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P/FR/SK/80
BEERE, M.C.
SKEENA RIVER STEELHEAD
OBSERVER PROGRAM: JULY
CPLA c. 2 mm SMITHERS

THE SKEENA RIVER
STEELHEAD OBSERVER
PROGRAM
JULY 18-AUGUST 18, 1992

SK-80

M.C. BEERE

B.C. ENVIRONMENT
RECREATIONAL FISHERIES BRANCH
SMITHERS, B.C.

SKEENA FISHERIES REPORT # SK 80

OCTOBER, 1992

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1.0 INTRODUCTION

In 1991, the Department of Fisheries and Oceans (DFO) acknowledged the problem of steelhead interception in commercial fisheries in the approaches to the Skeena River and committed to a 50% reduction in steelhead harvest and harvest rate over a three year period commencing 1992. The commercial fishing industry, acting proactively and with DFO support, developed a "steelhead conservation and research" program which advocated, in part, the release of gillnet caught steelhead. Concern was expressed by sportfish spokespersons that survival of steelhead subjected to such treatment was questionable and results reported by commercial fishermen would require corroboration by independent sources. An observer program was developed to address these criticisms and examine the efficacy of gillnet release as an ongoing management strategy.

The primary objective of the observer program was to examine the proportion of gillnetted steelhead which were alive when landed and to judge subjectively the health of those fish. While it was recognized that verification of steelhead catch reporting was also a desirable objective it was understood that this could not be accomplished given the scope and design of the observer program. The program did however provide opportunity to make anecdotal observations on the catch reporting issue.

2.0 METHODS

Five commercial gillnet openings were selected for the Observer Program, commencing on July 18 and concluding on August 18, 1992. These openings were chosen to capitalize on the expected combination of high gear density and the peak steelhead run timing.

British Columbia Environment (BCE) Fisheries Branch staff from Smithers and a small number of BCE employees from other administrative regions of the Province participated in the program. BCE was responsible for ensuring that employees were delivered to dockside. The Fisheries Branch also obtained a contractor who employed ten observers and coordinated the activity and deployment of all observers. In addition, volunteers from the sport fishing community were encouraged to take part in the study. Volunteers were reimbursed by the DFO for travel, meals and accommodation.

All observers received basic instruction before entering the fishery. Topics covered included data collection and recording procedures, fish identification and safety. Instruction was given by BCE and DFO employees and by the contractor hired by BCE.

As a condition of the licence to fish commercially in statistical area 4, DFO required all vessels to be equipped with a live tank and water circulating system to hold and revive steelhead. Industry (the North Coast Advisory Board) was responsible for the active promotion of the catch

and release project and for soliciting the cooperation of vessel operators in accommodating observers and accurately reporting steelhead capture.

Finally, BCE was responsible for the preparation of a report summarizing the results of the investigation.

Observers worked exclusively in the area adjacent to the Skeena River mouth (statistical areas 4-15 and 4-12 - Figure 1.) because gear was concentrated and travel distances short thus making it possible to deploy and recover observers within daylight hours. They were transported from Port Edward into the fishery by the Prince Rupert Water Taxi (contracted by the DFO), a DFO rigid hull inflatable Zodiac and a BCE 22' aluminum jet boat. Where possible, observers were transported to the fishing grounds prior to the start of the commercial fishery opening. Commercial vessels were approached and requested to permit an observer to board for a short time. Once aboard a vessel, observers were instructed not to interfere with fishermen and to be as unobtrusive as possible in collecting data. Observer locations were tracked with the aid of VHF radio and neon bright flags. Observers were not deployed on days where visibility was limited excessively by fog.

The data recording form provided by BCE is shown in Appendix I. Data recorded included fishing location, the time the net was set and length of time fished, number of salmon caught

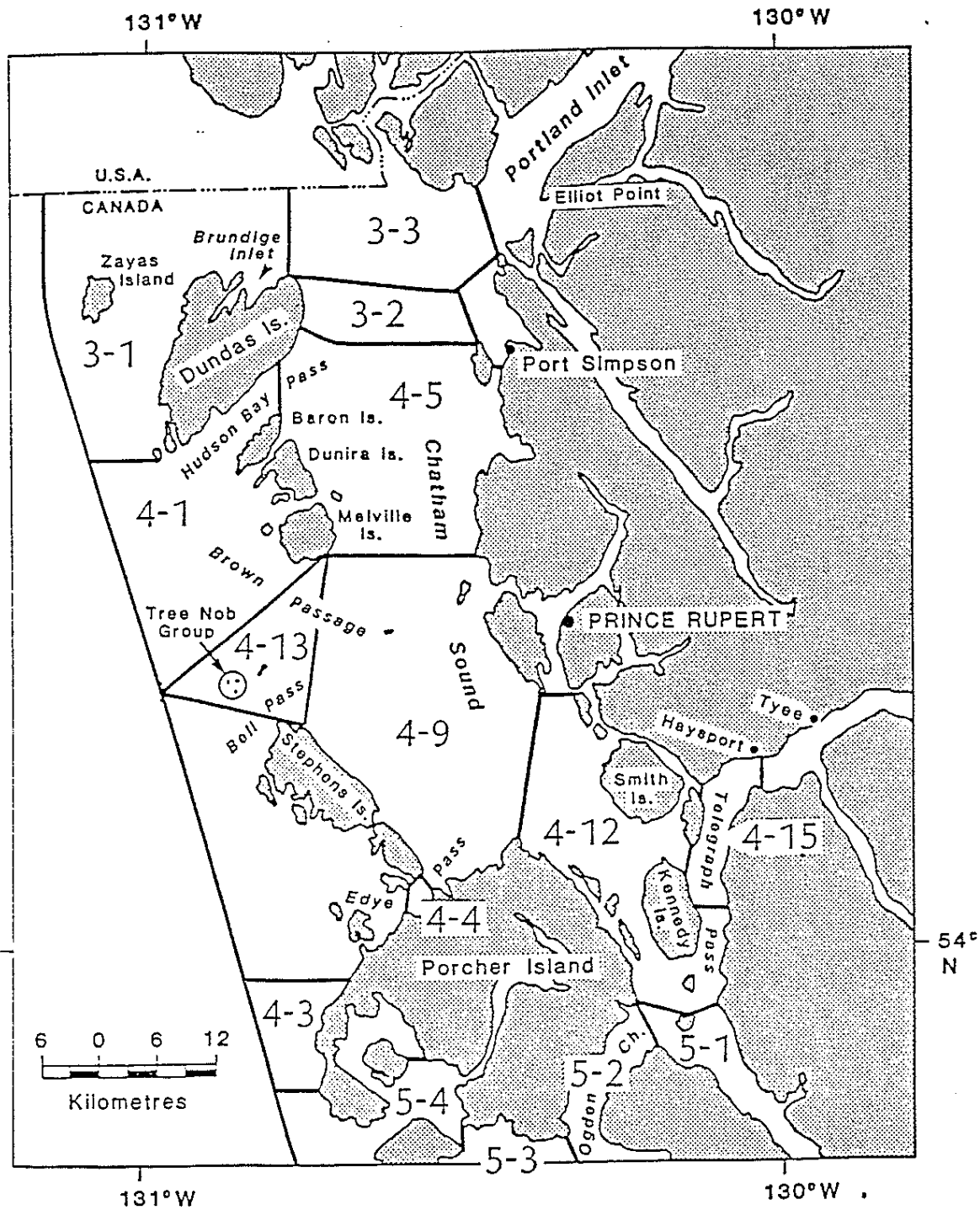


Figure 1. Map showing commercial fishery statistical areas including study location: areas 4-12 and 4-15.

by species, number of steelhead caught and the condition and fate of steelhead captured.

Under a separate program a live holding facility situated at Oceanic, off the south west corner of Smith Island (Figure 1.), was contracted by the DFO to anchor tag and hold steelhead until release at the end of each commercial opening. Commercial gillnet vessels with live steelhead were requested to radio the holding facility and have the contractor pick up and transport the fish to the Smith Island live barge. Some observers found themselves aboard vessels participating in the transport and live tank project but there was no planned linkage between the two projects.

Data sheets that were not completed fully were not used in data analysis. Only complete gillnet sets were considered valid. The total time a net fished was considered as the time between the start of the set and the start of net retrieval.

3.0 RESULTS AND DISCUSSION

Between July 18 and August 18, 1992, 139 observers were placed aboard commercial gillnet vessels. Three hundred and nine complete gillnet sets were observed for a total of 283.8 hours of fishing, during which 62 steelhead were captured (20% of all landings observed included steelhead). Of the 62 steelhead observed, 45 (73%) were dead when landed or died shortly after being extracted from the gillnet (Table 1.). These results compared closely with mortality rates

Table 1. Steelhead Observer Program Data Summary.

Date	Observers deployed	Hours observed	Hours per observer	No. sets observed	Sets per observer	Steelhead Dead	Steelhead Observed Alive	Steelhead per set	Sockeye	Std:Sock	Pink	Chum	Coho	Chinook	Jack Chin.
Week 29															
7/18/92	4	6.0	1.5	8	2.0	0	0	0.00	129	0.000	22	1	2	1	1
7/19/92	14	32.1	2.3	37	2.6	2	1	0.08	571	0.005	118	0	1	6	1
7/20/92	1	10.5	10.5	5	5.0	1	0	0.20	38	0.026	10	1	0	0	0
Week Total	19	48.6	2.6	50	2.6	3	1	0.08	738	0.005	150	2	3	7	2
Week 30															
7/25/92	10	33.1	3.3	28	2.8	2	1	0.11	522	0.006	77	1	0	0	0
7/26/92	12	26.3	2.2	31	2.6	2	1	0.10	267	0.011	122	7	1	4	0
7/27/92	11	18.9	1.7	25	2.3	1	2	0.12	363	0.008	160	10	6	0	0
7/28/92	1	0.0	0.0	1	1.0	0	0	0.00	53	0.000	29	0	1	0	0
Week Total	34	78.3	2.3	85	2.5	5	4	0.11	1205	0.007	388	18	8	4	0
Week 31															
8/2/92	12	33.2	2.8	34	2.8	7	2	0.26	832	0.011	621	3	8	7	0
8/4/92	6	5.4	0.9	7	1.2	1	0	0.14	168	0.006	531	1	2	0	0
Week Total	18	38.6	2.1	41	2.3	8	2	0.24	1000	0.010	1152	4	10	7	0
Week 32															
8/9/92	12	17.1	1.4	15	1.3	4	3	0.47	356	0.020	525	9	2	1	0
8/10/92	22	42.4	1.9	55	2.5	5	3	0.15	908	0.009	1527	72	14	1	0
8/11/92	4	3.4	0.9	5	1.3	1	0	0.20	57	0.018	84	3	2	0	0
Week Total	38	62.9	1.7	75	2.0	10	6	0.21	1321	0.012	2136	84	18	2	0
Week 33															
8/16/92	11	8.2	0.7	14	1.3	0	2	0.14	249	0.008	519	11	2	0	0
8/17/92	9	17.0	1.9	21	2.3	9	1	0.48	267	0.037	559	8	3	0	0
8/18/92	10	30.3	3.0	23	2.3	10	1	0.48	638	0.017	2075	27	14	1	0
Week Total	30	55.5	1.9	58	1.9	19	4	0.40	1154	0.020	3153	46	19	1	0
Grand Total	139	283.8	2.0	309	2.2	45	17	0.20	5418	0.011	6979	154	58	21	2

observed in "weedline" studies conducted in the same area in 1991 (162/243 or 67%) and 1992 (233/315 or 74%)(V. Lewynsky, Pers. Comm.).

Live steelhead were either released from the vessel or transported to the steelhead holding facility. Steelhead in the holding facility were anchor tagged and released at the end of each opening.

Attempts to deploy observers were regularly delayed by frequent encounters with fishermen who were either unaware of the program or were not willing to accept an observer aboard. During the five week program it was estimated that only 20 per cent of the vessels approached accepted an observer. At least seven of the commercial vessels boarded were not equipped with a live tanks to hold steelhead. This is considered to be an underestimate as many observers commented verbally that live boxes were conspicuously absent.

As the program progressed the incidence of steelhead capture increased. During the first week of the study, steelhead were captured in eight per cent of all net sets observed. This figure rose to 11 per cent in the second week, 24 per cent in the third week, 21 per cent in the fourth week and 41 per cent in the last week. This reflected closely the run timing pattern for Skeena River steelhead.

Many fishermen expressed a preference for fishing particular tides, yet almost all fishermen

observed set nets steadily through the day. The average time fished per set for all five openings was 68 minutes. There was no apparent correlation between length of set and condition of steelhead because there was no way of discerning exactly when the steelhead encountered the net. Steelhead were found dead in sets fished as little as 16 minutes while some lived through sets which fished as long as 150 minutes. Mortalities appeared more prevalent when gill tissue became damaged by the net or when steelhead were stressed or injured by thrashing aggressively in the gillnet for a prolonged period.

No correlation was found between incidence of steelhead interception and location fished. This was not unexpected given the small sample size and the low frequency of acceptance of observers. However, fishermen commonly remarked on the large number of steelhead caught in the De Horsey Slough.

Observers were instructed to record whether or not steelhead were captured in the top meter of the net. Of the 62 steelhead landings witnessed, 48 records of location in the net were available. Twenty one steelhead (44%) were caught in the top meter of net while 27 (56%) were not.

4.0 CONCLUSIONS AND RECOMMENDATIONS

1. The present study revealed that 73% of gillnetted steelhead were dead when landed. Two other studies involving the use of weedline equipped gillnets in these same waters produced direct mortality rates of 67% and 74% in 1991 and 1992 respectively.

Given that the direct mortality rate for gillnetted steelhead is approximately 70% under ideal circumstances and conditions, that additional but unknown indirect mortality occurs and that high gear densities result in many released fish being recaptured, reliance on gillnet release as a major contributor to conservation and allocation requirements is unfounded.

2. Only approximately 20% of the vessels approached and requested to accommodate observers complied. Any project such as this, where the support of industry is required in order that the study progresses smoothly, requires that a commitment be made from industry to oblige observers. Whether this commitment is voluntary or made a requirement by the DFO it is necessary so that much time is not wasted attempting to find vessels for observers. Also observers should be deployed to vessels in advance of the start of the fishery and be equipped to stay aboard for the duration of the opening. Consideration should be given to making it a condition of licence to accept observers.

3. Compliance with the "requirement" that all vessels entering the area 4 fishery have

functioning steelhead holding tanks was less than expected, even among vessels accepting observers. Catch reporting compliance for steelhead was also found to be less than complete. Methods of improving compliance must be identified and implemented.

5.0 ACKNOWLEDGEMENTS

This program could never have occurred without the assistance of the commercial vessel operators who accepted observers on board their boats, which were in some cases also their homes. The generosity shown by some in the form of meals and hospitality, information, or solely cooperation was much appreciated. Robert Brown, who was contracted by BCE, spent much of his own time and effort working toward smoother execution of the program and generally worked above and beyond the call of duty. Elmer Fast, DFO Prince Rupert, also dedicated many extra hours in an attempt to carry the weight of the entire project and his efforts were commendable, especially in light of the fact that he was new to the area and appeared to receive little assistance from his colleagues. Finally, thank you to volunteers and BCE employees from outside of the Skeena Region who travelled many kilometres to offer assistance and examine the commercial fishery first hand in order to better understand the problem of steelhead by-catch.

Appendix I. The Skeena Observer Program data sheet

SKEENA OBSERVER PROGRAM

VESSEL NAME:

OBSERVER NAME: _____ VESSEL LICENCE NUMBER: _____

DATE (mo, day)	TIMES (hh:mm)		PICK	STATISTICAL SUB-AREA AND SPECIFIC LOCATION
	SET	END		

POSITION 1st meter (y, n, unk)	CONDITION		FATE	TAG		COMMENTS <small>(revival time, handling, tag recapture, other notes of interest)</small>
	capture	collection or release		colour	number	

STEELHEAD

CONDITION CODES
 u = unknown; g = good (vigorous, little or no damage); f = fair (obvious damage, less vigorous); p = poor (severe damage, very inactive); d = dead

FATE CODES
 k = killed; r = released immediately; h = hold then released; c = hold then collected; u = unknown (still being held on departure)

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