ALASKA LEGISLATURE COMMITTEE FILES 1981-1982

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not accountable for by failure of the tag in fishing gear or failure of the fishermen to return the tag, but to failure of the tag to remain on the fish under natural conditions.

3. Tagging mortality is complete during the year of tagging, after that date a natural mortality rate applies to tagged and untagged specimens alike.

Then the difference between expected recovery and actual recovery for the second, third, etc., years of freedom may be accounted for only by natural mortality.

To put this relationship in algebraic form, let P denote the population of tagged fish,

n denote the annual rate of natural mortality,

s denote the annual survival rate (1 − s = n),

r denote the expected recovery rate of tagged fish, without natural mortality, over all years,

R denote the recovery of tags in actual numbers, and subnumbers, 0, 1, 2, 3 indicate the year of tagging and the year of tagging plus one, etc. The relationship between the tagged population, recovered tags and annual survival is shown by the formula:

$$Pr = \sum_{i=0}^{m} \frac{R_i}{s^i} \quad \cdots\cdots (2)$$

m denoting the largest number of years that a tagged specimen survives.

Rearranging, the general equation for the relationship becomes:

$$(Pr - R_0)s^m - R_1 s^{(m-1)} - R_2 s^{(m-2)} - \ldots - R_m = 0 \cdots\cdots (3)$$

Any estimate of r must be made from tagged fish running the gauntlet of Pacific Coast fishing gear during year 0. If estimated r is restricted to fish in their fifth and sixth years it will be close to the actual value of r as nearly all of such fish will be mature and subject to a wide fishery during their migration to natal streams. Such an estimate of r will also include correction for such disturbing factors as failure to

report tags, tag selectivity of the fishing gear and tagging mortality under assumption 3, previously presented.

Inspection of equation (3) will show further that the estimate of survival rests primarily upon the correct approximation of the expected recovery rate and a small error in the estimation of r will result in a substantial error in s. For the estimation of the survival rate, tagging data from all three areas have been combined. r, estimated from the recovery of 44 of 215 five and six year old fish tagged, is .205. Two five year old fish were recovered after a year of freedom, necessitating a further consideration of r. Empirical values of the notations are:

P	=	918
R_0	=	110
R_1	=	35
R_2	=	11
R_3	=	1

Substituting in (3), we obtain the cubic equation,

$$78 s^3 - 35 s^2 - 11 s - 1 = 0 \cdots\cdots (4)$$

The approximate solution for s is .681. To correct r, it can be shown that

$$r = \frac{42}{215 - \frac{2}{sr}} \quad \cdots\cdots (5)$$

r = .209

Substituting corrected r in equation (3) we obtain

$$81.9 s^3 = 35 s^2 - 11 s - 1 = 0 \cdots (6)$$

The approximate solution of equation (6) s .659. Further substitution of corrected values does not change either r or s in three significant places, r is accepted as .209 and s is accepted as .659. The annual rate of natural mortality is estimated as .341 for the stock as a whole, as it occured in the outside waters of Southeastern Alaska.

RELATIVE MATURITY

Having a usable estimation of natural mortality it is possible to estimate the relative maturity of the stocks of kings as found in each area of tagging. The terms of the right half of equation (2) will correct the tags recovered in the years 1, 2, and 3 to the numbers of expected recoveries had they been mature in the year of tagging. While fish recovered during the year of tagging in a stream were definitely mature and those recovered a year or more after tagging were definitely immature, there remains a rather large portion of recovered fish whose precise condition as to maturity at tagging remains doubtful.

As mature kings leave the coast of Alaska and proceed toward their natal streams they are subjected to a troll fishery over the entire distance. It may also be true that some immature king salmon leave the coast of Alaska and feed in areas farther to the south. This condition necessitates an arbitrary decision that all fish recaptured during the year of tagging along the direct migration route are mature. This assumption may well be in error. Tagged fish recaptured in the area of tagging during the year of tagging have received an indefinite status regarding the state of maturity.

The calculation for estimating the percentage of mature kings within age classes is presented in Table 12. The data are grouped according to years of salt water residence to enlarge the individual samples and to make the resulting estimate apply to a group of similar size. Apparent irregularities are noted in the data for Areas II and III which have been attributed to the error inherent with small samples, viz., the lack of immaturity of the $3_1 \cdot 4_2$ group. To the authors, the conclusion that all fish in the population that fall in the age group $3_1 \cdot 4_2$ are mature is absurd, rather the conclusion is that the sampling was insufficient and repeated sampling would show immature fish of that classification to be present.

The data clearly indicate a large portion of the fish in Area I with four years or less of ocean residence are immature, probably at a level greater than 80 percent. The opposite relationship is true of stocks found in Areas II and III.

Table 12. Calculation of the percentage mature kings grouped by number of years of salt water residence.

Area I	R_0			Immature				
Age groups	Mature	Indefinite	Total	$R_{1/o}$	$R_{2/o}{}^2$	$R_{3/o}{}^3$	Total	Percent mature
$3_1 \cdot 4_2$	2		2	11	16		27	6.9
$4_1 \cdot 5_2$	11	1	12	30	7	3	40	21.2-23.1
$5_1 \cdot 6_2$	5		5				0	100.0
Total	18	1	19	41	23	3	67	20.9-22.1

Area II	R_0			Immature				
Age groups	Mature	Indefinite	Total	$R_{1/o}$	$R_{2/o}{}^2$	$R_{3/o}{}^3$	Total	Percent mature
$3_1 \cdot 4_2$	7		7				0	100.0
$4_1 \cdot 5_2$	43	3	46	8	2		10	76.8-82.1
$5_1 \cdot 6_2$	11	1	12	2			2	78.6-89.7
6_1	2		2				0	100.0
Total	63	4	67	10	2		12	79.7-84.7

Area III	R_0			Immature				
Age groups	Mature	Indefinite	Total	$R_{1/o}$	$R_{2/o}{}^2$	$R_{3/o}{}^3$	Total	Percent mature
$3_1 \cdot 4_2$	4		4				0	100.0
$4_1 \cdot 5_2$	10	3	13	3			3	62.5-81.3
$5_1 \cdot 6_2$	7		7				0	100.0
Total	21	3	24	3			3	77.8-88.9

Table 13. Relative maturity by size groups for Areas I, II and III

Area I

Size group inches	R_0 Mat.	R_0 Indef.	R_0 Total	Immature $R_{1/e}$	Immature $R_{2/e}^2$	Immature $R_{3/e}^3$	Immature Total	Total	Percent mature
20.0			0	2			2	2	0
22.5	1		1		7		7	8	12.5
25.0	2		2	3	11		14	16	12.5
27.5	3		3	15	5	3	23	26	11.6
30.0	4		4	18			18	22	18.2
32.5	4	1	5	3			3	8	50.0-62.5
35.0	2		2					2	100.0
37.5	1		1					1	100.0
40.0	1		1					1	100.0
Total	18	1	19	41	23	3	67	86	20.9-22.1

Areas II and III combined

Size group inches	R_0 Mat.	R_0 Indef.	R_0 Total	Immature $R_{1/e}$	Immature $R_{2/e}^2$	Immature $R_{3/e}^3$	Immature Total	Total	Percent mature
22.5									
25.0	8		8				0	8	100.0
27.5	6	1	7	2			2	9	66.7-77.8
30.0	21	1	22	6	2		8	30	70.0-73.4
32.5	25	2	27	3			3	30	83.4-90.0
35.0	14	2	16				0	16	87.5-100.0
37.5	6	1	7	2			2	9	55.6-77.8
40.0	4		4				0	4	100.0
Total	84	7	91	13	2		15	106	81.5-88.3

Similar calculations were used for estimating the relationship between size and maturity and these estimates are presented in Table 13. Areas II and III were combined as these stocks have been shown consistently to have similar characteristics. Remarks made previously on sample size apply equally as well to this study. Discrepancies from expected results appear which have been attributed to sampling error inherent in such small samples. The data do give the indication that a large percentage of the stock in Area I contained in or smaller than the 30.0 inch group are immature, probably greater than 80 percent. The data for Areas II and III indicate the opposite relationship; fish of all the size groups commonly encountered are largely mature.

REGULATIONS

The king salmon fisheries of the Pacific Coast have been subjected to a variety of restrictions, ranging from a total closure during certain seasons of the year, or a total closure of certain areas, to a size restriction. In Southeastern Alaska fishing for kings in outside waters is prohibited from November 1 to March 15 and the taking of fish less than six pounds dressed weight or 26 inches fork length is prohibited. The closed season restriction is of little consequence as there is little or no desire to fish in outside waters during the winter months. The size restriction is of consequence and may be examined in the light of the data and its interpretation presented.

Any size restriction is presumably invoked under the hypothesis that if the little fish are allowed to remain in the sea, the net size of the stock will be materially greater at some later date, or that the net value will be greater. If, in the case of king salmon, the maximum production in pounds is desired, losses to the stock because of maturity and natural mortality must be offset by growth. This relationship has been studied for Area I and the calculations are presented in Table 14.

Considering the figures in Column 10, Table 14, it is shown that a gain of pounds of stock is possible through restricting the size of the fish landed. The 27.5 inch size group will get a nineteen percent increase in weight if allowed to grow an additional year. Greater net increases accrue from smaller size groups, up to a maximum of 264 percent increase for the smallest size group found in the samples. These figures do not contain the effects of being hooked and released, however, and it will be seen that if a combination of hooking mortality and natural mortality exceeds the values of column 11, Table 14, a net loss will occur.

Table 14. Calculation of effects of maturity and natural mortality upon Area I stock.

1	2	3	4	5	6	7	8	9	10	11
F.L., mid inches	No. of fish	Wt. conv. lbs.	Stock wt. lbs.	No. immat.	Survive nat. mort.	F.L., rev. ann. incr. inches	Wt. conv. lbs.	Stock wt. lbs.	Col. 9/ col. 4	Total survivity rate for col. 10=1.0
12.5	100	0.8	80	100	66	19.2	3.2	211	2.64	.750
15.0	100	1.4	140	100	66	21.7	4.8	317	2.26	.708
17.5	100	2.3	230	100	66	24.2	6.6	436	1.89	.652
20.0	100	3.6	360	100	66	26.7	9.1	671	1.87	.604
22.5	100	5.1	510	88	58	29.2	12.1	702	1.38	.521
25.0	100	7.2	720	88	58	31.7	15.7	911	1.26	.479
27.5	100	[illegible]	970	88	58	34.2	19.9	1154	1.19	.446
30.0	100	12.7	1270	82	54	36.7	24.9	1345	1.06	[illegible].78
32.5	100	16.4	1640	44(a)	29	39.2	30.6	887	0.54	
35.0	100	20.7	2070	0						<0
37.5	100	25.7	2570	0						
40.0	100	31.6	3160	0						

(a) midrange point of percent mature = 56 percent used (Table 13)

No data are available to the authors with which to directly estimate the effects of hooking and subsequent release.[19] A minimum estimate of such mortality may be taken as the percentage of fish not tagged or graded "C" during the tagging operation. This category includes fish that came aboard dead or severely injured with excessive bleeding, and it is the opinion of the authors that only a small fraction would survive if released. It is also the opinion of the authors that the treatment of the fish brought aboard the vessel was above par if compared to the fleet of trollers as a whole. The percentage of fish landed that were tagged is presented in Table 15, Column 6 of Table 15 is repetition of Column 11, Table 14 and is referred to as the "peril point" mortality as it is at that point where a loss of pounds of fish will occur if they are released. Comparison of column 5 and 6 of Table 15 will show that a size limit is not a valid means to increasing the production of pounds of fish in the stocks found in Area I. Only in the 20.0, 22.5 and 25.0 inch size groups does the expected minimum mortality rate fall below the peril point. A much worse case can be presented for Areas II and III where the stocks are largely mature regardless of size. The conclusion reached is that a size limit is not a feasible means of increasing production and some other method of restriction must be arrived at to maximize the poundage produced.

Area I is uniquely situated at the beginning of a coastwise fishery. Fish that are not caught in Area I are subjected to fishing pressure along their entire migration route and in their natal streams. It could be argued then that Area I should be closed to trolling and advantage be taken of the growth profits outlined in Table 14. Such a restriction would seem to be premature at the present. The fishery is rapidly expanding

(19) Dr. H. J. Milne of the Pacific Research Station of the Biological Board of Canada writes (private communication): "In our pound experiments last year (1954) the hooking and releasing mortality on small coho salmon (about 20 inches) was 30 percent initially and about 40 percent at the end of a month. The spring (king) salmon) mortality appears to be higher but the sample was smaller. This excessive mortality rate would destroy any confidence in a size-limit restriction devised to increase the production of the stock through growth.

SUMMARY

Production of king salmon by trolling in Southeastern Alaska began early in the 1900's. Methods of fishing have steadily improved, new grounds have been explored, yet from a peak production of nearly 17 millions of pounds of dressed fish in 1937, production has steadily declined to a level of about 9 millions of pounds. This decline in abundance is directly related to the destruction of the spawning and fresh water rearing areas, principally, by Federal built dams on the Columbia River.

Tagging in outside waters during the years 1952-1952 has shown the importance of Columbia River contributions to this fishery and especially those fall run races that spawn above Bonneville Dam. The second most important contributor is the Fraser River and all major river systems north of the California-Oregon boundary are shown to contribute, but to a lesser degree. Alaska rivers are relatively unimportant to this fishery.

The outside waters are divided into three areas by the characteristics of the stocks of kings found. The stocks found in the area bounded by Cross Sound and Cape Fairweather were composed of relatively small fish with the principal mode of fork length at 27.5 inches. The principal age group found was the 4_1 with the 3_1 group next in importance. The stock as a whole was quite immature, probably in excess of 80 percent.

The stocks found on the west coast of Chichagof Island were comparatively larger fish with the principal mode of fork length at the 30.0 and 32.5 inch groups. The principal age group was 4_1 and the 5_1 second in importance. The stock as a whole was quite mature, probably in excess of 80 percent.

The stocks found on the west coast of Prince of Wales Island were composed of the largest fish of the three areas. The principal mode of fork length falls almost evenly on the

Table 15. Calculation of minimum hooking mortality and the total mortality compared with the Petrl Point mortality.

1 Fork length cell inches	2 Total sample	3 No. Tagged	4 Percent not tagged	5 Minimum total mortality (a)	6 Petrl Point mortality rate
12.5	1	1	0.0	?	.750
15.0	10	4	60.0	.791	.708
17.5	9	4	55.5	.707	.652
20.0	19	15	21.0	.479	.604
22.5	35	28	20.0	.473	.521
25.0	56	46	17.8	.458	.479
27.5	147	115	21.2	.480	.446
30.0	114	95	16.8	.452	.378
32.5	42	34	19.0	.466	<0
35.0	21	16	23.8		
37.5	6	6	0.0		
40.0	1	1	0.0		
Total	461	365	20.8		

(a) Where h denotes hooking mortality and n denotes annual mortality, the expression:

n + h - nh = total mortality

into and beyond the area and developing fishing grounds both north of Cape Fairweather and offshore on the Fairweather Bank where no tagging or study has taken place. It is the recommendation of the authors that further study be conducted in the offshore and Yakutat areas to complete the picture of the stocks of king salmon found to the north-west of Cape Spencer.

Benefits to the fishery to be derived from only additional spawning escapement are questionable, for it appears that the crux of the problem of depleted runs lies with the destruction or removal of spawning and rearing areas of the species. A result of these conditions has been a lowering of potential, and a diminution of the populations available to the industry. Only by combining habitat improvement with adequate escapement will the potential of the North Pacific king salmon be realized.

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35.0 and 37.5 inch groups. The age groups 4_1 and 5_1 were of equal importance. The stock as a whole was quite mature, probably in excess of 80 percent.

The annual expectation of death from natural causes (other than fishing) is estimated as .341 for the combined areas covered. The question of size limits is examined with the tentative conclusion that regulation of this type will show no profit margin where maximum pounds of fish produced is desired. The combined effect of mortality, caused by hooking and releasing and natural mortality, may even show a loss of profit in pounds of stock.

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Appendix II: Recovery data of king salmon tagged in the area Cape Spencer to Cape Fairweather.

Recovery Area	Tag No.	Date Tagged	Fork Length	Age	Date Recovered	Recovery Gear	Specific Location of Recovery
Oregon Coast Streams	None						
Columbia River	3019	5/21/52	29.0	4$_1$	8/10/52	Dip Net	Cellilo Falls
	790	7/26/50	32.5	4$_1$	9/2/50	Sport ?	Across from Astoria
	724	7/29/50	26.0	3$_1$	9/10/50	Gill Net	Clifton Drift
	615	7/19/50	28.5	4$_1$	9/10 or 11/50	Gill Net	Astoria Cannery, caught Ellsworth or St. Helens
	3091	5/26/52	30.5	5$_1$	9/13/52	Gill Net	Hawks drift, 7 mi. below Vancouver
	686	7/28/50	21.5	3$_1$	9/15/50	Gill Net	Point Ellice
	3995	6/29/52	29.0	4$_2$	4/25/53	Gill Net	Cowlitz Jct. Willamette Slough
	719	7/25/50	30.5	5$_2$	5/7/51	G. N. ?	Astoria cannery
	787	7/26/50	25.5	4$_2$	5/11/51	Gill Net	Skamokawa
	3029	5/21/52	27.0	4$_1$	7/5/53	Sport	Sauvies Rave.
	1968	8/1/51	29.5	4$_1$	7/30/52	Gill Net	Deer Island
	710	7/25/50	29.0	4$_1$	8/10/51	Troll	Mouth of Columbia
	709	7/26/50	29.0	4$_1$	8/13/51	Gill Net	Clifton

Appendix I – Con't.

Recovery Area	Tag No.	Date Tagged	Fork Length	Age	Date Recovered	Recovery Gear	Specific Location of Recovery
Columbia River – Con't.	750	7/25/50	28.5	4_1	8/20/51	Gill Net	14 miles above mouth Columbia
	773	7/26/50	31.5	4_1	8/21/51	Gill Net	Megler
	3998	6/29/52	27.5	4_1	9/10/53	Gill Net	St. Helens
	3966	6/27/52	31.0	4_1	9/11/53	Dip Net	Celilio Falls
	743	7/25/50	25.0	4_1	9/3/52	Gill Net	Browns Port
	3886	8/13/51	25.5	3_1	8/4/53	Gill Net	Point Ellice
	709	7/26/50	21.5	3_1	9/5/52	Dip Net	Celilio Falls
	778	7/26/50	28.5	4_1	9/11/52	Dip Net	Celilio Falls
Washington Coast Streams	705	7/28/50	30.0	4_1	10/23/50	Gill Net	Willapa River
British Columbia Streams	3817	5/21/52	35.5	5_1	8/26/52	Gill Net	Fraser River at Cottonwood
	3896	5/26/52	28.0	4_1	9/1/52	Gill Net	Fraser River at Surveson
	3846	5/23/52	30.0	4_1	1952	Gill Net	Fraser River at Surveson
S.E. Alaska Streams	3872	5/25/52	37.0	5_1	8/12/52	Gaff	Taku River spawning ground
	3889	5/26/52	40.0	5_1	8/11/52	Gaff	Taku River spawning ground
Inside Fisheries	3878	5/25/52	31.5	4_1	7/5/53	Gill Net	Knight Inlet, B. C.
	636	7/21/50	32.5	5_2	8/18/50	Troll	North Inian Pass, AAA

Appendix I – Con't.

Recovery Area	Tag No.	Date Tagged	Fork Length	Age	Date Recovered	Recovery Gear	Specific Location of Recovery
Ocean Fishery	660	7/21/50	26.0	4_2	5/27/51	Troll	Off Grays Harbor, Wash.
	4205	6/29/52	29.0	4_1	8/17/52	Sport	Entrance, Grays Harbor, Wash.
	3881	5/25/52	28.5	4_1	8/3/53	Troll	Amphitrite Point, B. C.
	3917	6/12/52	31.0	4_2	9/3/53	Troll	Lennard Isl., B. C.
	643	7/25/50	22.5	3_1	7/29/52	Troll	Lennard Isl., B. C.
	3870	8/13/51	25.5	3_1	7/15/53	Troll	West Coast Vancouver Isl., B. C.
	3867	8/13/51	29.0	4_1	7/24/52	Troll	Esperanza, B. C.
	4205	6/29/52	35.5	6_2	8/21/52	Troll	Esperanza, B. C.
	3916	5/21/52	31.5	4_1	7/24/52	Troll	Kyuquot, B. C.
	3970	6/29/52	31.0	4_1	6/15/53	Troll	Kyuquot, B. C.
	3915	5/20/52	29.5	4_1	6/27/53	Troll	Quatsino Sound, B. C.
	3916	5/27/52	32.0	4_1	8/22/52	Troll	Hecate Str., "Tooth Picks", B. C.
	762	7/26/50	28.0	4_1	5/17/51	Troll	Hecate Str., Porcher Island, B. C.
	3941	5/23/52	27.0	4_1	6/25/53	Troll	Hecate Str., Rose Spit, B. C.
	818	7/27/50	27.0	4_1	6/1/53	Troll	Ketchikan fish house, from Hecate St.
	3931	6/8/52	26.0	4_2	5/17/54	Troll	Baker Isl., AAA
	3854	6/4/51	23.5	3_1	7/10/53	Troll	Cape Addington, AAA

Appendix I – Con't.

Recovery Area	Tag No.	Date Tagged	Fork Length	Age	Date Recovered	Recovery Gear	Specific Location of Recovery
Ocean Fishery Con't.	732	7/25/50	25.5	4_1	6/18/52	Troll	Noyes Island, AAA.
	3929	6/18/52	28.5	4_1	7/23/52	Troll	Cape Edgecumbe, Sitka Pt., AAA
	38[illegible]	[illegible]/52	28.0	4_1	7/23/52	Troll	Krumt Island, AAA
	9[illegible]	[illegible]/50	27.0	4_1	5/28/52	Troll	Salisbury Sound, AAA
	3914	5/26/52	30.5	4_1	6/15/52	Troll	Salisbury Sound, AAA
	3926	5/23/52	31.0	4_1	7/27/52	Troll	Porcupine Rocks, AAA
	3882	6/23/51	29.0	[illegible]	8/18/52	Troll	Porcupine Rocks, AAA
	734	7/25/50	28.5	4_1	8/23/51	Troll	Cape Cross, AAA
	3852	8/6/51	25.5	3_1	1952	Troll	Pelican Cold Storage, AAA
Taggeg Area	3887	8/15/51	28.0	3_1	6/21/52	Troll	Cape Spencer, AAA
	3895	5/26/52	30.0	4_1	7/15-16/52	Troll	Lituya Bay, AAA

Appendix II: Recovery data of king salmon tagged in the area Sitka to Cross Sound

Recovery Area	Tag No.	Date Tagged	Fork Length	Age	Date Recovered	Recovery Gear	Specific Location of Recovery
Oregon Coast Sonoma	1106	8/31/50	24.0	3_1	12/22/50	Sport	Floras Creek
	1028	7/12/51	29.5	4_1	12/17/51	Sport	Alsea River
	1056	9/1/50	31.0	4_1	10/15/50	Gill Net	Yaquina River
	118	5/30/50	36.5	6_1	9/?/50	Gill Net	Siletz River
	3827	7/12/51	29.5	5_2	8/19/51	Gill Net	Tillamook Bay
	132	6/1/50	30.5	4_1	10/21/50	Gill Net	Nehalem River
Columbia River	324	6/27/50	26.0	4_1	8/3/50	Gill Net	St. Helens
	575	7/14/50	34.5	5_1	8/15/50	B. Seine	Clatskanie, Oregon
	183	5/29/50	31.0	4_1	8/24/50	Gill Net	Opposite Pt. Ellice
	125	5/29/50	33.0	5_2	8/24/50	?	Lower Columbia
	159	6/2/50	29.0	4_1	'24/50	Gill Net	Puget Island
	995	6/29/5[illegible]	26.5	4_1	8/[illegible]/50	Gill Net	Astoria cannery, butchering table
	3815	6/28/51	34.0	3_1	8/2[illegible]'51	Gill Net	Lower river, near Astoria
	1096	8/8/50	32.5	5_2	9/6/5[illegible]	Sport	Chinook Channel, mouth of Columbia River
	1048	8/1/50	24.0	3_1	9/8/50	Dip Net	Celilio Falls
	93	5/29/50	28.5	4_1	9/9/50	Dip Net	Celilio Falls
	1079	8/3/50	33.0	4_1	9/10/50	Dip Net	Celilio Falls
	176	6/6/50	30.5	4_1	9/12/50	Gill Net	Deadmoman Light

Appendix II, Con't.

Recovery Area	Tag No.	Date Tagged	Fork Length	Age	Date Recovered	Recovery Gear	Specific Location of Recovery
Columbia River Con't.	1085	8/3/50	33.0	4_1	9/14/50	Dip Net	Celilio Falls
	82	5/28/50	31.0	4_1	9/16/50	Gill Net	St. Helens
	1130	9/7/50	38.0	5_1	10/19/50	Gill Net	Lower Columbia
	339	6/27/50	33.0	5_2	10/20/50	Gill Net	Wallace Id., near Clackamie, Ore.
	1121	9/6/50	30.5	4_1	9/1/51	Dip Net	Celilio Falls
	196	6/2/50	30.0	4_1	4/23/52	Sport	Willamette Slough
Washington Coast Streams	175	6/6/50	34.8	5_2	10/12/50	Gill Net	Palix River
	1072	8/3/50	32.0	5_1	1950	Gill Net	Chehalis River
	167	6/5/50	32.5	5_1	9/29/50	Gill Net	Queets River
	348	6/28/50	37.0	5_1	10/27/50	Gill Net	Queets River
British Columbia Streams	198	6/22/50	34.0	4_1	7/7/50	Gill Net	Fraser River
	120	5/31/50	30.0	4_1	8/9/50	Gill Net	Fraser River, mouth
	572	7/14/50	35.0	5_2	8/14/50	Gill Net	Fraser River, Steveston
	122	5/31/50	29.0	4_1	8/22/50	Gill Net	Fraser River, mouth
	481	7/1/50	29.5	4_1	8/24/50	Gill Net	Fraser River, mouth
	335	6/27/50	37.0	5_2	8/28/50	Gill Net	Fraser River, North Arm
	3820	7/1/51	35.0	5_2	8/30/51	Gill Net	Fraser River, at Steveston
	249	6/23/50	30.5	4_1	9/2/50	Gill Net	Fraser River, at Albion

Appendix II, Con't.

Recovery Area	Tag No.	Date Tagged	Fork Length	Age	Date Recovered	Recovery Gear	Specific Location of Recovery
British Columbia Streams Con't.	1075	8/3/50	26.0	4_1	9/5/50	Gill Net	Fraser River, at Steveston
	3808	6/28/51	35.5	4_1	9/18/51	Gill Net	Fraser River, at Steveston
	147	6/1/50	29.0	4_1	10/16/50	Gill Net	Fraser River, Lightship
	1078	8/3/50	36.0	5_1	1950	Dead	Fraser R., N. Thompson Spawning ground
	145	6/1/50	35.5	4_1	6/27/50	Gill Net	Skeena River
	218	6/24/50	32.0	4_1	7/12/50	Gill Net	Skeena River
	220	6/24/50	31.5	5_1	8/1/50	Gill Net	Skeena River, Point Lambert
	109	5/30/50	29.5	4_1	6/20/50	Gill Net	Nass River
S. E. Alaska Streams	None						
Inside Fisheries	1055	8/1/50	39.0	6_1	9/20/50	Gill Net	Willapa Harbor, Washington
	65	5/26/50	32.0	4_1	6/19/50	Trap	Sooke, B. C.
	285	6/26/50	30.5	4_1	8/7/50	Trap	Sooke, B. C.
	124	5/31/50	28.5	4_1	1950	P. S.	Fishermans Pack Co., Anacortes, Washington
	358	6/28/50	27.0	4_1	8/15/50	P. S.	Point Roberts, Wash.
	1111	9/30/50	25.5	3_1	10/27/50	Gill Net	Barkley Sound, B. C.
	67	5/26/50	33.5	4_1	7/15/50	Gill Net	Knight Inlet, B. C.
	138	6/1/50	35.0	5_1	9/15-19/50	Troll	Blinkhorn Light, Johnstone Strait, B. C.
	1015	7/6/50	37.0	5_1	5/26/51	Troll	Everett Sound, AAA

Appendix II, Con't.

Recovery Area	Tag No.	Date Tagged	Fork Length	Age	Date Recovered	Recovery Gear	Specific Location of Recovery
Ocean Fishery	69	5/27/50	29.5	4_2	8/30/50	Troll	Cape Lookout, Oregon
	62	5/26/50	32.5	4_1	8/29/50	Troll	Raphel Point, B. C.
	587	7/15/50	36.0	5_1	8/17/50	Troll	Esperanza, B. C.
	129	5/31/50	29.0	4_1	7/29/51	Troll	Lookout Isl., Kyuquot, B. C.
	329	6/27/50	29.5	4_2	8/26/50	Troll	Lookout Isl., Kyuquot, B. C.
	1006	6/22/50	33.0	5_1	8/18/50	Troll	Cape Scott, B. C.
	290	6/24/50	32.0	4_1	8/12/50	Troll	Nahwitti Bar, B. C.
	188	6/18/50	37.0	5_1	7/22/50	Troll	Shag Rock, Graham Isl., B. C.
	78	5/28/50	34.0	5_2	8/5/50	Troll	Langara Isl., B. C.
	205	6/24/50	32.5	5_2	8/5/50	Troll	St. Joseph Isl., AAA
	64	5/26/50	29.5	4_1	6/27/50	Troll	St. Joseph Isl., AAA
	241	6/25/50	30.0	4_1	7/31/50	Troll	Snipe Bay, AAA
	192	5/29/50	30.5	5_2	7/11/50	Troll	Snipe Bay, AAA
	295	6/26/50	31.5	5_1	8/3/50	Troll	Whale Bay, AAA
	75	5/28/50	38.0	5_2	7/16/50	Troll	Cape Edgecumbe, AAA
Tagging Area	327	6/27/50	29.5	4_1	8/12/50	Troll	Cape Edgecumbe, AAA
	3810	6/28/51	32.5	5_1	7/25/51	Troll	Pt. Amelia, Krusof Isl., AAA
	1129	9/6/50	30.5	4_1	7/14/51	Troll	Salisbury Sound, AAA
	1113	9/3/50	32.0	4_1	1951	Troll	Serge Bay, AAA
	346	7/2/50	28.5	4_1	8/3/50	Troll	Yakobi Rock, AAA
	228	6/24/50	27.0	4_1	6/15/51	Troll	Icy Pt., AAA

Appendix III: Recovery data of king salmon tagged in the area Warren Island to Cape Falls

Recovery Area	Tag No.	Date Tagged	Fork Length	Age	Date Recovered	Recovery Gear	Specific Location of Recovery
Oregon Coast Streams	None						
Columbia River	1616	5/31/50	27.5	4_1	9/8/50	Dip Net	Celilio Falls
	1586	5/29/50	27.5	4_1	9/12/50	Gill Net	The Dalles
	1622	6/10/50	36.0	4_1	9/12/50	Gill Net	Below Celilio Falls, 1 mile
	1638	6/12/50	31.5	4_2	9/12/50	?	Taken off port docks of Astoria
	1543	5/25/50	29.5	4_1	7/31/51	Gill Net	Near mouth of Columbia
	1768	7/15/50	33.0	4_1	8/6/51	Gill Net	Lower Columbia
Washington Coast Streams	1691	6/20/50	32.0	5_2	7/8/50	Gill Net	Willapa River, South [illegible]
British Columbia Streams	1566	5/28/50	39.0	5_1	8/10/50	Gill Net	Fraser River, mouth
	1626	6/10/50	32.0	4_1	8/18/50	Gill Net	Fraser River, mouth a
	1533	5/22/50	31.0	4_1	8/29/50	Gill Net	Fraser River, at Whonnock
	1629	6/11/50	36.0	5_1	9/25/50	Gill Net	Fraser River, at Port Hammond
	1696	6/20/50	39.5	5_1	7/25/50	Gill Net	Bella Coola River
	1606	5/30/50	31.5	4_1	6/20/50	Gill Net	Skeena River, Mouth

Appendix III: – Con't.

Recovery Area	Tag No.	Date Tagged	Fork Length	Age	Date Recovered	Recovery Gear	Specific Location of Recovery
Alaska Summer	Hoar						
Inside Fisheries	1519	5/17/50	35.5	3_1	1950	Gill Net	Grays Harbor, Washington
	1660	6/13/50	36.0	4_1	8/24/50	Trap	Smoke, B. C.
	1578	5/29/50	38.0	3_1	9/ 4/50	Gill Net	Alberni Canal, B. C.
	1600	5/30/50	25.0	3_1	8/27/50	Gill Net	Conover Island, B. C.
Ocean Fishery	1555	5/25/50	31.5	4_2	8/26/50	Troll	S. of Columbia Entrance
	1593	5/29/50	34.5	3_2	8/9/50	Troll	Esperanza, B. C.
	1612	5/30/50	33.5	3_1	8/12/50	Troll	Esperanza, B. C.
	1556	5/24/50	31.0	3_1	8/6/50	Troll	Kyuquot, B. C.
	1592	5/29/50	31.5	4_2	7/22/50	Troll	Cape Scott, B. C.
	1632	6/11/50	41.0	4_1	6/25/50	Troll	Langara Island, B. C.
Tagging Area	1507	5/15/50	33.0	3_2	7/7/50	Troll	Baker Island, AAA
	1664	6/16/50	35.0	4_1	7/12/50	Troll	St. Joseph Island, AAA
	1643	6/15/50	36.0	4_1	7/31/50	Troll	Snipe Bay, AAA

2/18/82

Leo G Lands

STATE TELECONFERENCES

The State Teleconference Satellite System was designed and intended to get to Alaskans in the bush plus the other larger cities, to get the viewpoints of individuals who have spent days, weeks, months and I 6-1/2 years of research auditing this State's Fisheries all aspects and am reduced to less than five minutes of time.

The time is used up by State officials giving lengthy reports which I know by heart, and others in the State do too, as we attend Fisheries Boards' meetings in our communities plus our own research.

I talked to Senator Bettye Fahrenkamp yesterday and she said any future teleconferences she holds will be held in other communities first, all State officials can listen, then if there is time left they can answer the concerns given. Let the State officials be last.

Do we have Limited Entry on time all d for the communities outside Juneau.

"How was that point system set-up?" by how much money each earns?

Last year I asked KTOO to cover the Longevity Bonus Program, which was the first time it was done. "They did" It was news.

They are not permitted to this year. A legislator has to request it which was done on Fisheries for the evening of February 17, 1982.

They figured it was not news worthy evidently listening to State officials for most of the time which they've heard at least twice this year.) It looks like we might as well do away with the State Satellite Teleconference system.

I'm giving each legislator a copy of this today and expect the courtesy in writing to give it to Senator Bill Ray. "our opinions which he can give to me.

Last Wednesday February 10, I waited to testify for nearly two hours in Haines due to the time left the areas outside Juneau were given five or six minutes for each testimony, shortened to two minutes each.

Hells Fire! I could in two minutes said this only. Greetings legislators, Dept. of Fish & Game Officials, Limited Entry Commissioners, Board of Fisheries. "I'm very happy to say I'm glad you appeared, am happy you're well.

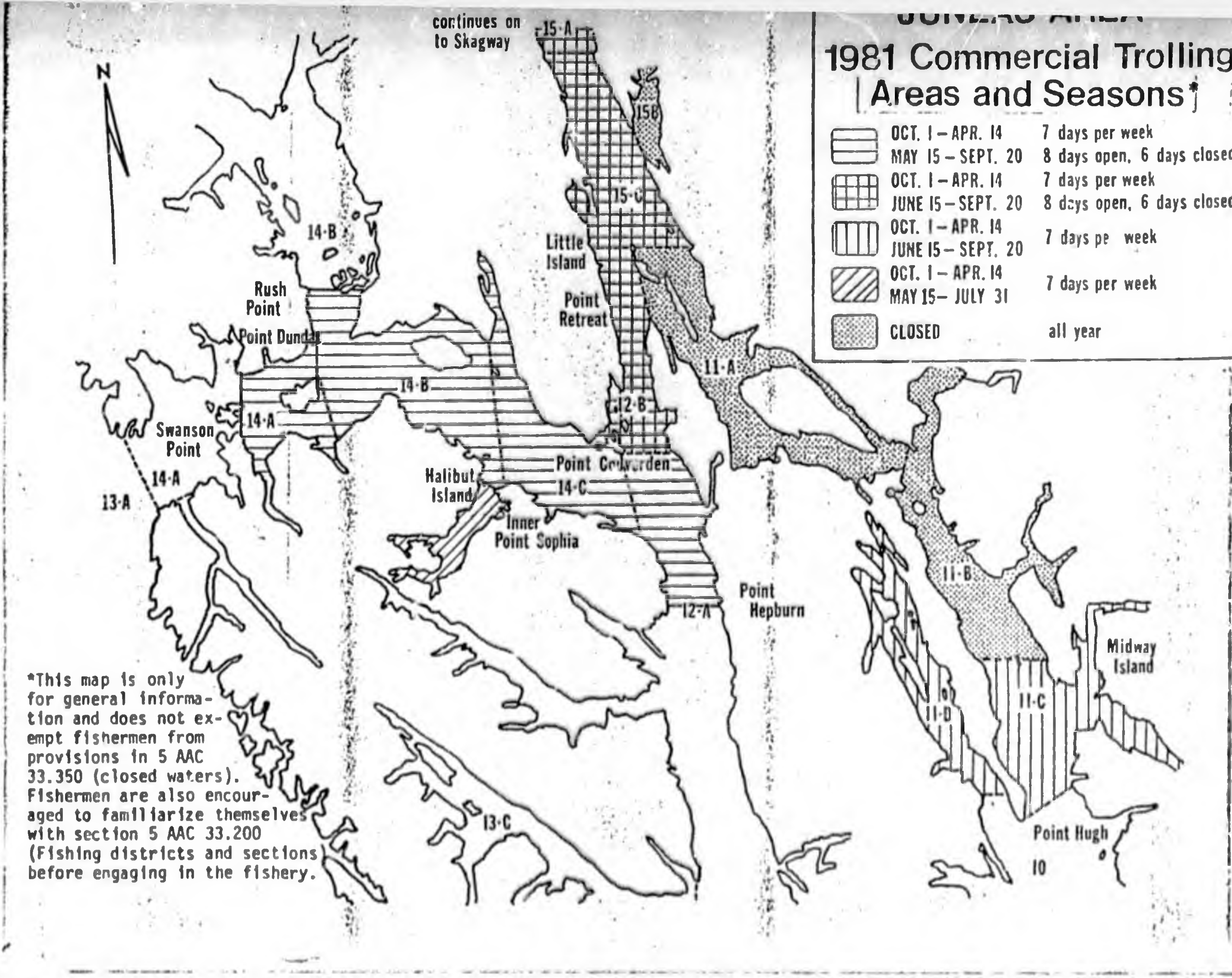
My time is up. I hope you will authorize me to hire a secretary in town to type up my concerns as I don't have the several hundred dollars to do it and send to you.

Fishing Days Icy Straits 1981

April													
[illegible]	16	17	18	19	20	21	[illegible]	25	[illegible]	[illegible]	26	27	28
[illegible]	[illegible]	May											
[illegible]	[illegible]	1	2	3	4	5	[illegible]	7	8	9	10	11	12
[illegible]	[illegible]	[illegible]	16	17	18	19	20	21	22	23	24	25	26
					June								
27	28	29	30	31	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19	20	21	22	23
24	25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	July	[illegible]	[illegible]	[illegible]	5	6	7
8	9	10	11	12	13	14	15	16	17	18	19	20	21
22	23	24	25	26	27	28	29	30	31	Aug. 1	2	3	4
5	6	7	8	9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	21	22	23	24	25	26	27	28	29	30	Sept. 1	2
(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	11	12	13	14	15	16
17	18	19	20										

Fishing Days In Icy Straits

1978	1979	1980	1981
158	129	96	62


1981 Commercial Trolling
Areas and Seasons*
OCT. 1 – APR. 14 7 days per week
MAY 15 – SEPT. 20 8 days open, 6 days closed
OCT. 1 – APR. 14 7 days per week
JUNE 15 – SEPT. 20 8 days open, 6 days closed
OCT. 1 – APR. 14
JUNE 15 – SEPT. 20 7 days per week
OCT. 1 – APR. 14
MAY 15 – JULY 31 7 days per week
CLOSED all year
N
continues on to Skagway
15-A
15B
15-C
14-B
Little Island
Point Retreat
Rush Point
Point Dundas
11-A
14-B
12-B
14-A
Swanson Point
14-A
13-A
Point Couverden
14-C
Halibut Island
Inner Point Sophia
11-B
Point Hepburn
12-A
Midway Island
11-D
11-C
13-C
Point Hugh
10

*This map is only for general information and does not exempt fishermen from provisions in 5 AAC 33.350 (closed waters). Fishermen are also encouraged to familiarize themselves with section 5 AAC 33.200 (Fishing districts and sections) before engaging in the fishery.

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.