A RECONNAISSANCE OF THE SUSTUT RIVER WITH PARTICULAR REFERENCE TO STEELHEAD TROUT

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INTRODUCTION

The Sustut River system has long been known for its run of large summer steelhead trout (Salmo gairdneri). Angling pressure has been relatively light due to the remoteness of the system although in the early 70's the construction of the British Columbia Railway (B.C.R.) grade, mining roads and associated landing strips created new access and therefore increased angling pressure (Fig. 1). Because of the new access, a regulation banning angling in any waters above the Bear—Sustut junctions - including Bear River and all tributaries and lakes — was instituted to protect this fragile stock.

There has been an angling guide operating on the river for 17 years with two others starting operations in 1984.

In the fall of 1977 B.C. Fish and Wildlife crew went into the Sustut system to gather life history information on steelhead. Due to recent management and enforcement concerns, a general reconnaissance survey was again mounted in the fall of 1983 to create a higher enforcement profile, and to collect biological data on Sustut steelhead.

RESULTS AND DISCUSSION

Four helicopter trips were made to the Sustut system. The District Conservation Officer accompanied us on two trips to check anglers and hunters. Upon arriving at the river, an overview flight was made to locate anglers and hunters, find concentrations of fish, and check the guides's camp. Fifty-four hunters and anglers were checked (Table 1). Checks resulted in two angling and hunting infraction charges being 1aid.

TABLE 1. Number of anglers and hunters checked during reconnaissance survey of Sustut River, Sept./Oct., 1983.

Dates	People Checked
Sept. 14/83	11
Sept. 23/83	7
Oct. 2/83	21
Oct. 9/83	15
TOTAL	54

The people checked had a variety of residences - New York, Connecticut, Pennsylvania; as well as more local communities such as Prince George, Smithers, Williams Lake, Campbell River. People were getting into the area via helicopter, airplane (float & wheel) and by "speeder" up the B.C.R. grade from Fort St. James. Parties usually consisted of 4—5 people.

During our over-flights 12 steelhead were observed in Johanson Lake, 1 in Johanson River, 12 below the Sustut—Johanson confluence and a few scattered fish below the Bear-Sustut junction. These counts were low because fish were not visible in the deeper portions of the Johanson Lake or the river. We did not observe any fish in the Sustut Lake although they are known to frequent the lake at this time of year (B.

Chudyk, pers. comm.). Although the entire watershed upstream of the Bear-Sustut junction is closed to all angling, there was evidence of angling having been done at Johanson Lake, Sustut Lake and Sustut - Johanson junction. It appeared that steelhead holding below the Bear Sustut junction can be very susceptible to angling but after some pressure they dispersed and were harder to catch (pers. obs.).

A total of 61 scale samples were collected from the Sustut steelhead. Nine from Johanson Lake, 4 below the Sustut—Johanson junction, and 48 below the Bear-Sustut junction. Of 60 readable scales ten steelhead age groups were determined, plus one resident trout (6^+). The dominant age groups were 4.2^+ and 4.3^+ (39% and 23% respectively) with the majority of the females being 4.2^+ (51%) and the males 4.3^+ (50%). The male to female ratio was 1:1.5. A comparison is made with a sample of 1977 ages (Table 2).

Fifty-five steelhead were tagged with floy tags and released (Appendix 1). The tags were put on to try and further pinpoint the run timing of Sustut stocks into the Skeena, and to ensure scale samples weren't taken from a fish more than once.

Since no juvenile data has been gathered from the Sustut, one electro shocking site was done September 23 in a side channel 8.5 km upstream of the Skeena-Sustut junction. Data obtained from this single sample site were too scanty to determine a reliable estimate of the status of juvenile salmonid populations for the system. For the area sampled, an estimated density for rainbow fry was $.28/m^2$ and for parr was $.17/m^2$. The total density of all species sampled was $.70/m^2$. The sample data extrapolated over the 18.75 km reach upstream from the Skeena-Sustut junction resulted in an estimate of 42,188 rainbow fry and 25,781 rainbow parr (Table 3). We did not obtain enough samples to age parr accurately or to put much validity into these juvenile population densities.

TABLE 2. Steelhead trout age groups from Sustut River, 1977 (m=30) and 1983 (m=59).

Age Group	Number Male		Number Female		Number of Steelhead			Percent of Total		
	1977	1983	1977	1983	1977	1983	Total	1977	1983	Total
3.2+	2	1	0	5	2	6	8	7	10	9
3.3+	0	5	0	5	0	10	10	0	17	11
3.2S1+	0	0	0	2	0	2	2	0	3	2
3.3S1+	0	0	0	1	0	1	1	0	2	1
4.1+	1	0	0	0	1	0	1	3	0	1
4.2+	7	4	13	19	20	23	43	67	39	49
43+	4	11	0	3	4	14	18	13	23	20
4.1S1+	0	1	0	0	0	1	1	0	2	1
4.2S1+	0	0	2	1	2	1	3	7	2	4
5.2+	0	0	0	1	0	1	1	0	2	1
5.2S1	0	0	1	0	1	0	1	3	0	1
TOTAL	14	22	16	37	30	59	89	100	100	100

TABLE 3. Estimated number of juveniles in the lower 18.75 km of the Sustut River.

SPECIES	ESTIMATED NUMBER	DENSITY (/M^2)
Rainbow trout		
(fry)	42,188	.28
(parr)	25,781	.17
Dolly Varden	1,172	.01
Chinook	35,156	.23
TOTAL	105,469	.70

The Fish and Wildlife cabin on Sustut Lake is in need of cleanup and some repair. There is evidence it has been used. On one trip there were two people staying in it.

CONCLUSIONS

At present there is one angling guide operating on the lower Sustut. He operates from mid September to mid October in the lower 18 km of the river. It seems by the time he starts operations, the major portion of the run has already passed through to the upper reaches as there were steelhead being caught in August (F. Guillon, pers. comm.). He does not operate in the area where the fish are holding immediately below the Bear-Sustut junction. The two other angling guides that are starting operations on the Sustut should not have an adverse effect on the steelhead angling in the river and may result in less poaching going on in the river because of more people being on the river. However, if harvest becomes excessive further restrictions may have to be implemented.

Because there is evidence of illegal activities in the Sustut, enforcement patrols should be made several times each year.

The scale sampling from steelhead went well but the juvenile sampling was inadequate. More sample sites must be done to draw any valid conclusions.

RECOMMENDATIONS

1. Continue to do a few enforcement trips a year.
2. Gather some more juvenile data from the system.
3. Gather more scale samples from adult steelhead.

APPENDIX 1

DATE	AGE	SEX	LENGTH	TAG # (Orange)	LOCATION	COMMENTS
14/9/83	4.3+	M	94.0	02302	Below Bear—Sustut Junc.	
"	4.3+	M	91.4	02303	"	
"	4.2+	F	81.3	02304	"	
"	4.3+	M	104.2	02305	"	
"	4.2+	F	78.7	02306	"	
"	3.2+	F	76.2	02307	"	
"	3.2+	F	78.7	02308	"	
"	3.3+	F	83.8	02309	"	
"	4.2+	F	76.2	02310	"	
"	3.3+	F	94.0	—	"	Released
"	4.3+	M	94.0	02313	"	
"	4.2+	M	83.8	02314	"	
"	4.3+	M	101.6	02315	"	Girth 21″
"	4.2+	F	73.7	02321	"	
"	4.2S1+	F	83.8	02322	"	
"	4.1S1+	M	78.7	02323	"	
23/9/83	4.2+	F	69.9	02351	"	
"	4.3+	M	81.3	02352	"	
"	4.2+	F	72.4	02353	"	
"	4.2+	F	71.1	02354	"	
"	3.2+	F	72.4	02355	"	
"	4.2+	F	78.7	02356	"	
"	3.3+	M	91.4	02357	"	
"	3.3+	M	96.5	02358	"	
"	—	F	71.1	0261	"	
"	—	F	78.7	02371	"	
"	4.2+	F	81.3	02372	"	
"	4.2+	F	76.2	02373	"	
"	-	M	94.0	02374	"	
"	-	F	76.2	02375	"	
"	4.3+	M	91.4	02376	"	
"	3.3+	F	78.7	02377	"	
"	4.3+	F	86.4	02378	"	
"	R.2+	M	81.3	02379	"	
2/10/83	4.2+	F	76.2	02324	"	
"	3.2+	F	76.2	02325	"	
"	4.2+	F	76.2	02326	"	
"	4.3+	M	92.7	02327	"	
"	4.3+	M	97.8	02328	"	
"	4.2+	F	81.3	02329	"	
9/10/83	4.2+	M	86.4	02394	Below Sustut-Johanson	
"	3.2+	M	88.9	02395	"	
"	4.2+	F	68.6	02396	Johanson Lake	
	3.3+	F	88.9	02397	"	
"	4.2+	F	76.2	00403(blue)	Below Bear	
"	3.3+	F	86.4	00407 "	"	

APPENDIX 1

DATE	AGE	SEX	LENGTH	TAG # (Orange)	LOCATION	COMMENTS
9/10/83	4.3+	F	88.9	00408(blue)	Below Bear	
	3.3S1+	F	86.4	00409 "	Johanson Lake	
"	4.3+	M	91.4	00410 "	" Lake	
"	3.3+	M	86.4	00411 "	Sustut-Johanson	
"	3.2+	F	76.2	00412 "	Johanson Lake	
"	4.2+	F	76.2	00413 "	"	
"	3.3+	M	88.9	00414 "	Sustut-Johanson	
"	4.2+	F	78.7	00415 "	Johanson Lake	
"	4.2+	F	81.3	00432 "	"	
"	4.2+	M	83.8	00433 "	"	
"	6+	M	48.3	-	Bear-Sustut	
2/10/83	4.3+	F	87.7	-	"	Killed
"	5.2+	F	78.7	—	"	"
"	4.3+	M	97.8	—	"	Killed Girth 20.5"
"	3.3+	M	97.8	-	"	Killed Girth 20"
14/9/83	4.2+	M	78.7	—	"	Killed
1/10/83	3.2S1+	F	82.6	-	"	Released
"	3.2S1+	F	81.3	—	"	"
3/10/83	4.2+	F	76.2	—	"	" Girth 17.5"

APPENDIX 2

Calculations of juvenile populations.

Sample site

Size		
	Length	16 m
	Width	8 m
	Depth	.2 m

Juvenile numbers from sample site:

Species	Approx. length (mm)	Number	Density/SQM	Adjusted Density
Rainbow				
(fry)	40	29	.23	.28
(parr)	95	18	.14	.17
Dolly Varden	42	1	.01	.01
Chinook	58	24	.18	.23
TOTAL		72	.56	.70

- Most juveniles are located along river margins.
- The number of fish shocked from the site was estimated to be 80% of what was there.
- Extrapolated 16 m sample site over the 18.75 km reach.

Adjusted number of fish collected from sample site X 18750 = Number of fish in the reach.

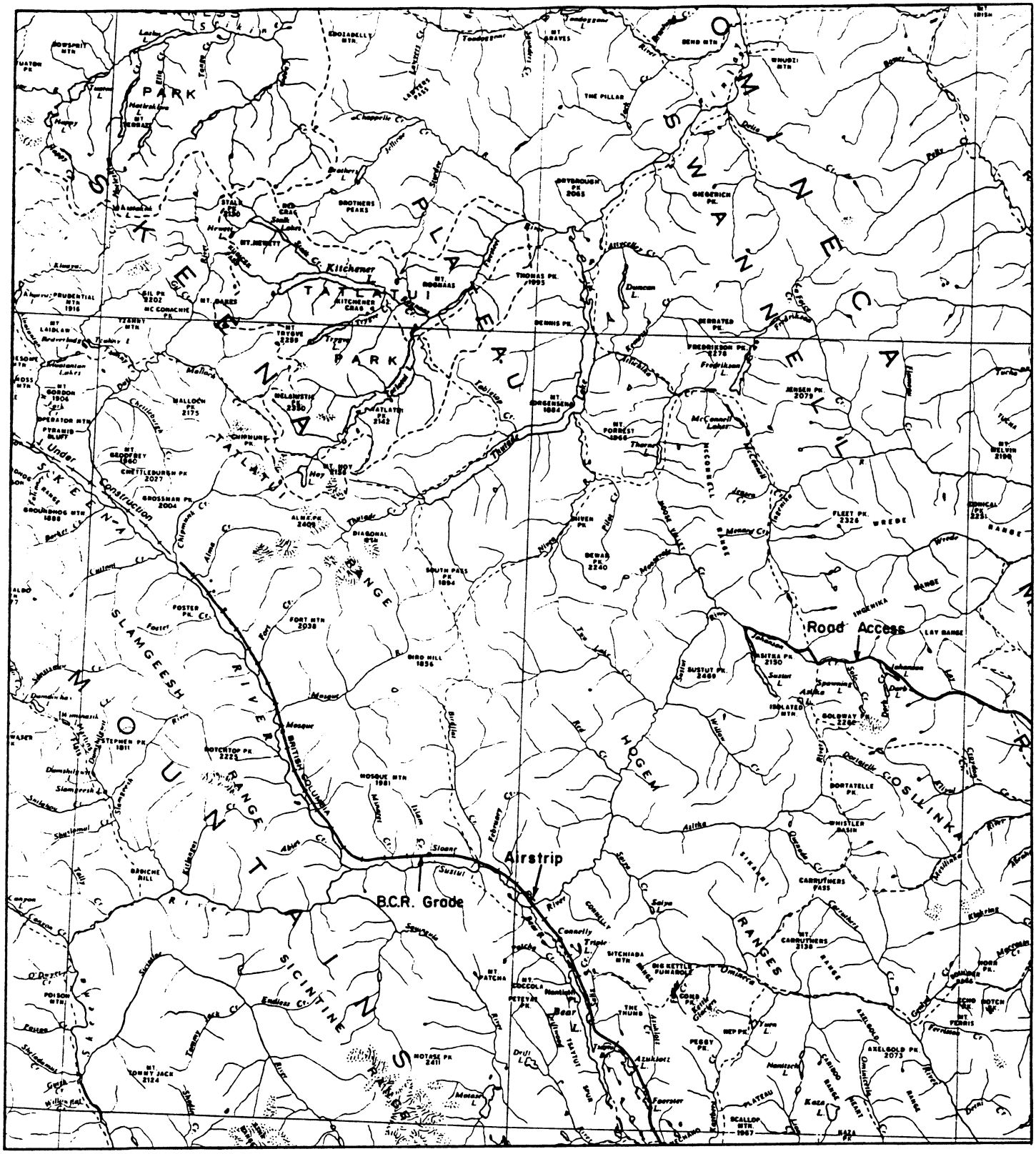
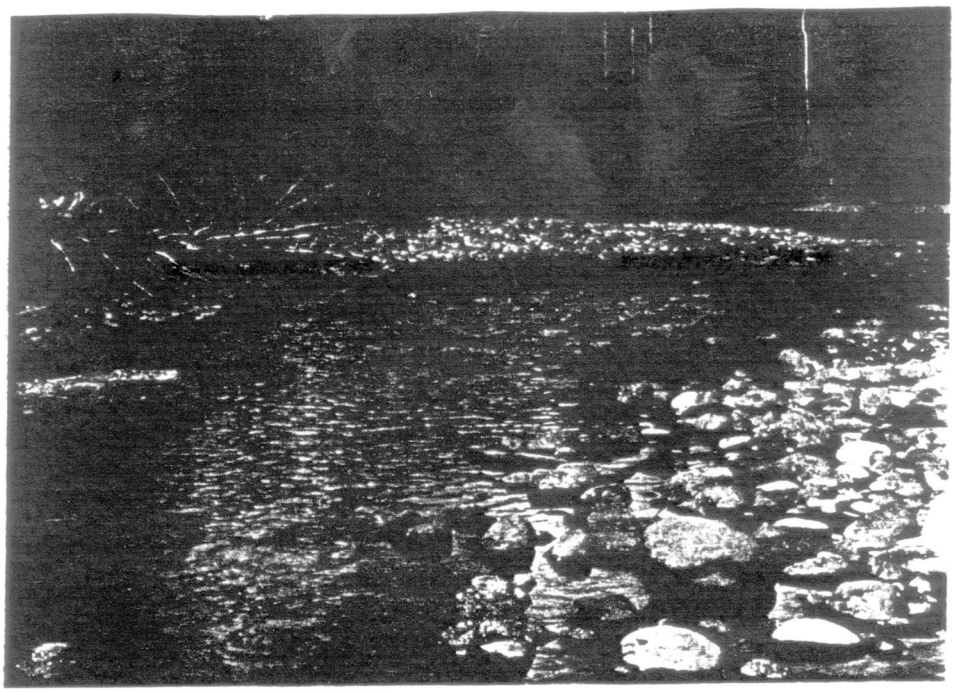
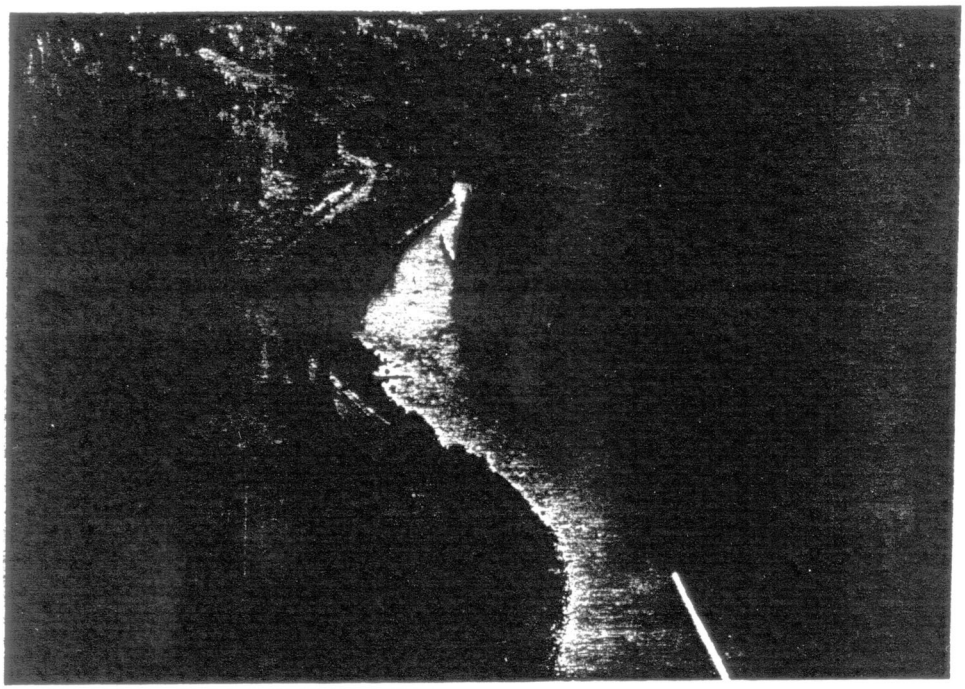


Fig. 1 Sustut River System

APPENDIX 3



Sustut River electro fishing
Sample site 1.



Sustut River below the Bear-Sustut junction.

Sustut River Steelhead.

APPENDIX 4

Steelhead Harvest Analysis for the Sustut River.

SUSTUT

Year	Days Fished	No. Anglers	Wild Kill	Wild Release	Hatch. Kill	Hatch. Release	Total Kill	Total Release	Total Catch	Kill/ Day	Catch/ Day
70/1	536	57	191	289			191	289	480	0.36	0.90
71/2	321	84	114	190			114	190	304	0.36	0.95
72/3	186	48	117	254			117	254	371	0.63	1.99
73/4	248	58	44	18			44	18	62	0.18	0.25
74/5	70	27	34	0			34	0	34	0.49	0.49
75/6	219	53	43	59			43	59	102	0.20	0.47
76/7	273	48	31	76			31	76	107	0.11	0.39
77/8	257	55	56	82			56	82	138	0.22	0.54
78/9	314	71	52	87			52	87	139	0.17	0.44
79/0	255	81	52	32			52	32	84	0.20	0.33
80/1	240	35	36	33			36	33	69	0.15	0.29
81/2	475	60	62	81			62	81	143	0.13	0.30
82/3	290	105	68	142			68	142	210	0.23	0.72