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**SUMMARY OF U.S.S.R.-U.S. COOPERATIVE HIGH SEAS  
SALMONID TAGGING OPERATIONS IN 1989**

by

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# SUMMARY OF U.S.S.R.-U.S. COOPERATIVE HIGH SEAS SALMONID TAGGING OPERATIONS IN 1989

## ABSTRACT

In 1989 the United States participated with the U.S.S.R. in a cooperative salmonid sampling and tagging program. A purse seine vessel was used for capture of fish for tagging. In the first three legs (of four) of the tagging cruise, 403 salmon were tagged (47 sockeye, 243 chum, 106 pink, 5 coho, 2 chinook). Fish were released south of 44°N, between 168° and 178°E in April, south of 51°N, between 178°E and 169°W, in May and June, and near the Shumagin Islands in early July. Data from the final leg of the tagging cruise (in July) 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 1989 in a high seas salmonid sampling and tagging program similar to programs conducted from 1983-86 and 1988 (Harris 1983, 1984, 1985; Kautsky and Harris 1986; Walker et al. 1988). Since 1987 the program has included a trawl vessel as well as the purse seiner used for tagging. No salmonids are tagged during the trawl cruises, and only the results of the tagging cruise are reported here.

According to official cruise plans for 1989 (USSR Ministry of Fisheries 1989), the main aims of the investigation were:

1. investigation of biology and population structure of salmonids, primarily pink and chum salmon, in wintering areas and on migration routes;
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 data on abiotic and biotic characteristics of salmon habitats.

Soviet scientists are 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 41°-45°N, 174°E-170°W (Area B). Sampling periods began early (February-July) in order to encounter pink salmon in these areas. The tagging vessel also made several sets near the Shumagin Islands, between 54° and 56°N and 165° and 158°W (Area C), to investigate the presence of Asian chum salmon in this area.

This report summarizes results of the survey through the end of the third leg (of four) 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 1989 survey. Data from the final leg of the 1988 cruise and from the 1987 cruise have been received, but minor discrepancies in numbers and species identification of fish caught and tagged make it desirable to delay provision of this information to the Commission pending clarification of these problems. 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.

## TAGGING VESSEL, GEAR, AND SAMPLING METHODS

The 54.8-m medium freezer trawler (SMRT) R/V Nemirov, used in most previous 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 since 1985 (970-m length, 127-m depth, 44 mm stretched mesh, 16 mm stretched mesh in bunt; 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".

## RESULTS

The sampling program of the R/V Nemirov is summarized in Table 1. Three seine sets, south of 44°N and east of 178°E, were made during the first cruise. Eight sets were made in the second cruise, all in or near area B. Mr. Haaga participated as U.S. scientist. Poor weather was responsible for the low effort in both cruises. During the third sampling leg the R/V Nemirov made eighteen sets north of area B between 175°E and 172°W and five sets near the Shumagin Islands. Mr. Leopold was the U.S. participant. As mentioned, the United States has not yet received catch and biological data and scale samples from the fourth and final segment.

Table 2 presents basic salmonid catch and tag release data for each seine set made in the first three cruises. These data are preliminary, as some species identifications may be changed following completion of examination of scale samples and coordination of analysis.

The three sets made in the first cruise were between 42° and 44°N and between 168° and 178°E. Chum and pink salmon comprised the entire catch, with the exception of one coho. Age .3 chum were the main age group in the second set, while age .1 fish were taken in the third set. Overall salmonid catch per unit effort (CPUE) was 220.3 fish/set, inflated by one catch of 599 fish.

In the eight sets of the second cruise (May 10-27), the overall salmonid CPUE was 20.5 fish/set. The catch was primarily chum and pink salmon, but sockeye, coho, and chinook salmon, and steelhead trout were also caught. Chum were mainly age .2 and older, except for those in set N5, which were all age .1.

Of the twenty-three sets made in the third cruise, the first eighteen were between 45° and 51°N and between 175°E and 172°W. The remaining five sets were made near the Shumagin Islands. Chum, pink, and sockeye were the main components of the catch; one coho and six chinook were also taken. Overall salmonid CPUE was 22.3 fish/set. Pink and chum were found throughout the area sampled, while sockeye were taken only north of 49°N, and chinook only near the Shumagins. Sockeye were mostly from older ocean-age classes (.2 and .3) except for a large number of .1 fish in set N31 in the Shumagins. Chum were predominantly age .2 and older, but large proportions of age .1 fish were caught between 46° and 48°N. Age .3 and .4 fish were common in the Shumagins.

Most (71%) tag releases were west of 169°W and south of 51°N (21% south of 46°N); 29% of the tagged fish were released near the Shumagin Islands. A total of 403 salmon (243 chum, 106 pink, 47 sockeye, 5 coho and 2 chinook) was tagged and released in 34 sets from mid-April to early July in 1989 (Table 3). In comparison, 955 salmonids were tagged in 36 sets in 1988.

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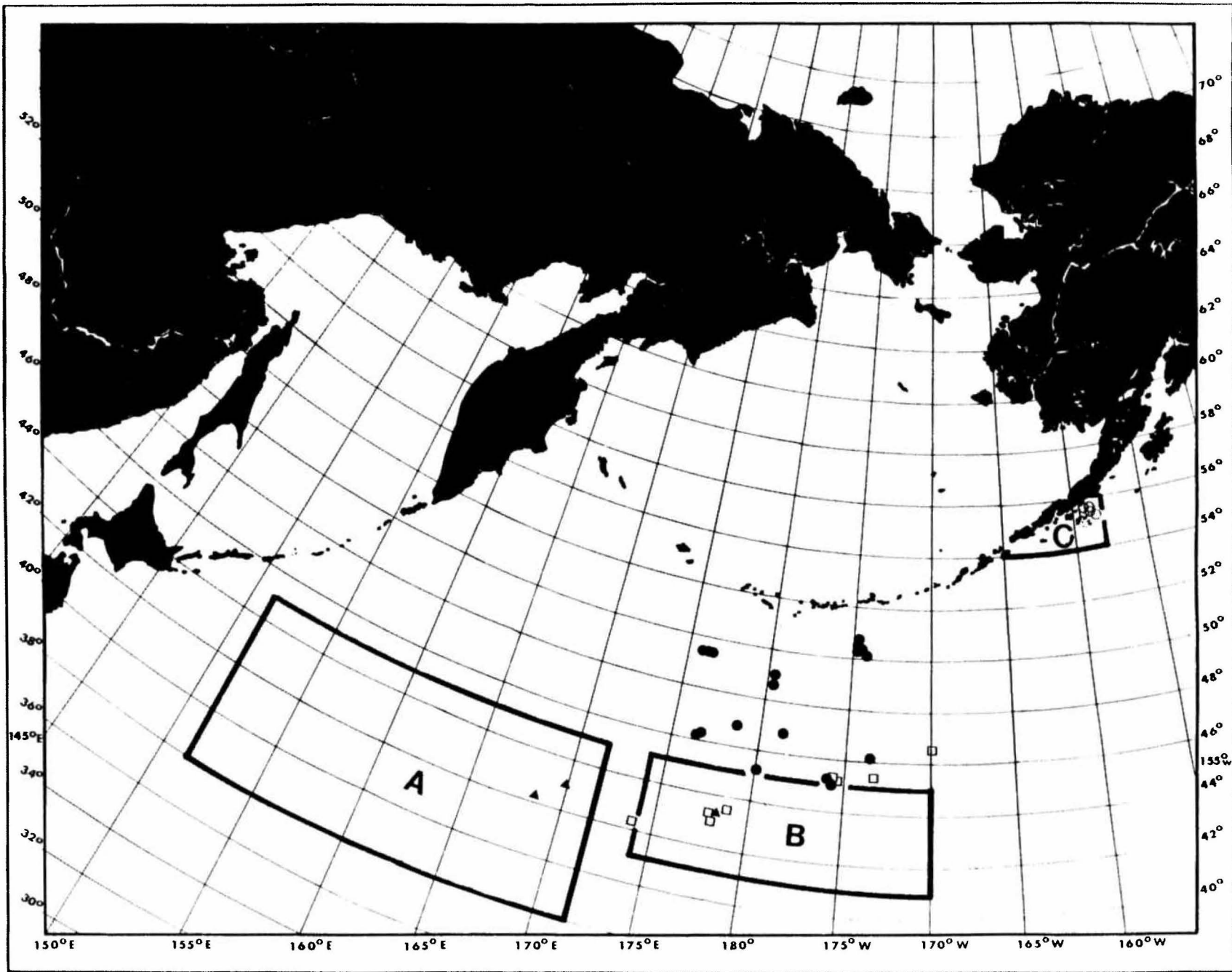


Fig. 1. Study areas for U.S.S.R.-U.S. cooperative salmon research in 1989 and seine set locations for the first (April: ▲ ), second (May: ◻), and third (June: ●; July: ○) legs of tagging cruise (4/16-7/3/89).

Table 1. General cruise schedules of TINRO research vessel R/V Nemirov, 1989.

Dates	Location	Activity	Number of seine sets
R/V <u>Nemirov</u> :			
1 April	Leave Vladivostok		
16-25 April	North Pacific Ocean	Sampling	3
2-3 May	Dutch Harbor, Alaska	U.S. participant L. Haaga embarks	
10 May - 27May	North Pacific Ocean	Sampling	8
1-3 June	Dutch Harbor, Alaska	L. Haaga disembarks, S. Leopold embarks	
7-27 June	North Pacific Ocean	Sampling	18
1-3 July	Shumagin Islands	Sampling	5
5-7 July	Kodiak, Alaska	S. Leopold disembarks; post-cruise conference	
July	North Pacific Ocean	Sampling	?
25 July	Return to Vladivostok		

Table 2. Salmonid catches and tag releases by seine net, U.S.S.R.-U.S. cooperative high seas salmonid research on R/V Nemirov, 1989.

Set No.	Date	Location		Surf. T. (C)	Salmonid catch							Tag releases							Tag serial numbers
		N. Lat.	Long.		Red	Chum	Pink	Coho	King	Sthd.	Total	Red	Chum	Pink	Coho	King	Sthd.	Total	
N01	4/16	42-12	168-04E	6.0	0	0	5	0	0	0	5	0	0	4	0	0	0	4	W000-W003
N02	4/17	43-00	169-57E	5.5	0	447	152	0	0	0	599	0	33	3	0	0	0	36	W004-W039
N03	4/25	43-13	177-58E	7.7	0	49	7	1	0	0	57	0	0	0	0	0	0	0	
Cruise 1 totals:					0	496	164	1	0	0	661	0	33	7	0	0	0	40	
N04	5/10	43-29	178-35E	6.9	0	3	3	1	0	0	7	0	3	3	1	0	0	7	W040-W046
N05	5/14	42-17	173-44E	9.6	0	16	7	1	0	2	26	0	6	1	1	0	0	8	W047-W054
N06	5/15	43-04	177-44E	8.8	0	37	0	0	0	1	38	0	0	0	0	0	0	0	
N07	5/15	43-15	177-32E	7.1	0	6	7	0	0	0	13	0	3	1	0	0	0	4	W055-W058
N08	5/22	45-13	175-26W	6.5	0	13	0	0	0	0	13	0	4	0	0	0	0	4	W059-W062
N09	5/23	45-26	175-45W	6.3	1	7	0	0	1	0	9	0	7	0	0	1	0	8	W063-W068,W072-W073
N10	5/24	45-26	173-16W	7.4	0	0	12	0	0	0	12	0	0	8	0	0	0	8	W074-W081
N11	5/27	46-31	169-58W	6.5	2	6	35	2	1	0	46	2	1	12	2	0	0	17	W082-W098
Cruise 2 totals:					3	88	64	4	2	3	164	2	24	25	4	1	0	56	
N12	6/07	50-32	174-43W	5.9	4	4	7	0	0	0	15	4	4	5	0	0	0	13	W100-W112
N13	6/07	50-34	174-41W	5.9	1	4	13	0	0	0	18	1	2	1	0	0	0	4	W113-W116
N14	6/07	50-11	174-14W	5.9	0	1	0	0	0	0	1	0	1	0	0	0	0	1	W117
N15	6/10	45-16	175-57W	6.4	0	5	3	0	0	0	8	0	0	0	0	0	0	0	
N16	6/10	45-17	175-35W	7.0	0	10	2	0	0	0	12	0	4	0	0	0	0	4	W118-W121
N17	6/11	45-19	179-58W	7.4	0	0	0	1	0	0	1	0	0	0	1	0	0	1	W122
N18	6/12	46-20	176-37E	6.0	0	20	2	0	0	0	22	0	10	2	0	0	0	12	W123-W126,W128-W135
N19	6/12	46-18	176-33E	6.8	0	10	0	0	0	0	10	0	10	0	0	0	0	10	W136-W145
N20	6/15	46-10	173-34E	6.6	0	2	0	0	0	0	2	0	2	0	0	0	0	2	W146-W147
N21	6/16	46-59	178-38W	6.9	0	30	2	0	0	0	32	0	7	2	0	0	0	9	W148-W156
N22	6/17	46-59	178-17E	7.0	0	4	18	0	0	0	22	0	0	12	0	0	0	12	W157-W168
N23	6/23	49-28	176-02E	5.8	3	0	6	0	0	0	9	3	0	4	0	0	0	7	W169-W175
N24	6/23	49-28	176-04E	5.8	3	3	11	0	0	0	17	3	3	10	0	0	0	16	W176-W191
N25	6/23	49-27	176-08E	5.8	1	2	1	0	0	0	4	1	2	1	0	0	0	4	W192-W195
N26	6/24	48-46	179-45W	6.3	0	5	1	0	0	0	6	0	5	1	0	0	0	6	W196-W201

Table 2. - cont'd.

Set No.	Date	Location		Surf. T. (C)	Salmonid catch							Tag releases							Tag serial numbers
		N. Lat.	Long.		Red	Chum	Pink	Coho	King	Sthd.	Total	Red	Chum	Pink	Coho	King	Sthd.	Total	
N27	6/24	49-06	179-47W	6.1	5	18	2	0	0	0	25	3	6	2	0	0	0	11	W202,W204-W213
N28	6/27	50-43	174-46W	6.8	11	71	13	0	0	0	95	11	43	12	0	0	0	66	W214-W279
N29	6/27	50-43	174-46W	6.8	2	15	4	0	0	0	21	1	8	4	0	0	0	13	W280-W292
N30	7/01	55-20	158-49W	9.0	9	5	6	0	0	0	20	2	5	5	0	0	0	12	W293-W304
N31	7/02	55-30	159-04W	9.4	51	50	11	0	4	0	116	9	38	10	0	1	0	58	W305-W362
N32	7/02	55-30	159-05W	9.4	9	30	2	0	1	0	42	6	27	2	0	0	0	35	W363-W397
N33	7/03	55-29	159-07W	9.0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	
N34	7/03	55-29	159-05W	9.6	3	9	1	0	1	0	14	1	9	1	0	0	0	11	W398-W408
Cruise 3 totals:					102	299	105	1	6	0	513	45	186	74	1	1	0	307	
Cruise 1-3 totals					105	883	333	6	8	3	1,338	47	243	106	5	2	0	403	

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Table 3. Tag releases in the first three legs of U.S.S.R.-U.S. cooperative high seas salmonid research operations in 1989, 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	33	7	0	0	0	40
	May	0	23	13	2	1	0	39
	June	0	4	0	1	0	0	5
	Total	0	60	20	3	1	0	84
North Pacific, N. of 46° W of 169° W	May	2	1	12	2	0	0	17
	June	27	103	56	0	0	0	186
	Total	29	104	68	2	0	0	203
Shumagin Is., 55°N, 159°W	July	18	79	18	0	1	0	116
	Total	18	79	18	0	1	0	116
All regions	April	0	33	7	0	0	0	40
	May	2	24	25	4	1	0	56
	June	27	107	56	1	0	0	191
	July	18	79	18	0	1	0	116
	Total	47	243	106	5	2	0	403