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**SUMMARY OF U.S.S.R.-U.S. COOPERATIVE HIGH SEAS
SALMONID TAGGING OPERATIONS IN 1988**

by

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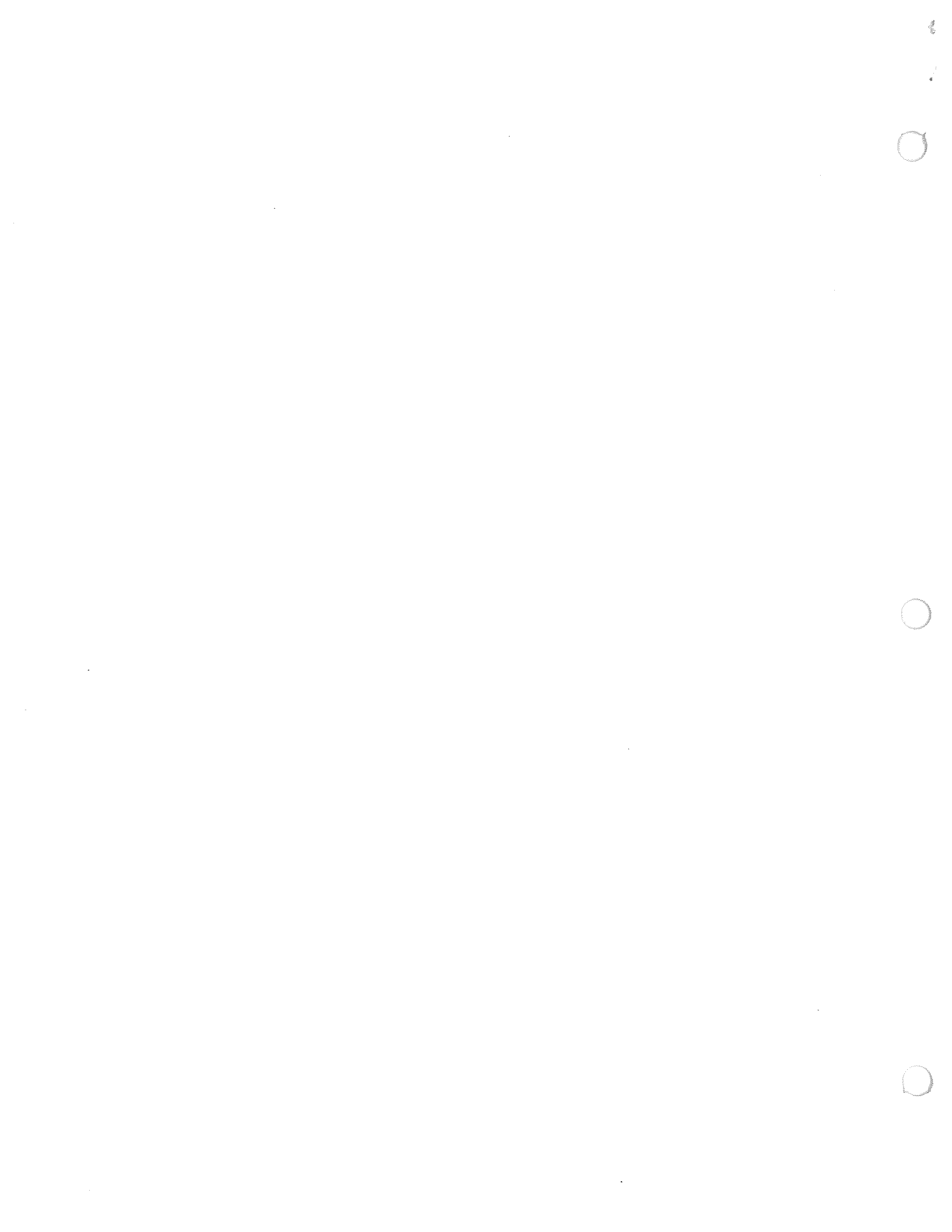
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SUMMARY OF U.S.S.R.-U.S. COOPERATIVE HIGH SEAS SALMONID TAGGING OPERATIONS IN 1988

ABSTRACT

In 1988 the United States participated with the U.S.S.R. in a cooperative salmonid sampling and tagging program. Two vessels were used: a purse seine vessel for capture of fish for tagging and a trawler for sampling fish for genetic analysis. The two primary research areas were 38°-45°N, 152°-172°E and 43°-51°N, 174°E-170°W. In the first two legs (of three) of the tagging cruise, 381 salmon were tagged (378 chum, 3 coho). All fish were released south of 43°N, between 178°E and 169°W, in April and May. Data from the final leg of the tagging cruise (in June and July, between 156° and 172°E) will be provided to the Commission when this information is received from the U.S.S.R.

INTRODUCTION

The United States and the U.S.S.R. cooperated in 1988 in a high seas salmonid sampling and tagging program similar to programs conducted from 1983 through 1986 (Harris 1983, 1984, 1985; Kautsky and Harris 1986). The program was expanded in 1987 and 1988 through addition of a trawl vessel to work with the purse seiner used in previous years. In 1987 the seiner R/V Nemirov and the trawler R/V Novokolovsk worked in Soviet coastal waters. U.S. scientists were not invited to participate in that sampling, but disc tags provided by the U.S. were used in the tagging program.

According to official cruise plans for 1988 (USSR Ministry of Fisheries 1988), the main aims of the investigation were:

1. location of large concentrations of salmonids, primarily pink and chum salmon;
2. identification of distribution and migratory routes;
3. salmon tagging;
4. purse seine sampling in conjunction with trawl sampling, to estimate trawl catch rate and salmon abundance; and
5. collection of biological materials (primarily for genetic analysis) to differentiate stocks present in an area.

Because of declines in the size of odd-year runs of West Kamchatka pink salmon in 1985 and 1987, Soviet scientists were primarily interested in determining the distribution and abundance of Asian pink salmon in the North Pacific. The main study areas reflect this interest (Fig. 1): 38°-45°N, 152°-172°E (Area A) and 43°-51°N, 174°E-170°W (Area B). Sampling periods were early (March-June) in order to encounter pink salmon in these areas.

This report summarizes results of the survey through the end of the second leg (of three) of the cruise of the tagging vessel; the U.S.S.R. has not yet provided the United States with data from the final leg after the last U.S. port call. These data are



expected and, following their receipt, an addendum to this document will be provided to the Commission to complete the report of the entire 1988 survey. The U.S. has also requested tag release data from the 1987 cruise. As in previous years, the U.S.S.R.'s Pacific Scientific Research Institute of Fisheries Oceanography (TINRO) has granted the Fisheries Research Institute (FRI) of the University of Washington full co-proprietorship of the detailed data from the survey.

VESSELS, GEAR, AND SAMPLING METHODS

The 54.8-m medium freezer trawler (SMRT) R/V Nemirov, used in 1983, 1984 and 1986 surveys, served as the purse seine vessel (see Harris 1983 for further details of the vessel). The design of the purse seine was similar to that used in 1985 and 1986 (970-m length, 120-m depth; Harris 1985, Kautsky and Harris 1986).

Methods of gear handling and catch processing aboard the Nemirov were also similar to those in previous years. Plastic "cinch-up" fasteners were used exclusively to attach the usual 3/4-in diameter red-and-white disc tags used in previous U.S. tagging experiments. During scale collection, U.S. and Soviet scientists attempted to collect all scales from the INPFC-preferred body area "A".

Sampling was also conducted by the new 62.22-m R/V TINRO. The R/V TINRO employed a rope trawl (108-m length, 528-m opening perimeter, 40-m vertical opening, 3-cm-mesh cod end lining) to locate aggregations of salmon. Typically, the trawl was towed at 5-6 nautical mph at an initial depth of 40-60 m (headrope depth); the net was then raised to 5-20 m. Total trawl times were usually one hour. There were variations on this pattern, such as sampling at more than two levels, or only one; longer or shorter trawl times; or lowering the net rather than raising it during the trawl.

RESULTS

The sampling program of the R/V TINRO is summarized in Table 1. The vessel sampled in and near area A before travelling to a port call at Kodiak. Mr. George Kautsky met the vessel and provided scientific supplies and obtained data. Mr. Daniel Grosse boarded the vessel as U.S. scientist. Ten tows were made in and south of area B in the second cruise before Mr. Grosse transferred to the R/V Nemirov. After continuing work in area B, the vessel proceeded to area A for further sampling.

During the first cruise of the R/V TINRO, 84 tows were made in the area bounded by 150°-174°E and by 38°-45°N. A total of 600 pink salmon, 170 chum salmon, and 7 chinook salmon was captured. No fish were tagged. Muscle tissue samples were collected for genetic analysis.

In the first ten sets of the second cruise, 81 salmon were captured (74 in one set): 70 pink, 10 chum, and 1 chinook salmon (Table 2). These tows were made in and south of study area B between 50° and 41°N, and between 171°W and 173°E.

The sampling program of the R/V Nemirov is summarized in Table 1. Eight seine sets, all south of 44°N, were made during the first cruise, two in study area A and the remainder on the southern edge of area B. Mr. Grosse participated as U.S. scientist after transferring from the R/V TINRO part way through the cruise. Mr. Robert Walker replaced Mr. Grosse at Dutch Harbor and was aboard during resupply

operations in the Bering Sea, but transferred off at Dutch Harbor, due to illness, before sampling in the second cruise began. Seven sets were made in the second cruise, all clustered in an area near 170°W, 43°N. Poor weather was responsible for the low effort in both cruises. Mr. Kautsky met the vessel during its U.S. port call at Kodiak and obtained scale samples and data from the cruise. During the third sampling leg the R/V Nemirov worked in area A between 156°E and 172°E along the subarctic front and returned to the home port of Vladivostok in mid-July. As mentioned, the United States has not yet received catch and biological data and scale samples from this final segment.

Table 3 presents basic salmonid catch and tag release data for each seine set made in the first two cruises. These data are preliminary, as some species identifications may be changed following completion of examination of scale samples and coordination of analysis.

The eight sets made in the first cruise were between 41°N and 43°N and between 167°E and 169°W. Chum salmon comprised the entire catch, with the exception of one coho. Age .2 and .3 chum were relatively well distributed along the transect, while age .1 fish all came from two large catches at 178°E, 42°N and 178°W, 43°N. Overall salmonid catch per unit effort (CPUE) was 179.1 fish/set, inflated by one catch of 960 fish. Average CPUE on the other seven sets was 67.6 fish/set.

In the seven sets of the second cruise (May 11-27), the overall salmonid CPUE was 21.7 fish/set. The catch was almost entirely age .2 and .3 chum salmon; two coho and one chinook were also caught.

All tag releases were south of 46°N, 56% west of 175°W and the remainder between 175°W and 169°W. A total of 381 salmon (378 chum and 3 coho) was tagged and released in 15 sets in April and May, 1988 (Table 4). In comparison, an average of 1,075 salmonids was tagged in 100 sets/year in 1983-86.

RECOMMENDATIONS FOR 1989

Soviet and U.S. scientists agreed that the continuation of cooperative high seas salmon research would be of mutual benefit to both nations. FRI will send TINRO a letter expressing U.S. interests, for use in planning 1989 high seas salmon research. If the R/V TINRO is used in 1989, future areas for cooperative research might include distribution of salmon with respect to depth, short-term movement and migratory studies with sonic tags, and hydroacoustic research, in addition to tagging experiments. U.S. scientists were very interested in the study areas used in 1988, as they overlap much of the current and former area of Japanese landbased high seas salmon fishing, but we would encourage sampling later in the summer during the period of commercial fishing.

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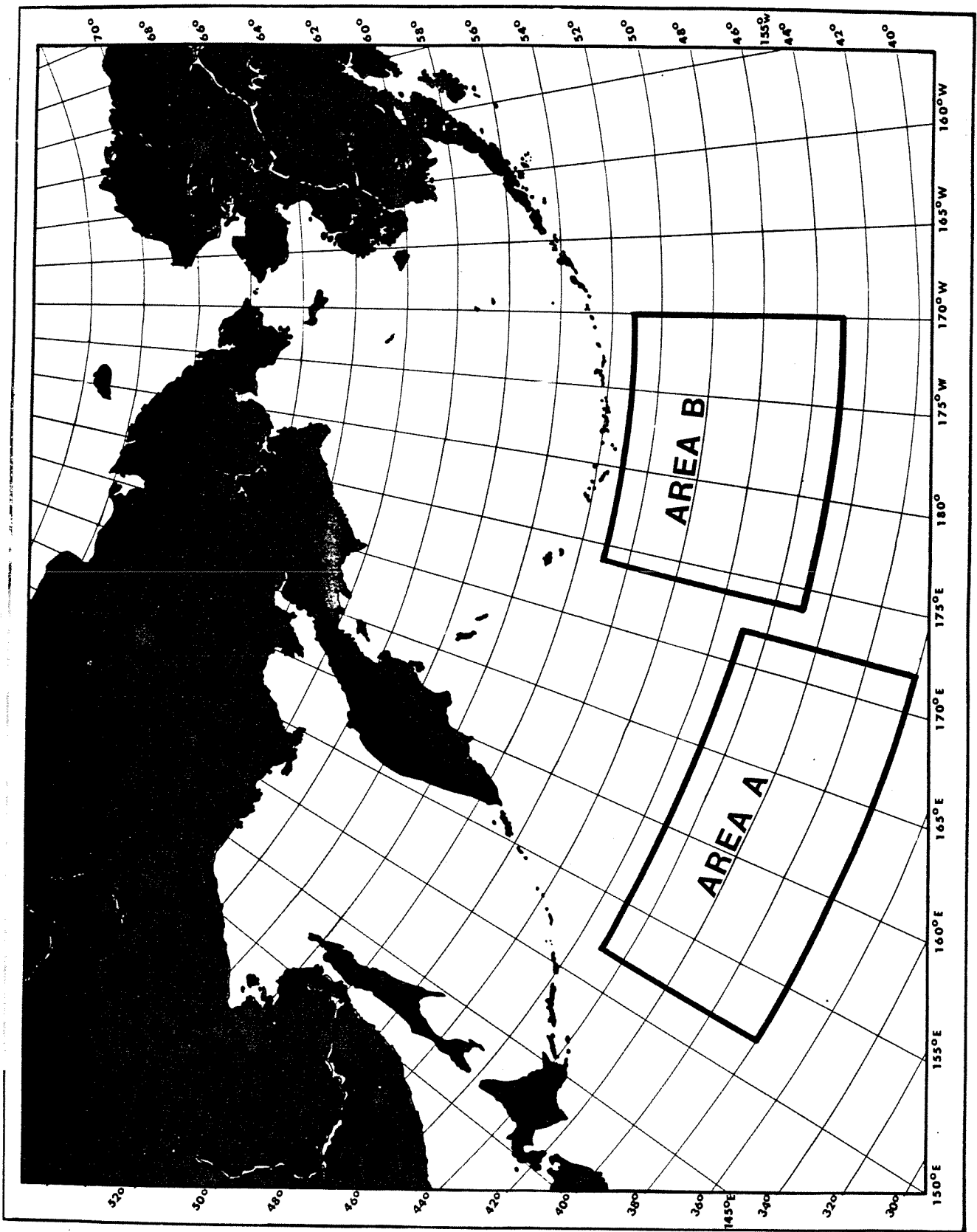


Fig. 1. Study areas planned for U.S.S.R.-U.S. cooperative salmon research in 1988.

Table 1. General cruise schedules of TINRO research vessels R/V TINRO and R/V Nemirov, 1988.

Dates	Location	Activity	Number of seine sets or trawl tows
<u>R/V TINRO:</u>			
13 February	Leave Vladivostok		
13 February - 28 March	North Pacific Ocean	Sampling and travel	84
28-30 March	Kodiak, Alaska	Port call; cruise conference; U.S. scientist D. Grosse embarks	
30 March - ?	North Pacific Ocean	Sampling	?
9 April	North Pacific Ocean	D. Grosse transfers to R/V <u>Nemirov</u>	
<u>R/V Nemirov:</u>			
late March	Leave Vladivostok		
1-18 April	North Pacific Ocean	Sampling	8
9 April	North Pacific Ocean	U.S. scientist transfers from R/V <u>TINRO</u>	
25 April	Dutch Harbor, Alaska	D. Grosse disembarks, R. Walker embarks	
25 April - 1 May	Bering Sea	Resupplying	
1 May	Dutch Harbor, Alaska	R. Walker disembarks	
11-27 May	North Pacific Ocean	Sampling	7
3-5 June	Kodiak, Alaska	Port call; post-cruise conference	
June - July	North Pacific Ocean	Sampling	?
15 July	Return to Vladivostok		

Table 2. Salmonid catches by trawl tow, U.S.S.R.-U.S. cooperative high seas salmonid research on R/V TINRO, 1988.
All tows made at 5-6 knots.

Tow No.	Date	Start		Finish		Surf. T. (C)	Duration (min)	Headrope depths (m) (in order)	Salmonid catch							
		N. Lat.	Long.	N. Lat.	Long.				Red	Chum	Pink	Coho	King	Sthd.	Total	
85	4/03	49-13	171-17W	49-13	171-12W	3.4	5	Missing data	0	0	0	0	0	0	0	0
86	4/03	49-10	171-21W	49-09	171-24W	3.4	30	60, 10	0	0	0	0	0	0	0	0
87	4/04	47-06	176-02W	47-03	176-09W	3.2	60	10	0	0	0	0	0	0	0	0
88	4/05	44-28	179-32E	44-24	179-25E	5.4	70	60, 15	0	0	0	0	0	0	0	0
89	4/06	42-39	176-09E	42-34	176-07E	7.8	60	50, 20, 10	0	0	0	0	0	0	0	0
90	4/07	42-11	176-03E	42-05	176-00E	8.1	60	40, 10	0	0	0	0	1	0	0	1
91	4/07	41-42	175-55E	41-36	175-55E	8.1	60	10, 30, 20	0	0	0	0	0	0	0	0
92	4/08	41-02	173-59E	41-09	173-59E	5.1	60	45, 40, 20, 10	0	2	1	0	0	0	0	3
93	4/08	41-37	174-00E	41-43	174-00E	5.1	60	40, 10	0	3	0	0	0	0	0	3
94	4/08	42-13	174-02E	42-19	174-02E	4.0	60	20, 5	0	5	69	0	0	0	0	74
Haul 86-94 totals:									0	10	70	0	1	0	0	81

Table 3. Salmonid catches and tag releases by seine net, U.S.S.R.-U.S. cooperative high seas salmonid research on R/V Nemirov, 1988.

Set No.	Location		Surf. T. (C)	Salmonid catch								Tag releases				Total Tag serial numbers		
	N. Lat.	Long.		Red	Chum	Pink	Coho	King	Sthd.	Total	Red	Chum	Pink	Coho	King		Sthd.	Total
N01	41-49	167-56E	7.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
N02	42-06	170-47E	4.4	0	28	0	0	0	0	0	0	0	0	0	0	0	0	
N03	42-08	178-15E	6.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
N04	42-09	178-28E	7.1	0	261	0	0	0	0	0	99	0	0	0	0	0	99	
N05	42-40	178-11W	7.1	0	960	0	0	0	0	0	101	0	0	0	0	0	101	
N06	42-45	177-03W	6.0	0	29	0	1	0	0	0	13	0	1	0	0	0	14	
N07	42-09	172-56W	6.1	0	153	0	0	0	0	0	90	0	0	0	0	0	90	
N08	42-14	169-51W	7.0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
Cruise 1 totals:				0	1,432	0	1	0	0	0	1,433	0	303	0	1	0	0	304
N09	5/11	data missing	7.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
N10	5/12	42-31	171-12W	7.4	0	44	0	0	0	0	16	0	0	0	0	0	16	
N11	5/12	42-30	171-15W	7.6	0	31	0	0	0	0	28	0	0	0	0	0	28	
N12	5/13	data missing	7.1	0	17	0	0	0	0	0	0	0	0	0	0	0	0	
N13	5/23	42-38	171-54W	7.3	0	6	0	0	0	0	6	0	0	0	0	0	6	
N14	5/23	42-43	171-56W	7.3	0	22	0	2	1	0	15	0	2	0	0	0	17	
N15	5/27	43-19	169-21W	7.2	0	29	0	0	0	0	10	0	0	0	0	0	10	
Cruise 2 totals:				0	149	0	2	1	0	0	152	0	75	0	2	0	0	77
Cruise 1+2 totals				0	1,581	0	3	1	0	0	1,585	0	378	0	3	0	0	381

Table 4. Total tag releases in U.S.S.R.-U.S. cooperative high seas salmonid research operations in 1988, by various sections of the North Pacific Ocean.

Region	Month	Species					Total	
		Sockeye	Chum	Pink	Coho	Chinook		Steelhead
North Pacific, S. of 46°, W of 175° W	April	0	213	0	1	0	0	214
	Total	0	213	0	1	0	0	214
North Pacific, S. of 46°, E of 175° W	April	0	90	0	0	0	0	90
	May	0	75	0	2	0	0	77
	Total	0	165	0	2	0	0	167
All regions	April	0	303	0	1	0	0	304
	May	0	75	0	2	0	0	77
	Total	0	378	0	3	0	0	381