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Docee River Counting Fence 1992 Operations

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Prince Rupert, B.C.
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ABSTRACT

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The Docee River Counting Fence provides escapement information for the management of the Smith Inlet sockeye salmon fishery. In 1992, 217,106 sockeye salmon were counted through the fence with the final escapement estimated at 220,000. The commercial sockeye salmon catch was 638,498 in 1992 (from field catch data) for a record total stock size of 858,498. The Docee River Counting Fence was operated from June 28 to August 10, 1992. Length, sex and age data were collected from 221 sockeye salmon. Maintenance and operation of the Docee River fence and facilities are described for 1992.

RESUME

Winther, I., S.K. Bachen, and R.D. Goruk. 1992. Docee River Counting Fence. 1992 Operations. Can. Data Rep. Fish. Aquat. Sci. 895. iv + 13 p.

La barrière de dénombrement de la rivière Docee permet de recueillir des données de remonte pour la gestion des pêches de saumon rouge du inlet Smith. En 1992, 217 106 saumons rouges on franchi la barrière et on a estimé à 220 000 le total des échappées. Les prises commerciales, d'après les données d'exploitation, se chiffraient à 638 498 saumons rouges en 1992. On a recueilli des données sur la taille, le sexe et l'âge en prelevant un échantillon de 221 poissons. Le document renferme des données sur l'exploitation et l'entretien de la barrière et des installations de la rivière Docee en 1992.

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INTRODUCTION

The Docee River is located in the Central Coast District of British Columbia in Canadian Department of Fisheries and Oceans Statistical Area 10 (Figure 1). The Docee River is less than 1 kilometer long and drains Long Lake into Wyclees Lagoon which drains into Smith Inlet. The Docee River Fence is located at the outlet of Long Lake.

The Docee River counting fence has been in operation since 1972 (Winther et al, 1992, 1991, 1990, 1989, Bachen et al, 1988 a & b, Thomson and Goruk, 1988). A counting tower was in operation from 1962 to 1971 (Thomson and Goruk 1988, Wood 1970). Daily sockeye escapement information recorded at the fence is used for the management of the commercial gillnet fishery in Smith Inlet. The counting fence generally operates from late June or early July to mid August.

METHODS

The Docee River camp was occupied from June 19 to August 10, 1992. Jet boats, fuel and supplies were transported from the Machmell Fisheries camp and Dawsons Landing to Wyclees Lagoon in the Fisheries vessel "Sea Truck". Supplies were transported from the lagoon to the camp with a tracked all terrain vehicle and trailer. Jet boats were run up the river to the camp.

CAMP MAINTENANCE

The construction of a cabin initiated in 1991 was continued. External siding was applied and internal walls were erected. Wiring, insulation and vapour barriers were installed. Ceilings and floors were covered. Surfaces were filled, sealed and painted. Electrical fixtures, plumbing, linoleum and a final coat of paint are required before the cabin can be occupied.

The yard around the camp and fence was cleared of brush and debris.

FENCE MAINTENANCE AND OPERATION

A large log jam had to be cleared from the mouth of the Docee River where it drains into Wyclees Lagoon. The jam was cleared using jet boats and chain saws. Logs and root masses were cleared from the upper river before a shear boom was strung across the lake outlet.

The fence frames, panels and counting strips were cleaned of ropes, wire and debris. The fence frames and panels were lowered making the fence operational at 1200 hours on June 23, 1992. Holes under the fence frames were plugged with sand bags applied to the upstream side of the fence. Expanded metal was used to block some

of the larger holes between the fence frames.

A two man crew counted fish through the fence by working a pattern of one hour shifts as described by Thomson and Goruk (1988). Sockeye caught and killed on the fence were sampled for post orbital to hypural plate (POH) length and tip of the nose to the fork of the tail (nose-fork or NF) length. Two scales were selected from each fish and sent to the DFO Scale Lab in Vancouver for age determination. Additional samples were obtained by capturing fish with a dip net from behind the fence.

RESULTS & DISCUSSION

Weather conditions at the Docee Fence during the 1992 sockeye migration were dominated by high pressure conditions producing clear days with morning fog and little precipitation (Table 1). Weather had a significant effect on river levels with very low water conditions persisting throughout the period (Figure 2).

The sockeye migration as described by counts through the Docee River fence appears in Table 2. Figures 3 and 4 depict the daily fence counts and the cumulative counts of sockeye through the fence respectively. The pattern of counts through the fence was erratic with a general bimodal trend. The migration was dominated by a peak count of 25,516 sockeye on July 10. Counts started slowly, rose quickly to this maximum and declined gradually to July 22. Counts increased to a second peak of 13,584 sockeye on July 27 then declined to the end of the program. Final escapement of sockeye salmon to Long Lake was estimated at 220,000.

There were 32 days of commercial gillnet fishing in Smith Inlet and Wyclees Lagoon in 1992 for a record estimated catch of 638,498 sockeye (field catch data). Table 3 details the catch by day for the commercial fishing fleet. Fisheries were held in management subareas 10-3, 10-4, 10-5, 10-6, 10-7, 10-8, and 10-9. After July 28 fisheries included management subarea 10-11, Wyclees Lagoon (Figure 1). No Indian food fish landings were recorded in Area 10 for 1992.

Although the escapement in 1992 was less than the record escapement of 260,000 set in 1991, the total stock returning to Area 10 was the largest ever recorded, 858,498 sockeye salmon (using field catch data).

A total of 221 sockeye salmon were sampled from the Docee fence in 1992, 79 males and 142 females. The male:female ratio was 0.56:1. Samples were separated by length frequency and age for Table 4. The total sample was 63% age 5_2 and 34% age 4_2 with the remaining 3% split between age 3_2 and age 5_3. The age composition was not the same for males and females. All age 3_2 sockeye were male comprising 4% of the male sample. Males were 48% age 4_2 and 47%

age 5_2 while females were 26% age 4_2 and 73% age 5_2. Both sexes had a 1% component of age 5_3. The sex ratio and the difference in age composition between males and females suggest a bias in the sampling procedure. Most samples were collected around July 25 rather than from throughout the run (Appendix 1). Differences in sex and age composition during different times of the run have been observed in previous studies of the Docee River migration (Winther et. al. 1989).

Comparisons of POH and nose-fork lengths collected at the Docee River fence show no difference in the relationship from data collected in 1991. There was no difference between the relationship for males and females so the equation for the pooled sample remains: NF = 1.2 POH as presented by Winther et. al. (1992).

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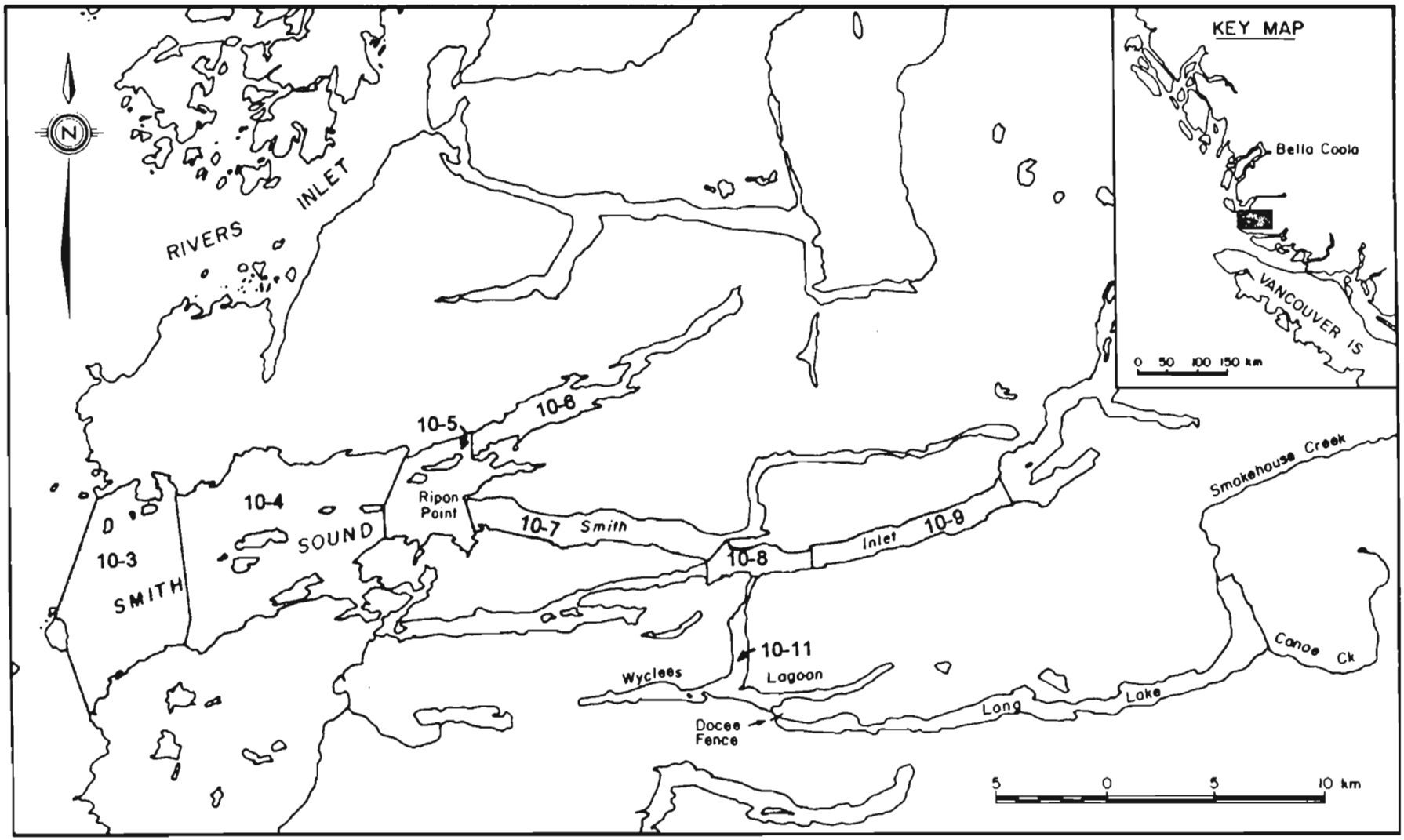

Figure 1. Location of the Docee River fence, Smith Sound, with commercial fishery management subareas.

Table 1. Docee River 1992 daily weather and river levels.

DATE	RIVER LEVEL (m) AM	PM	AM WEATHER	PM WEATHER
23-Jun			fog	clear, hot
24-Jun			fog	clear, sunny
25-Jun	1.6	1.5	light fog	sunny, hot
26-Jun	1.6	1.6	fog	sunny, hot
27-Jun	1.7	1.7	high cloud	high cloud
28-Jun	1.8	1.7	clear	rain
29-Jun	1.75	1.8	rain	rain
30-Jun	1.9	2	high cloud, bright	high cloud, sun
01-Jul	1.9	1.9	cloud	could
02-Jul	1.85	1.8	fog	high overcast
03-Jul	1.7	1.6	cloud	cloud, drizzle
04-Jul	1.5	1.4	fog	clear, sunny, hot
05-Jul	1.35	1.3	overcast	overcast
06-Jul	1.3	1.2	overcast	overcast
07-Jul	1.1	1	rain	clearing, sun
08-Jul	1.1	1	fog, clearing	clear, sunny, hot
09-Jul	1	0.9	fog, clearing	rain
10-Jul	0.9	0.9	rain	clearing
11-Jul	0.9	0.8	fog, sun	clear, sunny
12-Jul	0.8	0.8	rain	clearing
13-Jul	0.8	0.8	fog, drizzle	cloud, drizzle
14-Jul	0.8	0.8	clear, sunny	clear, sunny
15-Jul	0.8	0.7	high cloud	clear, sunny
16-Jul	0.6	0.5	fog, sun	sunny
17-Jul	0.5	0.4	fog	clear, sunny
18-Jul	0.4	0.4	fog	clear, sunny
19-Jul	0.4	0.4	sunny	clear, sunny
20-Jul	0.4	0.4	fog	clear, sunny
21-Jul	0.4	0.4	fog	clear, sunny
22-Jul	0.3	0.3	cloud	clear, sunny
23-Jul	0.3	0.3	cloud	cloud
24-Jul	0.2	0.2	overcast	cloudy, sun
25-Jul	0.1	0	fog, drizzle	overcast
26-Jul	0	0	overcast, drizzle	overcast, drizzle
27-Jul	-0.1	-0.2	overcast	overcast
28-Jul	-0.2	-0.2	fog, clearing	clear, sunny
29-Jul	-0.3	-0.3	fog, clearing	clear, sunny
30-Jul	-0.4	-0.4	fog, clearing	clear, sunny
31-Jul	-0.4	-0.4	fog, clearing	clear, sunny
01-Aug	-0.4	-0.4	fog, cloud	overcast
02-Aug	-0.5	-0.5	fog, cloud, clearing	overcast
03-Aug	-0.5	-0.5	fog, cloud	clear, hot
04-Aug	-0.5	-0.5	fog, cloud	overcast, clearing
05-Aug	-0.5	-0.5	fog, clearing	cloud, heavy, rain
06-Aug	0.3	1	fog, cloud	rain
07-Aug	1.4	1.7	fog, cloud	rain, SE wind
08-Aug	1.8	1.8	cloud	rain, SE wind
09-Aug	1.8	1.7	cloud, drizzle	cloudy, SE wind
10-Aug	1.7		cloudy	

Figure 2. 1992 Docee River morning water levels by day.

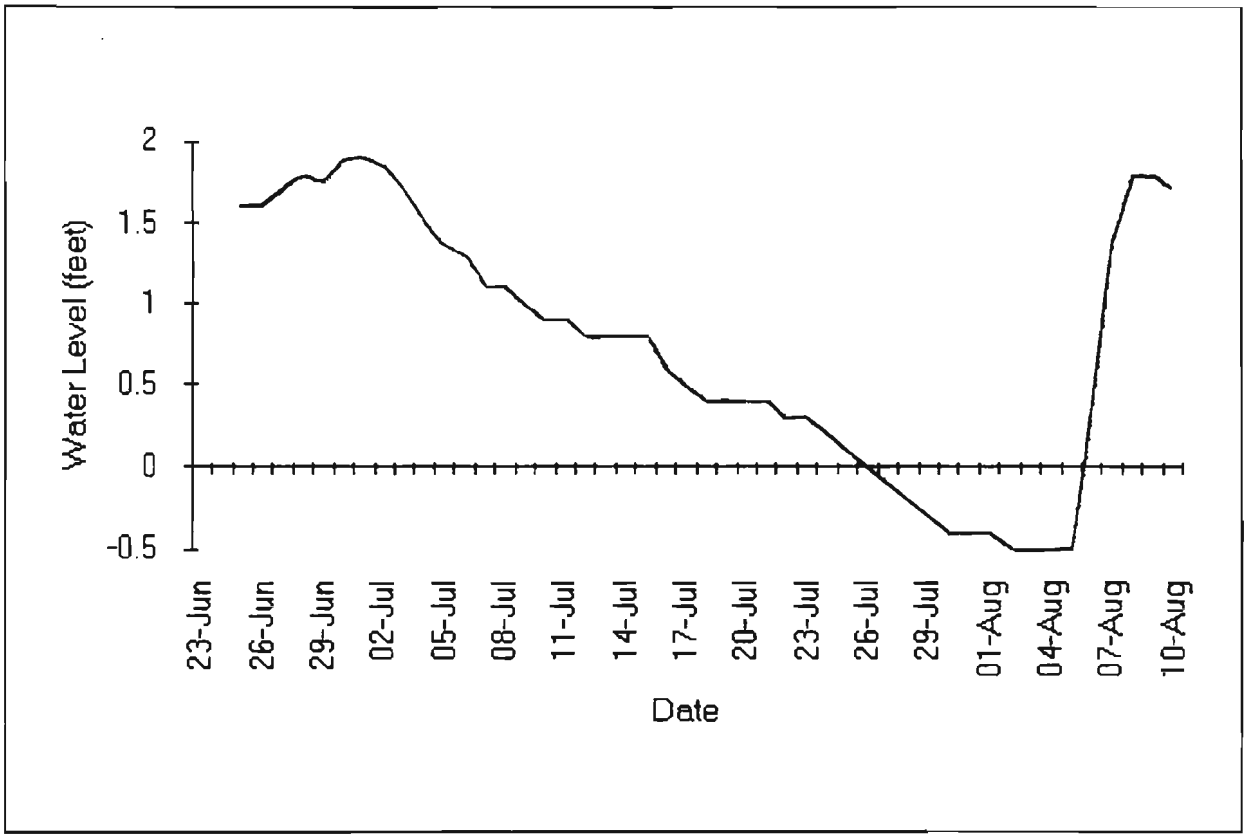

Table 2. 1992 Docee River fence daily sockeye counts.

Date	Daily Total	Cumulative Total	Comments
June 23	0	0	Fence in 1200
24	0	0	Fence sandbagged
25	0	0	
26	0	0	
27	1	1	
28	2	3	
29	6	9	
30	2	11	
July 1	0	11	
2	13	24	
3	38	62	
4	1142	1,204	
5	896	2,100	
6	306	2,406	
7	58	2,464	
8	639	3,103	Seal through fence
9	3041	6,144	
10	25516	31,660	
11	20679	52,339	
12	22342	74,681	
13	11520	86,201	Seal through fence
14	9963	96,164	
15	12747	108,911	
16	12048	120,959	
17	7460	128,419	Bear behind fence
18	7099	135,518	
19	5070	140,588	
20	8575	149,163	7 otters by fence
21	4921	154,084	
22	1458	155,542	
23	3747	159,289	
24	7765	167,054	
25	6713	173,767	
26	9358	183,125	
27	13584	196,709	
28	5705	202,414	
29	305	202,719	
30	1611	204,330	
31	862	205,192	
Aug 1	2476	207,668	
2	1492	209,160	
3	3172	212,332	
4	1064	213,396	
5	627	214,023	
6	518	214,541	
7	783	215,324	
8	647	215,971	
9	1135	217,106	Fence out 1530
		220,000	Final Escapement

Figure 3. 1992 Docee River Fence daily sockeye salmon counts.

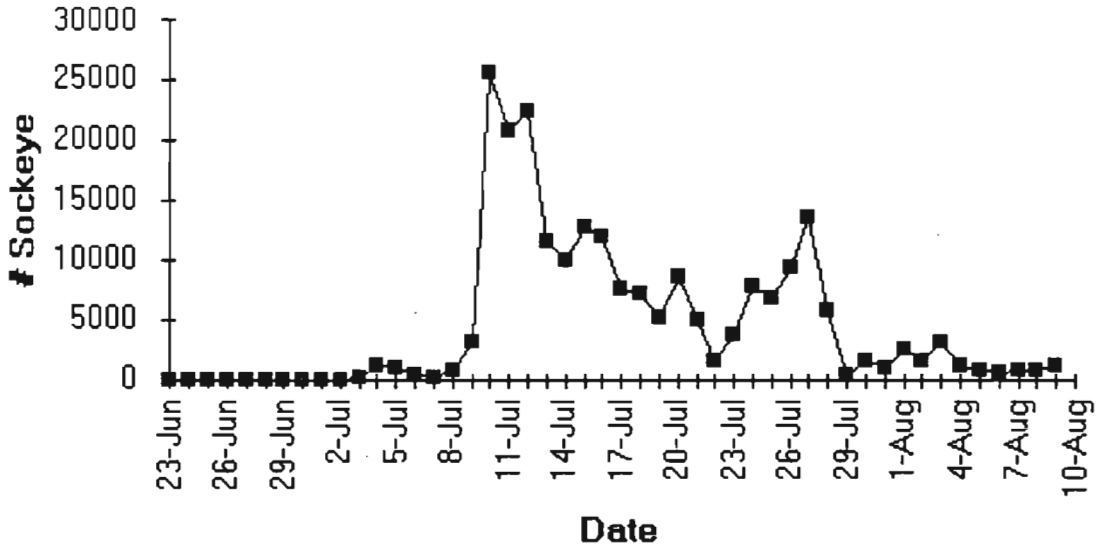

Figure 4. 1992 Docee River Fence cumulative sockeye counts.

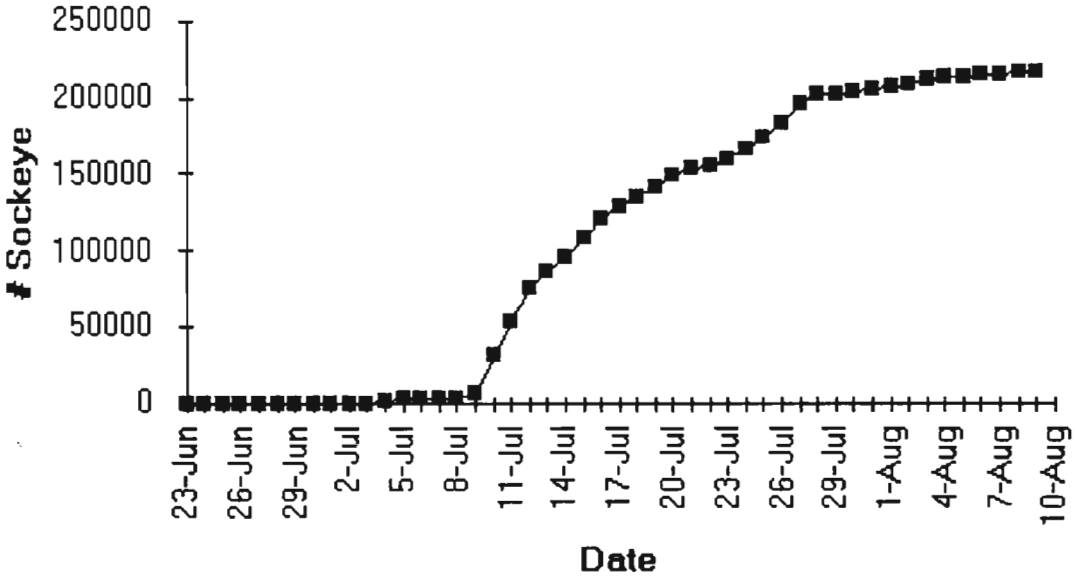

Table 3. 1992 Area 10 commercial gillnet field catch figures.

	Opr	Sockeye	Coho	Pink	Chum	Chinook	Jack	Sthd.
30-Jun	165	1149	1140	1066	315	80	2	0
TFW	165	1149	1140	1066	315	80	2	0
TTD	165	1149	1140	1066	315	80	2	0
6-Jul	157	5942	189	544	114	41	2	2
7-Jul	184	16204	731	3001	838	106	10	14
TFW	341	22146	920	3545	952	147	12	16
TTD	506	23295	2060	4611	1267	227	14	16
13-Jul	318	48422	518	1360	691	118	11	2
14-Jul	310	45071	181	1219	465	121	6	2
15-Jul	300	45157	282	795	572	181	12	0
16-Jul	338	51422	276	1033	776	224	23	6
17-Jul	254	34914	154	1145	406	140	4	5
18-Jul	267	42254	518	2421	498	174	7	0
TFW	1787	267240	1929	7973	3408	958	63	15
TTD	2293	290535	3989	12584	4675	1185	77	31
19-Jul	279	27842	387	1626	580	91	26	0
20-Jul	230	28949	300	2495	596	113	2	0
21-Jul	270	25308	278	1980	501	86	2	2
22-Jul	252	24711	182	1248	418	70	10	2
23-Jul	290	51763	283	2500	675	73	3	0
24-Jul	250	25733	180	830	285	31	13	2
25-Jul	187	17642	82	561	206	19	4	2
TFW	1758	201948	1692	11240	3261	483	60	8
TTD	4051	492483	5681	23824	7936	1668	137	39
26-Jul	169	22302	135	816	276	23	2	2
27-Jul	188	21322	196	1544	289	30	2	0
28-Jul	208	18134	215	1891	570	24	0	2
29-Jul	251	17872	291	1257	553	19	2	0
30-Jul	202	14069	159	1782	719	10	4	0
31-Jul	127	9875	116	1323	383	13	4	1
1-Aug	91	9286	91	741	249	7	4	3
TFW	1236	112860	1203	9354	3039	126	18	8
TTD	5287	605343	6884	33178	10975	1794	155	47
2-Aug	54	5854	69	559	189	15	0	0
3-Aug	39	7424	82	213	79	6	0	0
4-Aug	47	6134	83	196	62	2	0	0
5-Aug	69	4931	150	777	284	6	2	0
6-Aug	67	3278	157	613	405	17	0	2
7-Aug	53	2416	279	208	1003	12	1	2
8-Aug	28	2168	159	2	2	5	0	0
TFW	357	32205	979	2568	2024	63	3	4
TTD	5644	637548	7863	35746	12999	1857	158	51
9-Aug	14	826	114	140	408	0	0	0
10-Aug	4	124	48	42	108	0	0	2
TFW	18	950	162	182	516	0	0	2
TFY	5662	638498	8025	35928	13515	1857	158	53

Table 4: Length frequency at age of sockeye salmon sampled at the Docee River Fence in 1992. (UNK = age unknown)

	FEMALES				MALES				
AGE>	4_2	5_2	5_3	UNK	3_2	4_2	5_2	5_3	UNK
POH (mm)									
290					1				
300					2				
310									
320									
330									
340									
350									
360						1			
370									
380						1			
390									
400	1					1			1
410	1	1				3	1		
420	3	1		1		7			1
430	9			1		5			
440	6	1				5	1	1	
450	4	3				8	4		
460	5	8				2			
470		3				1	5		
480		6		1			1		
490	2	12		1			1		
500	2	19	1	1			4		
510		20		1			2		2
520		13		1			4		
530	1	5	1			1	6		
540		4					1		
550	1	2					2		
560						1			
570							3		
Totals by age	35	98	2	7	3	36	35	1	4

Total Females 142 Total Males 79

Appendix 1. 1992 Docee River Fence sockeye salmon samples. (FW = fresh water age.)

Date	POH	NF	Sex	Age	FW	Date	POH	NF	Sex	Age	FW
5-Jul	540	645	F	5	2	22-Jul	510	615	F	5	2
9-Jul	510	590	F	5	2	22-Jul	380	445	M	4	2
11-Jul	510	600	F	5	2	22-Jul	440	525	F	4	2
13-Jul	500	590	F	5	2	22-Jul	410	490	F	4	2
13-Jul	500	580	F	5	2	23-Jul	510	590	F	5	2
13-Jul	490	590	F	5	2	23-Jul	295	335	M	3	2
13-Jul	500	590	F	5	2	23-Jul	470	580	F	5	2
13-Jul	545	645	F	5	2	23-Jul	435	520	M	4	2
13-Jul	500	590	F	5	2	23-Jul	510	620	M	5	2
13-Jul	415	490	M	4	2	23-Jul	475	565	F	5	2
13-Jul	445	535	F	5	2	26-Jul	540	645	M	5	2
20-Jul	510	605	F	5	2	26-Jul	490	585	F	5	2
20-Jul	500	610	F	5	2	26-Jul	485	580	F	RG	
20-Jul	500	590	F	5	2	26-Jul	510	605	F	RG	
20-Jul	495	590	F	5	2	26-Jul	290	360	M	3	2
20-Jul	515	620	F	5	2	26-Jul	515	610	F	NS	
20-Jul	440	535	M	4	2	26-Jul	445	535	F	4	2
20-Jul	405	495	M	5	2	26-Jul	495	585	F	5	2
20-Jul	495	605	F	5	3	26-Jul	435	525	F	4	2
20-Jul	505	590	F	5	2	25-Jul	520	615	F	5	2
20-Jul	510	600	F	5	2	25-Jul	525	615	F	5	2
20-Jul	295	355	M	3	2	25-Jul	515	615	F	5	2
20-Jul	450	545	M	4	2	25-Jul	510	600	F	5	2
20-Jul	430	525	M	4	2	25-Jul	460	545	F	4	2
20-Jul	435	525	M	4	2	25-Jul	420	500	M	4	2
20-Jul	430	510	F	4	2	25-Jul	510	610	F	5	2
20-Jul	495	600	F	5	2	25-Jul	545	645	F	5	2
20-Jul	500	590	F	5	2	25-Jul	520	630	M	5	2
20-Jul	460	560	M	4	2	25-Jul	430	510	F	MF	
20-Jul	480	575	F	5	2	25-Jul	490	570	F	5	2
20-Jul	530	650	M	5	2	25-Jul	505	610	F	5	2
20-Jul	530	635	F	5	2	25-Jul	510	610	F	5	2
20-Jul	420	500	F	4	2	25-Jul	515	600	F	5	2
20-Jul	510	610	F	5	2	25-Jul	530	640	M	3	2
20-Jul	465	560	M	5	2	25-Jul	455	550	F	5	2
20-Jul	570	680	M	5	2	25-Jul	520	605	F	5	2
20-Jul	540	640	F	5	2	25-Jul	530	640	M	5	2
20-Jul	460	550	F	5	2	25-Jul	545	630	F	4	2
20-Jul	420	505	M	4	2	25-Jul	435	530	M	5	2
20-Jul	500	590	F	5	2	25-Jul	530	630	F	5	3
20-Jul	460	550	F	5	2	25-Jul	425	510	F	4	2
20-Jul	425	510	F	4	2	25-Jul	445	540	M	5	2
20-Jul	490	575	F	5	2	25-Jul	525	640	M	5	2
20-Jul	500	600	F	5	2	25-Jul	495	580	F	4	2
20-Jul	530	650	M	5	2	25-Jul	465	550	F	3	2
22-Jul	470	560	F	5	2	25-Jul	525	630	F	5	2
22-Jul	510	615	F	5	2	25-Jul	495	595	F	4	2
22-Jul	565	680	M	5	2	25-Jul	445	540	M	5	2
22-Jul	490	585	F	5	2	25-Jul	505	600	F	5	2
22-Jul	410	495	M	4	2	25-Jul	530	635	M	4	2
22-Jul	470	560	F	5	2	25-Jul	450	535	M	5	2
22-Jul	500	600	F	5	2	25-Jul	455	560	F	5	2
22-Jul	450	535	F	4	2	25-Jul	505	605	F	5	2
22-Jul	435	525	M	4	2	25-Jul	485	580	F	4	2
22-Jul	515	630	M	5	2	25-Jul	470	570	M	5	2
22-Jul	495	590	M	5	2	25-Jul	480	585	M	5	2

Appendix 1 continued.

Date	POH	NF	Sex	Age	FW
25-Jul	515	610	F	5	2
25-Jul	510	605	F	5	2
25-Jul	560	675	M	4	2
25-Jul	450	525	F	4	2
25-Jul	420	510	F	5	2
25-Jul	495	600	F	5	2
25-Jul	515	610	F	5	2
25-Jul	490	585	F	4	2
25-Jul	425	510	M	4	2
25-Jul	440	520	F	5	2
25-Jul	525	615	F	4	2
25-Jul	445	530	F	4	2
25-Jul	450	545	M	4	2
25-Jul	520	635	M	5	2
25-Jul	525	620	F	5	2
25-Jul	520	630	M	5	2
25-Jul	460	550	F	4	2
25-Jul	460	550	F	5	2
25-Jul	435	520	M	4	2
25-Jul	520	615	F	5	2
25-Jul	540	640	F	5	2
25-Jul	510	605	F	5	2
25-Jul	430	520	M	4	2
25-Jul	530	640	M	5	2
25-Jul	570	695	M	5	2
25-Jul	420	500	M	4	2
25-Jul	395	475	M	RG	
25-Jul	445	545	M	4	2
25-Jul	510	600	F	5	2
25-Jul	490	590	F	5	2
25-Jul	475	560	F	5	2
25-Jul	430	520	M	4	2
25-Jul	490	585	F	5	2
25-Jul	500	600	M	5	2
25-Jul	480	570	F	5	2
25-Jul	425	525	M	4	2
25-Jul	500	590	F	RG	
25-Jul	520	615	F	5	2
25-Jul	455	550	F	4	2
25-Jul	495	595	M	5	2
25-Jul	450	535	M	4	2
25-Jul	450	550	M	4	2
25-Jul	510	630	M	RG	
25-Jul	455	540	F	4	2
25-Jul	450	545	M	4	2
25-Jul	490	575	F	5	2
25-Jul	520	610	F	5	2
25-Jul	510	605	F	5	2
25-Jul	495	600	F	5	2
25-Jul	520	625	F	5	2
25-Jul	550	670	M	5	2
25-Jul	515	610	F	5	2
25-Jul	485	575	F	5	2
25-Jul	455	555	M	4	2
25-Jul	440	530	F	4	2
25-Jul	485	565	F	5	2
25-Jul	505	615	M	5	2
25-Jul	430	515	F	4	2
25-Jul	430	510	F	4	2
25-Jul	510	605	F	3	2
25-Jul	495	595	F	5	2
25-Jul	500	595	F	5	2
25-Jul	535	650	F	5	2
25-Jul	545	660	M	5	2
25-Jul	470	580	M	5	2
25-Jul	490	595	F	5	2
25-Jul	445	530	M	4	2
25-Jul	490	605	M	5	2
25-Jul	420	490	F	2M	?
25-Jul	440	525	M	5	3
25-Jul	420	505	M	4	2
25-Jul	450	540	M	4	2
25-Jul	425	500	F	4	2
25-Jul	500	595	F	5	2
25-Jul	510	615	M	3M	?
25-Jul	415	495	M	4	2
25-Jul	360	430	M	4	2
25-Jul	430	510	F	4	2
25-Jul	420	500	M	RG	
25-Jul	480	560	F	RG	
25-Jul	395	485	M	4	2
25-Jul	420	510	M	4	2
25-Jul	515	610	F	5	2
25-Jul	505	600	F	5	2
25-Jul	530	635	F	5	2
25-Jul	470	570	M	4	2
25-Jul	420	505	F	4	2
25-Jul	425	510	F	4	2
4-Aug	460	550	F	5	2
4-Aug	430	510	F	4	2
4-Aug	455	555	F	5	2
4-Aug	470	565	M	5	2
4-Aug	405	505	M	4	2
4-Aug	445	540	M	5	2
7-Aug	495	580	F	5	2
7-Aug	460	540	F	4	2
7-Aug	440	510	F	4	2
7-Aug	415	490	F	4	2
7-Aug	470	580	M	5	2
7-Aug	450	540	M	4	3
7-Aug	480	580	F	5	2
7-Aug	450	535	F	5	2
7-Aug	480	570	F	5	2
7-Aug	435	525	F	4	2
7-Aug	400	490	F	4	2
7-Aug	410	500	F	5	2
7-Aug	495	615	M	5	2
7-Aug	410	500	M	4	2
7-Aug	485	610	F	5	2
7-Aug	455	565	F	5	2
7-Aug	450	545	F	5	2
7-Aug	440	550	F	4	2
7-Aug	525	645	M	5	2

Appendix 2. 1992 Bella Bella Tide Heights (m)