 ^{Tr}
Horsetails	2	15	8	6	1		l	2	3	<u>ו</u>	2			· . ,		K.	,	
Sedges	3	. 2	5	5	1	J	1	2	,		2	1 7 2	1	2		1		
Grasses	3	1	1	2	7	15					1	•		1		2	2	1
Angelicas A. Lucida	9	4	12	9	7	3	1	1	3	1	3	1			•		1	
A. Genuflexa		2	2	1					,		1	1				•	1	1
Fi.sh	3	1	1	3	2	,	, 6	,1	-	1	•	×	1	2	2	2	6	5
Salmonberry							1	4	2		1			- 3	4	1		1
Elderberry									2	2	ly.	2	6	6	8	6	6	2
Highbush Cranberry										1					2	1	4	4
Crowberry											1				. • •	÷		1
Nettle		-									×						2	
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APPEARANCES AN	D PERCISETAGES OF	FOODS IN I	76 BEAR	SCATS -	KARLUK	LAKE	DRAINA	JE ANU	NEARSI ·	(JULI 8	10	
*T -= 100% 100 - 75 75 - 50				OCTOBER	1, 1952	+)				•		,
50 - 25 25 - 5	~	July 8	- 15 (6	l Scats)	July 1	16 - 3	31 (32 5	Scats)	Augus	t 1 - 15	(38 Scats)	2.
Tr - 5 - Trace	9	T 100	75 50	25 5 ^T r	T 100	75	50 ÷2;	5 5 ^{Tr}	T 10	0 75 50	25 5 ^{Tr}	
Dock	20 10 - 10 10 10 10 10 10 10 10 10 10 10 10 10 1								,		1	
Salix					l		4	· . ·			1	
Conk (Dendentor	nus Sp.)			• *	e e e e e e e e e e e e e e e e e e e		· •	1.				ř
Yellowjackets			•				•	12			-	
Bumblebees		-		·				21	· ·		1	
Gravel								1			1	
(Cestode Segmen	ats)		-			•					<i>∯</i> 3)	
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		TABLE VIII. (CONT'I))	· ·
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APPEARANCES AND PERCENTAG	HES OF FOODS IN 1	76 BEAR SCATS - KARLUK I	AKE DRAINAGE AND NEARE	r (july 8 to
T = 100% 100 - 75	· ·	OCTOBER 1, 1954)		
75 - 50 50 - 25 25 - 5	August 16 - 31	(12 Scats) September	1 - 15 (15 Scats) Se	eptember 16 - 30 (18 Scats)
Tr -5 - Trace	T 100 75 50	25 5 ^{Tr} T 100 75	5 50 25 5 ^{Tr} T	100 75 50 25 5 ^{Tr}
Horsetails	- - -			
Sedges	÷			
Grasses	1	1	3	
Angelicas A. Lucida	*			
A. Genuflexa				
Fish		1	* * * *	·* .
Salmonberry	14	2		1
Elderberry	5 1	23 854	1 13	5
Highbush Granberry		1	3 1	31
Crowberry		4		
Nettle				,
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TABLE VIII. (CONT'D)

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APPEARANCES AND PERCENTAGES OF FOODS IN 176 B	DEAR SCATS - KARL	UK LAKE DRAINAGE AND	NEARBY (JULY 8 TO	
T = 100%	OCTOBER 1, 1954)		•
100 - 75 75 - 50 50 - 25 25 - 5 August 16 - 31 (12 Sc	ats) September	1 - 15 (15 Scats)	September 16 - 30 (18 Scat	s)
Tr - 5 - Trace T 100 75 50 25 5	^{Tr} T 100 75	50 25 5 ^{Tr}	T 100 75 50 25 5 ^{Tr}	4° -
Dock		· · · ·		.,
Salix	•	• 		••
Conk (Dendentonus Sp.) 1			· ·	
Yellowjackets			· . ·	
Bumblebees				
Cravel	•			
(Cestode Segments) (1))			-
1	· · · · ·			

TABLE VIII. (CONT'D)

d.

	75	65	64	. 44	5 70	0 54			374	•
(Cestode Segments	3		,			(4)			(4)	
Gravel	κ.				-	1	•		2	· · · ,
Bumblebees	•				. 2	2 2			4	. 4
Yellowjackets					1	. 2	، ، ، ب		3	
Conk (Dendentonus	sp.)	1		J				2	
Salix	- ,	1		:	l	ų. V			2	n n Na sana
Dock	· ·					1	· +,	` <i>`</i>	1	, ·
Nettle		· .			ä	2			2	. <i>'</i>
Crowberry		•			1	. 5	, ,		6	• •
Highbush Cranberr	Y	· ·	4	2	: 10	6			22	* * *#
Elderborry	42	16	14	9	12	2 7			100	
Salmonberry	2	11	6	1	1	. 2	· · · ·	,	23	
Fish	10	4	4	6	8	5		•	37	
A. Cenufleza	٠	2	2	1	2	2			9	
Angelica Lucida	10	5	15	10	11	4			55	r
Grasses	3	3	2	Ļ	11	16			39	
Sedges	5	6	5	6	3	1	· · · · · · · · · · · · · · · · · · ·	• •	26	·
Horsetalls	3	17	11	7	3		, ,	* 1 /	41	
50 - 25 25 - 5 Tr - 5 - Trace	T	100	75	50	25	5 ^{rr}	, , , , , , , , , , , , , , , , , , ,	Aŗ	pearan	ICes
T - 100% DRAINAGE 100 - 75 75 - 50	AND	NEARBY	AL	JULY (176	8 TO SCATS	остові 3)	SR 1,	1994)	Total	
Applandaded and fi	•					1				

As in 1952, elderberry was the item most used.

Foods that appeared most commonly were:

· · ·	TABLE V	/III.				
•	Appearances					
	Number	<u>% of Scats</u>	I <u>n 100% Amt</u>	<u>% of Scat</u> s		
Elderberry	100	56.8	42	24		
Angelicas	64	36.3	10	6		
Horsetails	42	23.3	3	2		
Grasses	39	22.2	5	3		
Fish	37	21.0	10	6		
Sedges	26	14.8	3	2		
Salmonberry	23	13.1	2	1		
Highbush Cranberry	22	12.5				

Comparisons with the 1952 determinations cannot be made unless the differences in time of collecting are considered. In that year none were collected before the end of July. This year 61 scats had been examined by mid-July. These were chiefly vegetative with Angelicas, horsetails and grasses well represented. This same type of material is usually found in scats during May and June.

5. STOMACH ANALYSES

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Only 2 bear stomachs were checked. Both animals had been taken during the hunting season in late September.

September 25	Male	Elderberry (6 lbs.)	100%
September 25	Female	Elderberry	60%
		Fish	30%
		Highbush Cranberry	10%

The stomach of a male killed in Anton Larsen Bay near the town of Kodiak, killed October 24, contained:

		ι.			Fish bones	• • • • •	90%
Weight	of	contents	9	lbs.	Elderberry		8%
		·,			Highbush Cra	iberry	2%

D. ACTIVITY

1. GENERAL

In general, behavior seemed normal, with more bear and the larger ones seen near dusk than at any other time. Some activity during the day was noted in July and the first half of August among the sub-adult and the sow-cub groups near streams.

Most animals were observed walking or running and many others while feeding, or in related activities e.g., chasing salmon. Very few bear were noted resting, although some were seen to lie down during the observation period.

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Young were usually following their mother but stopped to investigate objects and occasionally to wrestle or play. During one sighting, two young, probably in third years wrestled for over one-half hour, their mother entering the fun, but briefly, on occasion.

A pair of yearlings at another time wrestled for about 20 minutes, their mother remaining aloof.

Earlier in the season fresh beds were noted on high points; later in the thick alder-willow near streams and even on gravel bars and beaches. During the elderberry-feeding period, beds were found in the dense growth of the slopes.

2. SPEED

3

The bears seem to do much rambling, with many stops

to investigate objects or graze, etc. When one does cover longer distances on trails, etc., a man has to almost run to keep the animal in sight even though it seems to be shuffling along.

A sub-adult was observed walking along the trail along Thumb Lake about one mile in length. The distance was covered in less than 10 minutes, including three short hesitations.

3. SWIMMING

One bear was encountered swimming from Camp Island to the nearby lake shore, a distance of about 100 yards.

Other bear were observed in water near the lake shore but appeared to have their feet on the bottom most of the time, seemingly attempting to use their front paws to bring salmon carcasses to the surface.

Two yearlings wrestled in shallow water for nearly 10 minutes. In no case was a bear seen wholly submerged.

E. PHYSICAL APPEARANCE

1. PELAGE

All shades of brown were noted, from light to dark. Most blondness, if present, was seen about the head and shoulders although one lone yearling was mostly blond with patchy, long hair.

Color of a bear in early July may be considerably different than the same one two months later. Old long winter fur tends to be a much lighter shade than the new, short, dark coat of late summer,

2. SIZE - AGE CHARACTERISTICS

A long-legged bear although of good size is probably not very old, even sub-adult. This is especially true if it moves with some speed. An older bear is much more filled out, giving the legs a shorter look. It usually moves in a lumbering fashion. Real old bear seem to have a sway back. The above bear are usually males.

The adult females, smaller than males, usually show similar age characteristics, but sexes are hard to distinguish in the field unless there are cubs present.

a. WEIGHTS

In September 2 bear wore weighed:

Male sub-adult in 3rd year Female adult (lactating) 356 pounds

437 pounds

(In October a large male from Anton Largen Bay area was found to weigh 1225 pounds).

3. INJURIES

Only one bear was observed with a definite injury. This one had a stiff bowed-out left leg (foreleg) and walked with difficulty and slowness. It appeared to be in good condition. On a stream it pawed at carcasses, making no attempt to catch live fish. Another bear fishing in the vicinity seemed not to notice this cripple.

F. GREGARIOUSNESS

The only time there was any sign of gragariousness was during the breeding season and among cubs for a while after they had lost or left their mother. Otherwise hardly ever were bear, other than sub-adults and sow-cub groups, seen together.

One group, two large and a sub-adult, seen in early July appeared to be a boar and sow with cub in its third year. Probably the boar was still sexually interested in the sow and the single cub had not left its mother/ It kept its distance from the larger bear.

III. SALMON RELATIONSHIPS

A. BEAR

1. GENERAL

Although no weirs nor electric fences were installed some small amount of data were collected and general effects noted.

The streams on which there had been electric fences showed much bear use, indicating that the effect of a stream having been protected is hardly noticeable a year or two afterwards. Both Moraine and Halfway Creeks were visited by bear and kept free of carcasses presenting a much different aspect than that of 1952 when they were loaded with fungused salmon remains within the fences.

2. BEAR-TAKEN REMAINS EXAMINATION

A few fish showing bear marks but with undamaged interiors were dissected and tallied as to späwnedness. The results show that nearly all were spawned out. The following fish were checked from July 12 to 25th during the height of the spawning period on the smaller creeks.

TABLE IX.

SPANNING CONDITION OF 406 WHOLE BEAR-TAKEN SALMON

		Female		Male			
	Unspawned		Spawned	Unspawned	Spawned		
July	12	1.	2				
	13	3	10				
	17		70		17		
	17	•	34	2	29.		
	24	1	21	4	25		
	25	2	139	3	59		
		7	276	9	130		
:			• • •	1	,		

2.5% unspawned

6.9% unspawned

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The total sample here is small, but presents positively from /

known figures because whole fish were examined. The female is probably the more valuable and necessary because of apparent promiscuosity and the ability of one male to fertilize the eggs of several females.

Of course many jaws and partial remains were found but little definite data were extracted.

3. ESCAPE PATTERNS

a. UNSPANNED FISH RETURN TO LAKE

(As was noted in 1952, fresh spawners frantically returned to the safety of the lake when disturbed in the small streams. This escape pattern must be a factor in keeping low the number of unspawned fish taken by bear. Of course, the fresh fish are harder to catch than those more spawned out.

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b. ADAPTATION TO HIGH SPEED SPAWNING

Another factor that tends to keep the unspawned figure low is the apparent adaptability of the creek fish to high speed spawning as against a seemingly slower rate among the fish in more protected areas of the lakeshore and large, deep streams. The creek fish seem to school at the creek mouths until ripe, then make a run to do their actual spawning in possibly as little as two days. Without some such adaptation it is doubtful if salmon runs on the small creeks could have continued through the years in their "pre-man-exploited" abundance.

4. TAGGING

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The writer believes that a tagging experiment conducted at the mouths of these small creeks would indicate the speed of spawning. Daily checks would need to be made and probably a nonkill examination, using a dip net, to determine spawnedness. Others could be dissected to determine the condition positively.

A luminous tag in the dorsal fin area would be best for sighting in the area. In addition a small numbered tag through the lower part of the gill cover or jaw to identify individual fish would be helpful, especially if bear-taken.

Other information might also be collected, such as number of males involved with one female, length of time in vicinity of redd after spawning, etc.

This summer the writer tested the feasibility of gill cover tagging but few of the small tags could be seen in fast water. Dorsal discs would be very helpful. Of 105 fish tagged at Halfway and Cascade Creeks 4 were seen in the creeks and one tag was found on the banks. Unfortunately, a daily count could not be made so this small return should not be taken as indicative of success.

Both Don Bevan of Fisheries Research Institute and Bob Parker of the Alaska Department of Fisheries have noticed this apparent high speed spawning. In fact Bevan had tagged 200 creek spawners for another reason and mentioned that the fish spent about 4 days before leaving the 'redd' area and drifting downstream. His return was low also; due partly again to not making daily visits. In Bristol Bay experiments, Bevan said that fish stayed in small streams 3 weeks or more, but spawned in the first week. He mentioned that there was slight predation in the area tested.

A tagging in conjunction with a weir would be a valuable experiment. A suitable creek would be Halfway, not too long and easy to visit. Probably an experienced Fisheries man in addition to the game man would help a great deal in arriving at a definite degree of spawnedness and determination of other facts noted in daily visits.

B. DOLLY VARDEN

Occasionally Dolly Varden are caught by bear. One such of fair size the writer found at Meadow Creek which on examination of its stomach was found to contain at least 490 salmon eggs. A few other Dollies caught at the mouth of Cascade Creek also contained considerable numbers.

C. STORM DAMAGE

With the lowest escapement through the Karluk Weir ever recorded, an added disaster was the two day storm of August 22 - 23. Several streams were terrifically scoured, courses altered and much spawning gravel moved out into the lake as new deltas. Some of the eggs may have withstood the buffeting, unless later buried too deeply or picked up by gulls or Dolly Varden. Streams hardest hit were Grassy, Halfway, Meadow, Cascade and Salmon with Canyon and Upper Thumb to a lesser degree. Attempts to find eggs on these creeks later by Fishery personnel met with little success. If the eggs had eyed out, their tougher skins may have saved more than it appears.

The eventual number of adults that return to these hard hit creeks should be noted and compared with normal returns and returns at streams that were little affected by the storm.

IV. BEAR MARKING

A. METHODS

Marking attempts were carried out in the Karluk area again this summer to try and learn more of the movements of the bears. Little use was made of the cross-bow method due to lack of assisting personnel. A few wax packets were attached to undersides of willow and alder branches that hung over trails. These were contacted, but it appeared that some were bitten rather than rubbed. More effective, at least in contacts, were the "bottle stations".

From August 2 to September 25 a total of 61 stations were set out. By September 27 the last day any were visited, there had been at least 104 contacts. Some were hit several times, very few none or only once.

The "bottle station" consisted of an upside-down corked bottle 1/3 paint-filled, hooked to a wire trangle, the base of which stretched across a bear trail - no bait was used.

B. RESULTS

In spite of the numerous contacts, the writer feels that few lasting marks were carried by the bears. The chief season was the type of paint available. Again the author's dog was used as a test animal and indicated that the fast drying thin lacquers and rubber base paints were visible from as little as two days to hardly more than a week. Thicker solutions appeared to be somewhat more permanent.

It was noted that application of lacquer to the human skin produced a temporary burning sensation. The effect on the dog apparently was similar for much rolling on the ground occurred after contact. Also after lacquer was hard and dry on the hair it seemed to crack off easily on contact with brush, etc. Rubber-base paint was somewhat better in this respect, remaining more resilient; even so it showed little permanency.

Marks applied before mid-August appear to have much less permanence than those after, due to the final rubbings of old fur and the growth of new coats.

Not a marked bear was observed by the writer and to date no hunters or other persons have reported any.

Of the paints tried earlier (1952) by the author, plain

red lead has seemed most effective. Probably various sticky, semithick, ordinary "house" paints would also work to give variety in color.

Other solutions that might be investigated are peroxides, hair tints and dyes. Most of these are light shades and should usually show well on the dark coat of most bear.

. ADDITIONAL DATA

A. AVIFAUNA

L. BAGLES

Eagles did not seem quite as numerous as in 1952, and again there was little indication of predation. Where feeding was observed, nearly all the eagles were scavenging salmon carcasses.

2. BIRD LIST

A bird list was kept throughout the summer. Among the birds recorded nearly every day were bald eagles, glaucous-winged and shortbilled gulls, magpies and black-capped chickadees. Song birds seen commonly until early September were the pileolated warbler, savannah, golden-crowned, and fox sparrows, although the latter was also numerous until the middle of the month.

Common loons, golden-eye ducks, and red-breasted mergansers seemed most plentiful among the waterfowl. Migrating geese were noted on September 7, 20, 24, 25 and October lst/ A pair of whistling swans stopped by on Thumb Lake on September 7th.

Apparently the first bird to leave the area was the violetgreen swallow, None was recorded after the 31st of July, That long distance champion, the arctic tern, was not observed beyond the 21st of August. During September the one warbler and sparrows became scarce.

B. FLORA

Again plants were collected for addition to the herbarium at the Kodiak office. Also some seeds were identified, dried and placed in vials.

VI. SUMMARY

Using methods similar to those of 1952, a population of 132 was estimated for the area, a density of 1.65 bears per square mile. Two years ago the estimate was 124 and 1.55 the density.

Distribution of age classes was also similar with a good cub (seasonal and yearling) crop, representing 38% of the total (1952, 41%). The adults, best trophies, made up 29% in both years.

Most sows were observed with two cubs, a few with one and three and two with four. The average was 2.17 young per female compared with 2.13 two years ago.

Hunting pressure has remained high resulting in a take that practically eliminates the increase of approximately two dozen per year.

The bear-unit constant, for possible use in aerial surveys, was 1.7 as compared with 1.8 in 1952,

Ground surveys in late July and August to nearby areas indicated no definite signs of migration into or out of Karluk drainage, Movement within the drainage was similar to that noted in 1952. Generally from upper slopes to concentrations near salmon streams from mid-July through early August, then a return to the lower slopes as the elderberries ripened, in spite of numerous fall run salmon in the larger streams.

Again, elderberry was the most frequent constituent of scats (56.8%) in spite of the fact that over one-half the samples were checked in July when vegetative remains were dominant. Other important items were: Angelica, horsetails, grasses, fish, sedges, salmonberry and highbush cranberry in that order of appearance. In total amount in individual scats, elderberry again led with 24%, far below were Angelicas, fish, grasses, horsetails, sedges and salmonberry.

No strange actions were noted except for one bear that waded in a stream on his hind legs while fishing. One cripple seemed in good condition despite its injured foreleg.

The only signs of gregariousness appear to be during breeding season and a limited tolerance for each other at the same fishing hole.

Two streams where electric fences were installed in 1952 showed bear activity comparable to others. The once-fenced streams were clean, whereas two years ago they were choked with fungused salmon carcasses.

Of 406 red salmon, bear-taken but with undamaged interiors, 2.5% of the females and 6.9% of the males were found unspawned.

In the smaller streams an escape pattern was again observed among unspawned fish in their frantic return to the protective lake when disturbed.

In these same streams an apparent adaptation to high speed spawning seems to have evolved to maintain salmon populations through earlier times when bears were uncontrolled. Further study would be valuable.

Dolly Varden were taken containing numerous salmon eggs, one taken by a bear contained over 490 by count.

A storm on August 22 and 23 apparently did much damage to this season's egg deposit of early run salmon on several of the small streams.

Bear marking results were unsatisfactory, although many bear were apparently smeared on visits to "bottle stations". The only materials allowed were lacquers and rubber base paints which, although fast drying, lacked permanency and irritated the skin of the author and also test dogs. Sticky red leads, etc., seemed

much more effective two years ago.

Bird sight records were kept and plants and seeds were collected.



GUID ISLAND IN AND INTERNA

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REAL-DARAGED BELLDING

PAPER AP CAPTIL.

POR-DARCH PINC BALHON HEMAINS APPRARE BIRIZAR TO HEAR-DARCH HEMAINS BUT HOUS OR-OND.



WER 490 DED BALLEON ENGINE MELANOW CHEEK







#2 Ascending Spawners -(Headby Crook)



#2 Hane spot - A moment after nuthor and dog stepped in



\$3 50 ft. Bownstream - Last of salmon moving down.



- #4 100 ft. Bounstream about 2 minutes after fish disturbed, still piling over each other to reach safety of lake.
- #5 Stream Mouth Selmon quister as doop water is reached.

ADCENDING NED SAIMON SPANNERS REFURE 20 LARS THEN DISTURBED (DURATION OF ACTION, LESS THAN 5 MINUTED)



COTTONICOD CHENNE



TRUMB RIVER



GR086804



BOTTLA STATION (Diagram of triangle trip wire).

BEAR MARKING MUTHODS





UVAN BAY SLOPES, LOOKING TOWARDS MARLUK LAKE. HEADWATERE OF HAST FORE OF



SEDERBRIUNZ BUSHES BROKEN DOWN BY FREDING BEAR.



BARE LAKE AND CREEK. DAY APTER STORN, AUG. 24, 1954

WATER LITERALLY BLOSING OUT OF BARS LAKE. HEIGHT OF STORM, AUG. 23, 1954





SURF AT FRASER LAKE - NW END.



HED LEVELT (ANARULEL) - Up. 1058, UND BARE CATER - COBSOR. DAY APPEN WRITE, ARD, 04, 1954

ANANULIX (SED HIVER) LARE AND MRAIDARS, LOCKING 20-DARDS VERSEN LARS. AND. 24. 1954







SALMON CREEK (RAHLUK LARY) FINDS A MEN END. AUG. 25, 1954 (A. Clark)



MICH WATER AT CAMP ICLAMD - ADM. 25, 1954 (S. Clark).



GIGH CATTR AT RAREAR WAIN - AUG. 26, 1956 (S. Clark).



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LANDER EPHENZED AGEA (H. GLORES).

BOUND (N. Glanki).

MARS CAMER OF MALFOLY SEERS AFRIN 2000MP SICHL.





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NEW ALLES US WAST ALLES

RANCHIN LARD.

ERGH DAVER FOR DAYS, BOAT AT

CANTE DOOR.



BEAR TRACKS AT POOT S. WEAREJAN.

AFTER TRACTLE ATT RETAL



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HID AND LOVER SPANNING ANDAS OF PRADOU CARDIN MAY 2 ABOUT STORE.



BOULINING INFOSITED AN DEEPLY AS THUSE FROM IN OLD ATREAM BED.



BOULDER DEPOSITION.



COTTONNOOD TABOLA.

A.R.L.I.S. diffe service ANCHORAGE ALASKA Anchorage, Alaska 99503

UPPER SPANNIZHO ANDA OF MEADON CHEER APPERS ANDARY STOTE.