

ZYMOETZ RIVER
STEELHEAD TROUT: A PRELIMINARY
REPORT OF THE 1978 SPORT FISHERY
AND SOME ASPECTS OF THEIR LIFE HISTORY

By

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ZYMOETZ RIVER STEELHEAD
TROUT: A PRELIMINARY
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INTRODUCTION

Steelhead trout (Salmo gairdneri Richardson), are subjected to an intensive sport fishery on the Zymoetz River and its major tributary, the Clore River, which are located on the west-central coast of British Columbia near the city of Terrace. A steelhead angler use and creel survey was conducted on the Zymoetz-Clore in the autumn of 1978 by the Fish and Wildlife Branch. The survey was funded through the Salmonid Enhancement Program and was part of a total system reconnaissance aimed at providing the basis for future management decisions regarding the maintenance or enhancement of this important steelhead fishery.

Zymoetz steelhead were first described by Pinsent and Chudyk (M.S. 1973) who suggested the river be managed as an "everyman's river" - a river for the "average" steelheader. Imbleau (M.S. 1974), after a combined program of creel survey, angler interview and a modest tag and recovery program concurred with the "everyman" concept.

The objective of this study was to collect detailed information on angler origin and distribution in the fishery, their catch, angling methods, fishing effort, and also life histories of the Zymoetz-Clore steelhead.

DESCRIPTION OF THE STUDY AREA AND THE STEELHEAD FISHERY

Zymoetz River, known locally as "Copper River", joins the Skeena River 8 km northeast of Terrace, B. C., 54°33'N., 128° 29'W.

(Fig. 1). The Zymoetz flows for approximately 84 km from its

source in the McDonnell Lake chain to the Skeena, and drains an area of 300 km². McDonnell, and two, smaller, upstream lakes (Dennis and Aldrich) are shallow bodies of water that lie between 10 and 26 km west of Smithers, B. C. behind Hudson Bay Mountain. These lakes moderate temperatures, flows, and sediment loads in the Zymoetz between and for a short distance downstream of the lakes to Serb Creek, a glacial, silt-laden tributary which enters the Zymoetz approximately one km below McDonnell Lake (Fig. 3). The Clore River is the largest tributary of the Zymoetz. It rises in Burnie Lakes, located high in the Bulkley Ranges 50 km southwest of Telkwa, and flows for 75 km to its confluence with the Zymoetz approximately 30 km upstream from the Skeena.

Logging and recreation are the major activities within the Zymoetz drainage area. The Zymoetz valley is the shortest route between Smithers and Terrace hence it has become a major east-west energy transportation corridor (gas and electricity). Road access to the lower Zymoetz is gained via the Copper River Road, which originates near Terrace and parallels the river for 45 km. Access from Smithers is via the Copper River Ranch Road, which skirts the base of Hudson Bay Mountain and then runs adjacent to the Zymoetz for about 24 km (Fig. 3).

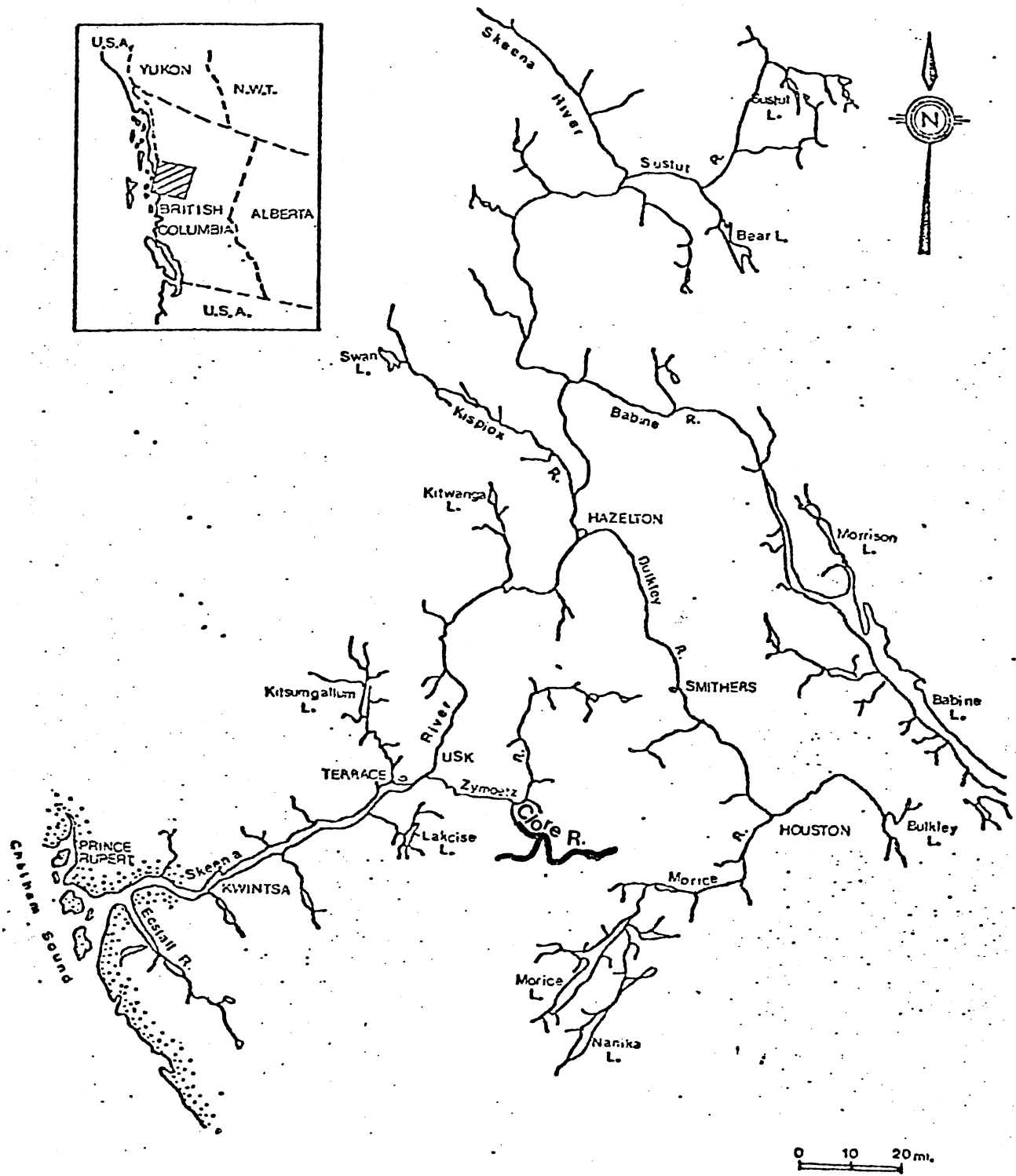


Fig. 1. The Skeena River and main tributaries.

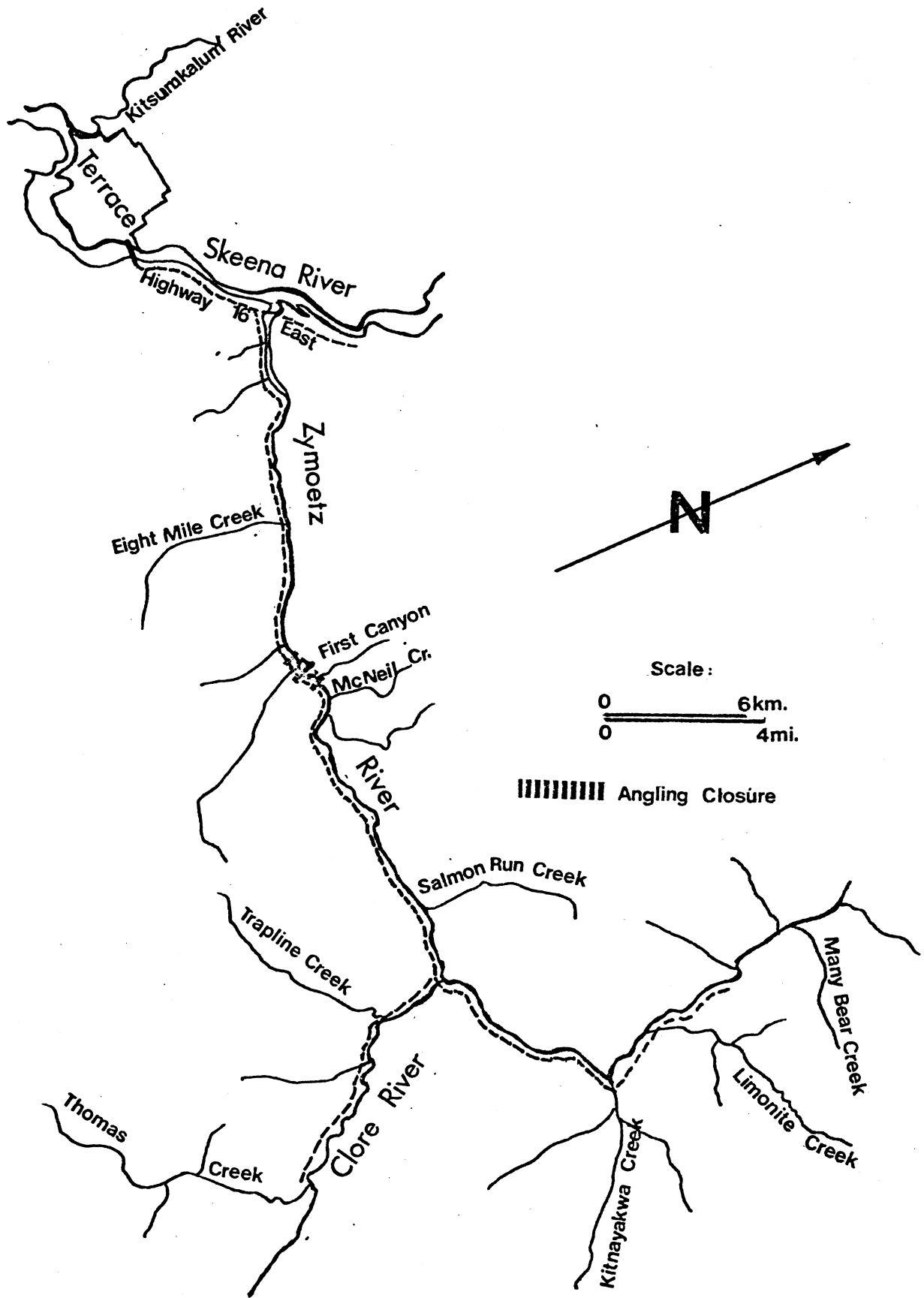


Fig. 2. The lower Zymoetz River and Clore confluence

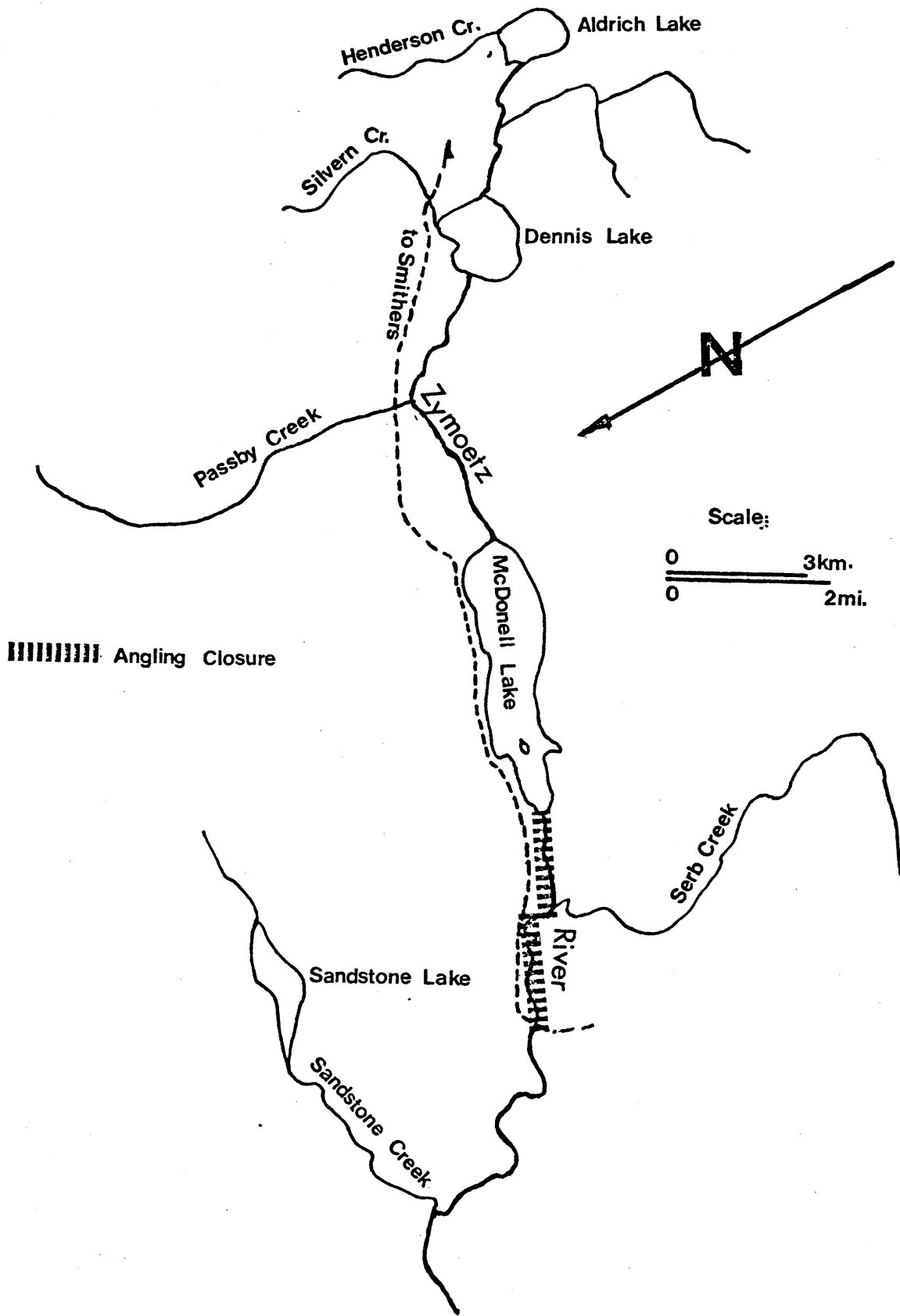


Fig. 3. Upper Zymoetz and headwater lakes.

Zymoetz steelhead are subjected to several fisheries prior to entering the Zymoetz. Like most Skeena summer-run fish, they enter the Skeena estuary in July and August during the peak of the commercial gill net fishery where they are taken incidental to sockeye and pink salmon. Upstream from the commercial fishery, Indian gill nets are set, primarily for salmon, at various sites along the main Skeena. Finally Zymoetz-bound steelhead are subjected to an intensive sport fishery at the Zymoetz-Skeena confluence and downstream on the mainstem Skeena. Steelhead begin appearing in the Zymoetz anglers' catches in late July. The fishery continues until freeze-up in December or until the fishery is closed by regulation from January 15 to June 30 upstream of and including the Clore River. Steelhead overwinter in the Zymoetz and spawn in the spring, principally at the outflow of McDonell Lake (Pinsent and Chudyk M.S. 1973) during late May and June.

British Columbia sport fishing regulations in force during the study period were as follows:

(1) Angling closures:

- (a) from McDonell Lake downstream about 3 km.
- (b) upstream from and including Clore River, Jan. 15 to June 30,
- (c) that part of Zymoetz Canyon marked by signs (Fig. 2).

(2) A roe ban - from Jan. 15 to June 30

(3) A steelhead catch limit of one fish per day and a maximum of two days possession.

METHODS

A permanent angler check station was established at the junction of the Copper River Road with Highway 16 approximately 8 km west of Terrace, B.C. The station was manned by two fisheries technicians from dawn to one hour after sunset each day for the duration of the study (September 1 to October 29, 1978). A roving assistant periodically interviewed anglers on the river bank. Signs were set up to direct anglers off the road and onto a siding, away from traffic. Each group of anglers was then interviewed and the information recorded on creel data cards (the Zymoetz and Clore Rivers were treated as distinct systems). The information requested included residence, length of trip, location of effort, success, and tackle used. The name of each angler was also recorded in order to establish the precise number of individual anglers fishing the Zymoetz and/or the Clore for future comparisons with Steelhead Harvest Analysis, which is the Fish and Wildlife Branch publication presenting annual steelhead harvest data estimated from punchcard returns.

Scale samples were collected and lengths, weights, and sex determined from anglers' catches. Anglers were invited to participate by collecting scale samples and other information from both killed and released steelhead.

Methods used in collection and analysis of steelhead scales were described by Narver and Withler (1974). Two high quality scales from each adult were placed on acetate strips and impressions made with a heated press. The impressions were interpreted using a Microcom 1600 microfiche viewer.

RESULTS

Angler Origin

The Zymoetz and Clore River angler populations were separated into residence categories corresponding to Steelhead Harvest Analysis areas (Tables 1 and 2). A further breakdown compared numbers of anglers from Kitimat, Terrace and Prince Rupert, all of whom were designated as "Local Residents" (Tables 3 and 4).

The angler residence data indicates that the Zymoetz fishery is comprised mainly of B.C. Residents (81.8% of the total number of Zymoetz anglers and 92.2% of the total number of Clore anglers) (Table 1 and 2). On the Zymoetz there were 336 Local Resident anglers (56.9%) (Table 3) of which 293 were from Terrace (Table 5). On the Clore there were 40 Local Resident anglers (66.7%) (Table 4) of which 35 were from Terrace (Table 6).

Table 1. Areas of residence and numbers of Zymoetz River steelhead anglers interviewed from September 1 to October 29, 1978.

Angler Residence	Number of Anglers	Number of Angler Trips	Percent of Total Anglers	Percent of Total Angler Trips
Vancouver Island	11	13	1.9	1.4
Lower Mainland	49	79	8.3	8.6
Kamloops	8	16	1.4	1.8
Okanagan-Kootney	23	40	3.9	4.4
Caribou	4	6	.7	.7
Northern Interior	51	66	8.6	7.2
Upper Mainland Coast	359	526	60.8	57.7
Queen Charlotte Islands	0	0	0	0
Non Resident Canadian	53	71	9.0	7.8
Non Canadians	32	95	5.4	10.4
Total	590	912	100	100

Table 2. Areas of residence and numbers of Clore River steelhead anglers from Sept. 1 to October 29, 1978.

Angler Residence	Number of Anglers	Number of Angler Trips	Percent of Total Anglers	Percent of Total Angler Trips
Vancouver Island	2	6	3.3	6.5
Lower Mainland	5	8	8.3	8.6
Kamloops	0	0	0	0
Okanagan	1	11	1.7	1.8
Caribou	0	0	0	0
Northern Interior	0	0	0	0
Upper Mainland Coast	44	70	73.4	75.3
Queen Charlotte Islands	0	0	0	0
Non Resident Canadian	5	5	8.3	5.4
Non Canadians	3	3	5.0	3.2
Total	60	912	100	100

Table 3. Zymoetz River steelhead angler harvest and catch per unit effort for the 1978 Creel Survey.

Angler Residence	Number of Anglers	Number of Angler Trips	Number of Angler Days	Kills	Releases	Catch per Day	Catch per Angler
Local Residents ¹	335	498	567	49 ²	22	0.13	0.2
Other B.C. Residents	170	248	344	49	51	0.29	0.55
Other Canadians	53	71	64	4	0	0.06	0.08
Non Canadians	32	95	118	15	37	0.44	1.63
Totals	590	912	1093	117	110		

¹Terrace, Kitimat or Prince Rupert residents.

²Two steelhead killed by local juveniles were not included in total.

Table 4. Clore River steelhead angler harvest and catch per unit effort for the 1978 creel survey.

Angler Residence	Number of Anglers	Number of Angler Trips	Number of Angler Days	Kills	Releases	Catch per Day	Catch per Angler
Local Residents	40	63	76	14	12	0.34	0.65
Other B.C. Residents	12	22	29	1	1	0.28	0.67
Other Canadians	5	5	6	0	0	0.0	0.0
Non Canadians	3	3	6	2	2	0.50	1.0
Totals	60	93	117	17	20		

Table 5. Number and per cent of Local Resident anglers and angler trips to the Zymoetz River, Autumn 1978.

Angler Residence	Number of Anglers	Percent of Total Anglers (n=590)	Number of Angler Trips	Percent of Total Angler Trips
Terrace	293	49.7	445	48.9
Kitimat	34	5.8	44	4.8
Rupert	9	1.4	9	1.0
Total	336	57.0	498	54.7

Table 6. Number and per cent of local resident anglers and angler trips to the Clore River, Autumn 1978.

Angler Residence	Number of Anglers	Percent of Total Anglers (n=60)	Number of Angler Trips	Percent of Total Angler Trips (n=93)
Terrace	35	58.3	55	59.1
Rupert	1	1.7	1	1.1
Kitimat	4	6.7	7	7.5
Total	40	66.7	63	67.7

Among non-locals on the Zymoetz, the largest percentage of angler-trips originated from the United States (10.4%), the Lower Mainland Coast (8.6%) and from Alberta (7.8%).

On the Clore among non-locals the largest percentage of angler trips originated from the Lower Mainland, Vancouver Island and other parts of Canada (8.6%, 6.5% and 5.4% respectively (Table 2).

Angler Effort and Success

Six hundred and fifty anglers were interviewed on the Zymoetz-Clore during the 1978 fishery, of which 590 fished the Zymoetz mainstem and 60 fished the Clore (Tables 1 and 2). The total number of angler days expended were 1210 on the Zymoetz-Clore combined, 1093 on the Zymoetz and 117 on the Clore.

Zymoetz anglers killed 117 (51.5%) of 227 steelhead caught while Clore anglers killed 17 (46%) of 37 fish caught. Non-Canadian anglers killed 28.5% of their catch on the Zymoetz and 50% on the Clore. Local residents killed 69 per cent of their Zymoetz catch and 57.8% of their Clore catch.

Non-local B.C. Residents caught the most fish (44.1%) in the Zymoetz followed by Local Residents (31.3%), whereas local anglers (70.3%) were more successful than other B.C. residents (21.6%) on the Clore River. In terms of catch per angler, Non-Canadian residents were by far the most successful (1.63 fish for the Zymoetz angler, 1.0 fish for the Clore angler), followed by other B.C. residents (.59 fish for the Zymoetz angler, .67 fish for the Clore angler) (Tables 3 and 4).

STEELHEAD CATCH DISTRIBUTION

Timing

As mentioned previously Zymoetz-Clore steelhead first became available to the Zymoetz angler during the latter half of July. In 1978, the fishery continued until the first of November when a torrential rainstorm caused extensive flooding and forced the closure of the fishery and the check station. The Zymoetz-Clore weekly harvest rate (during the census period) peaked during the week ending September 9 with a second peak during the week of September 23 (Fig. 4). In terms of angler-trips per week (Fig. 7), the one major peak occurred during the week ending September 9.

Location of Effort and Tackle Type

The area upstream from the Clore River on the Mainstem Zymoetz attracted the greatest proportion of angler effort (42.9% of the total number of angler-trips) (Table 7). The next most frequented area was between the first canyon (Fig. 2) and the Clore (26.8% of the total number of angler trips).

Almost 70% of the total Zymoetz-Clore steelhead catch were angled upstream of the Clore confluence, not including the MacDonell Lake area (Table 7).

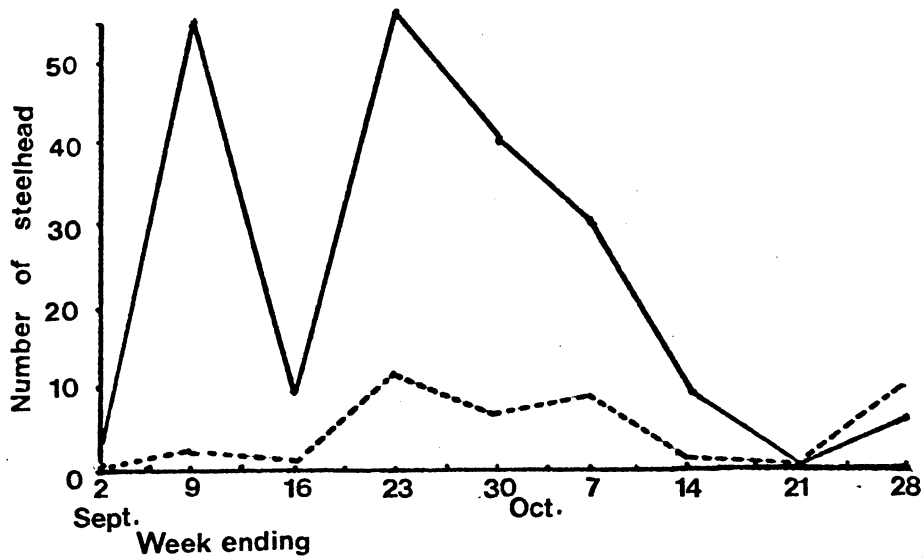


FIG. 4 Weekly steelhead harvest (kills plus releases) Zymoetz -Clore River creel survey 1978

— Zymoetz R.
 - - - Clore R.

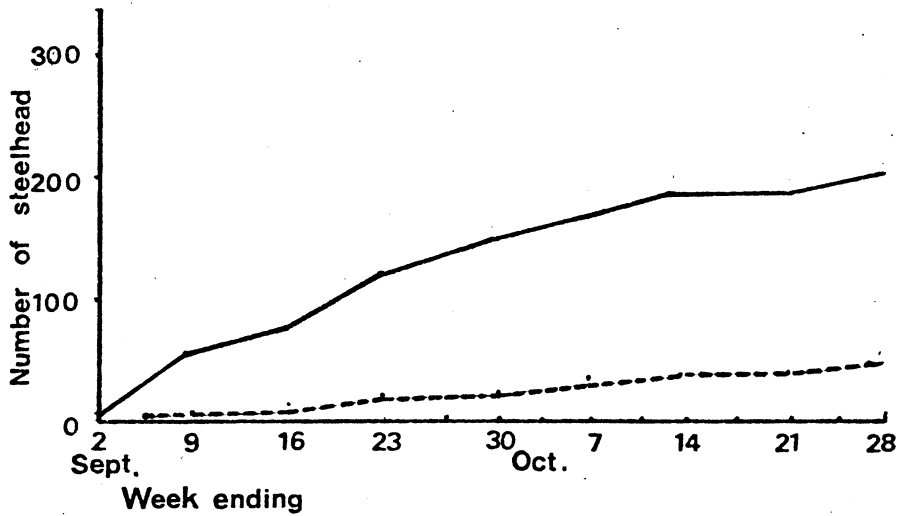


FIG. 5 Weekly cumulative steelhead harvest (kills plus releases) Zymoetz -Clore River creel survey 1978

— Zymoetz R.
 - - - Clore R.

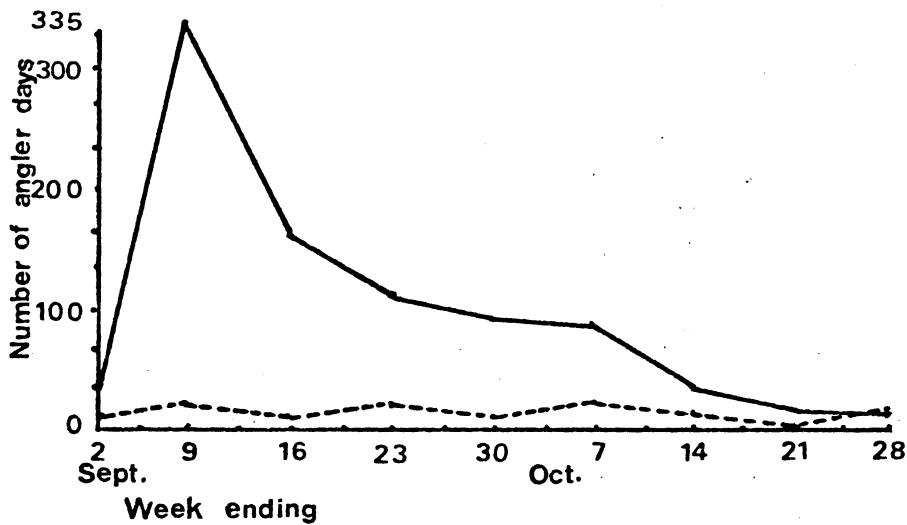


FIG. 6 Weekly total number of angler days Zymoetz-Clore River creel survey 1978

— Zymoetz R.
 - - - Clore R.

Table 7. Location by area for number of angler trips and steelhead caught (kills plus releases) on the Zymoetz and Clore Rivers, September 1 - October 29, 1978.

Location	Angler Trips ¹	Percent	Catch	Percent
River mouth to list Canyon	199	19.8	6	2.3
Above Canyon to Clore	266	26.5	20	7.6
Upstream of Clore	431	42.9	179	67.8
Clore River	95	9.5	37	14.0
McDonnell Lake	13	1.3	22	8.3
Total	1004	100	264	100

¹Totals do not tally with numbers of angler trips presented in other tables as many anglers fished several zones during one trip.

Table 8. Numbers and percentages of steelhead killed and released by roe, lure and fly fishermen on the Zymoetz River September 1 - October 29, 1978.

	Steelhead			Steelhead		
	Roe	Lure	Fly	Roe	Lure	Fly
Number	62	55	3	53	55	14
Percent	53.9	50.0	17.6	46.1	50.0	82.4

Table 9. Steelhead trout age groups from Zymoetz River, 1978 (n = 116).

Age Group	Number Steelhead	Number Male	Number Female	Percent of Steelhead	
3.1+	5	4	1	4.3	
3.2+	15	5	10	12.9	
3.3+	1	1	0	.9	
3.2S1+	5	1	4	4.3	
4.1+	9	7	2	7.8	
4.2+	50	17	33	43.1	
4.3+	2	2	0	1.7	
4.1S1+	3	2	1	2.5	
4.1S1S1+	1	1	0	.9	
4.1S2+	1	1	0	.9	
4.2S1+	23	4	19	19.8	
4.2S1S1+	1	0	1	.9	
	12	116	45	71	100

Table 10. Numbers of male and female steelhead of different freshwater ages, Zymoetz River, 1978 (n = 116).

Sex		Freshwater Age		Total
		3	4	
M	n	11	34	45
	%	24.4	75.6	38.8
F	n	15	56	71
	%	21.1	78.9	61.2
Total	n	26	90	116
	%	22.4	77.6	100

Trips to the Zymoetz by roe and lure anglers outnumbered those of fly fishermen by a wide margin. Anglers, either roe, lure, or fly, were randomly dispersed over the whole Zymoetz system.

During the study, roe anglers killed 62 fish (53.9%) and released 53 fish (46.1%) (Table 8). Lure anglers killed 55 fish (50%). Fly fishermen killed three fish (17.6%) and released 14 fish (82.4%). The ratio of steelhead killed to released for the three fishing methods, roe, lure, and fly, were 1:0.8, 1:1, and 1:4.6 respectively.

LIFE HISTORY OF THE ZYMOETZ STEELHEAD

Adult Steelhead Age-Sex Relationships

Of 116 steelhead sampled from anglers' catches on the Zymoetz during the study, all samples had scales that were readable for total age determination. Twelve age groups were identified (Table 9) - six groups for maiden fish and six groups for repeat spawners. The most frequently observed age groups for maiden fish were 4.2+ (43.1%), 3.2+ (12.9%), 4.1+ (7.8%). There were too few Clore samples to make a distinction; the Clore samples were combined with those⁷ of Zymoetz.

Adult Zymoetz steelhead sampled spent three (22.4%) and four (77.6%) winters in fresh water before migrating to sea (Table 10).

There was no difference between males and females in age at smolting (males 75.6%, at 4., females 78.9% at 4). In ocean age, however, male first-time spawners were distributed between .1+ (30.6%) and .2+ (61.1%) while females were largely .2+ (93.5%) (Table 11). In the sample of 82 first-time spawners, only three (3.7%) were of ocean age .3+. All were male steelhead.

Thirty-four (29.3%) of the total sample (116) were observed to be repeat spawners (Table 12). The ratio of female to male repeat spawners was approximately 2.1:1 in 1978.

The majority (96%) of female repeat spawners had spent two winters in the ocean prior to their initial spawning migration, whereas male repeat spawners spent one (44.4%) and two (55.6%) winters in the ocean before their first spawn. One steelhead was returning for its second spawn while two steelhead (one male and one female) were returning to spawn for their third time.

Adult Steelhead Lengths and Weights

Male and female steelhead of ocean age .2+ occurred most often (56%) among anglers' catches on the Zymoetz River (Table 9). The average weight of male .2+ steelhead was 5.5 kg and of females 4.7 kg (Table 13). One - ocean males averaged 1.9 kg. There were only two one-ocean females. Three ocean fish were scarce; only three (all males) were caught, one of which weighed 8.6 kg.

Table 11. Numbers and percentages of male and female steelhead of different ocean ages, Zymoetz River 1978 (n = 82) (Repeat spawners excluded).

		Ocean Age			Total
		.1+	.2+	.3+	
Male	n	11	22	3	36
	%	30.6	61.1	8.3	100
Female	n	3	43	0	46
	%	6.5	93.5	0	100
Total	n	14	65	3	82
	%	17.1	79.3	3.6	100

Table 12. Numbers and percentages of repeat spawning steelhead of different ocean age groups sampled from Zymoetz River anglers' catches, 1978 (n = 116).

		Ocean Age					Percent of Total
		.1S1+	.2S1+	.1S1S1+	.2S1S1+	.1S2+	
M	n	2	5	1	0	1	9
	%	22.2	55.6	11.1	-	11.1	100
F	n	1	23	0	1	0	25
	%	4.0	92	-	4.0	-	100
Total	n	3	28	1	1	1	34
	%	8.8	82.5	2.9	2.9	2.9	100

Table 13. Round weights and fork lengths of male and female steelhead of different ocean ages from Zymoetz River anglers' catches in the fall, of 1978. Repeat spawners excluded; numbers of fish for each age category vary because of incomplete information as to weight or length or both.

Sex	Ocean Age	Average	Range	Number
<u>Weights</u>				
Male	.1	1.9	1.5 - 4.3	4
	.2	5.5	5.0 - 5.9	7
	.3	8.6	8.6 -	1
Female	.1	2.6	1.9 - 2.9	2
	.2	4.7	3.7 - 5.7	12
	.3	-	-	-
<u>Lengths</u>				
Male	.1	56.9	53.0 - 61.0	10
	.2	80.6	75.5 - 91.5	16
	.3	93.4	91.3 - 95.5	2
Female	.1	64.2	61.0 - 67.0	3
	.2	75.4	67.8 - 87.0	33
	.3	-	-	-

DISCUSSION

Although the creel census commenced on September 1, the 1978 Zymoetz steelhead fishery was well underway as early as the first week of August. Unfortunately there is no way to accurately predict angler numbers or success during that month. Angler harvest, however, can be roughly estimated from information received from anglers interviewed during the creel census. Knowledgeable local anglers estimate that approximately 100 steelhead were caught during August. If we assume a kill: release ratio for August to be similar to the September - October period, then the number of steelhead killed would approximate 55 (55%). The total harvest for the three month fishery (Zymoetz and Clore) would then be 189 fish plus 175 releases. The reader must bear in mind the hearsay evidence, no matter how knowledgeable the source, upon which these assumptions are based.

Heavy rainfall and flooding in the Terrace area stopped all angling for the year on November 1, 1978. Terrace and the lower portion of the Zymoetz are located quite close to the coast and climate, during most years, is considerably more moderate than in the Smithers area, therefore the Zymoetz fishery often continues throughout the winter (downstream of the Clore). It is hoped that an additional survey in 1979 will provide the information missed during August 1978, and during the abnormal post-flood period.

Although a "Special River" by regulation, the Zymoetz does not attract large numbers of non resident anglers to the degree that the Kispiox River does. In fact, the Zymoetz is more akin to the Morice in terms of non-resident effort - non resident anglers expended only 16 per cent of the total number of angler days monitored on the Zymoetz-Clore, while non-residents accounted for approximately 11 percent of the angler days on the Morice (Whately, et al 1978). On the Kispiox 76 per cent of the effort in 1975 (Whately, 1977) was expended by non residents. The major feature not shared by the Morice, the Kispiox and the Zymoetz is the established reknown connected with the Kispiox as a producer of trophy-sized fish (> 9 kg). Kispiox steelhead are predominantly .2+ and .3+ ocean age (>70% of the total number of Kispiox age groups) with average weights ranging from 5 to 12.5 kg (Whately 1977). On the other hand, ocean age for Zymoetz-Clore steelhead is predominantly .2+ (79%) (Table 11) with average weights ranging from 3.0 - 5.9 kg (Table 13). Morice steelhead are predominantly .1+ ocean age with an average weight of only 1.7 kg (Whately et al 1978).

Zymoetz anglers, like Morice anglers, tend to kill a higher proportion of their catch than do Kispiox anglers. Fifty-one percent of the steelhead caught on the Zymoetz system were killed. Similarly, Morice anglers killed 68 per cent of their total catch (Whately et al 1978) whereas only a 24 percent kill was experienced on the Kispiox (Whately 1977).

As is usual in most steelhead fisheries, however, Zymoetz-Clore fly fishermen killed a lesser percentage of their catch than did roe or lure anglers (18 per cent as opposed to about 50 percent for roe or lure). Fly fishermen, however, were very much a minority on the Zymoetz unlike the Morice (Whately, et al. 1978) or the Kispiox (Whately, 1977). Among Zymoetz steelhead age groups, fish of freshwater age 4.. accounted for 77.5 percent of the total sample, hence 22.5 percent were of age 3. Again using Kispiox and Morice steelhead as a comparison, 70 percent of the Morice sample were 4. with 23.5 per cent age 3. (Whately at al 1978) while 56 percent of a Kispiox sample in 1975 were of freshwater age 4. and 40 per cent were age 3. (Whately 1977). Narver (1969) found that only 15 percent of a sample of Babine River steelhead were age 4. with 82 per cent age 3.. Over the four systems compared, the Zymoetz, Morice, and to a lesser extent, the Kispiox, are close to having the same freshwater age structure while the Babine produces younger smolts. The more productive, stable environment afforded by a large lake such as Babine is a factor not shared by the other three that may contribute to greater proportions of 3. smolts in the Babine system. This assumption seems to be supported by the greater proportions of older smolts on the other three systems that are not headed by as large a body of water as Babine Lake.

Repeat spawners among the Zymoetz steelhead sample comprised 29.3 per cent of the total. This is high compared with the 17.6 per cent observed in the Kispiox sample (Whately, 1977) and the 6.6 percent on the Morice (Whately et al, 1978).

The high incidence of repeat spawners in the Zymoetz population may be related to the river's proximity to the ocean. The Zymoetz-Skeena confluence is located only 80 km. from the ocean. Zymoetz steelhead should then be subjected to much less stress during upstream migration than Kispiox or Morice fish. The same might be assumed for downstream migration of kelts.

CONCLUSIONS

Results of the study reported herein generally indicate that Zymoetz-Clore River anglers are predominantly local in origin, that local anglers are not as successful as other B.C. or non resident anglers, and that they kill most of the fish caught, most of which do not exceed 4.5 kg (10 pounds). Virtually all of the fish are caught in the Clore and upstream from the Clore (90%) on the mainstem Zymoetz. In the short term, until McDonell Lake spawning and rearing are enhanced, Zymoetz stocks must be maintained using regulations designed to exemplify the non-specialized and local nature of the fishery while at the same time protecting this important but delicate stock from overharvest.

SUMMARY

1. During the period September 1 to October 29, 1978, a creel survey and catch sampling program was conducted on the Zymoetz and Clore Rivers to gather information on the steelhead fishery including angler origin, effort, methods used and success.

Scale samples, lengths and weights were also collected from anglers' catches for life history analysis.

2. Zymoetz River steelhead anglers were found to be primarily British Columbia residents (81.8%) as were Clore River anglers (92.2%). "Local" residents (Terrace, Kitimat and Prince Rupert) had the highest representation on the Zymoetz and Clore, 56.9% and 66.7% respectively.
3. Total effort expended by all anglers on the Zymoetz-Clore was 1210 angler days, 1093 on the Zymoetz and 117 on the Clore.
4. The total catch was 264 steelhead (37 from the Clore) of which 130 (49.2%) were released. Mainstem Zymoetz anglers killed 117 steelhead while 17 were killed on the Clore. The majority of the total catch was attributable to Non-local Residents of B.C. (44.1%) followed by Local Residents (31.3%). On the Clore, local anglers accounted for 70.3% of the catch followed by other B.C. residents (21.6%).
5. The catch per day for all anglers on the Zymoetz-Clore was 0.22. In terms of catch per angler, Non-Canadians were by far the most successful (1.63 fish per angler on the Zymoetz and 1.0 on the Clore) followed by other B.C. residents (0.59 fish for Zymoetz anglers, 0.67 fish for Clore anglers) then Local Residents and Non-resident Canadians.

6. The 1978 Zymoetz-Clore steelhead fishery began in early August and continued until October 29 when torrential rains and flood waters closed down the fishery. Peaks in harvest rates during the census period occurred in late September which corresponded to the highest concentration of anglers.
7. The most successfully fished area on the Zymoetz system was from and including the Clore river upstream to the end of the Copper River road. Only 26 fish (9.8%) were caught downstream of the Zymoetz-Clore confluence during the census period.
8. Roe and Lure anglers killed 53.9% and 50% of their fish respectively while fly fishermen killed only 17.6% of their fish. The ratio of steelhead killed to release for the three fishing methods (roe, lure, and fly) were 1:0.8, 1:1 and 1:4.6 respectively.
9. Among 116 readable scales collected in 1978 12 age groups were identified. The most frequently observed age groups were 4.2+ (43.1%), 4.2S1+ (19.8%), 3.2+ (12.9%) and 4.1+ (7.8%). The majority of Zymoetz steelhead spent four (77.6%) years in freshwater prior to seaward migration.
10. Among first-time spawners 93.5% of the females and 61.1% of the males were of ocean age .2+. Thirty percent of the males were .1+ fish whereas only 6.5% of the females were .1+ fish.

11. Repeat spawners accounted for 29.3% of the total sample (116). The ratio of female to male repeat spawners was approximately 2.8:1 in 1978. Of the 116 fish sampled three were observed to have spawned more than once.

12. Weights of male steelhead at ocean age .1+, .2+ and .3+ averaged 1.9, 5.5 and 8.6 kg respectively. Two-ocean females averaged 4.7kg.

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