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**SUMMARY OF U.S.S.R.-U.S. COOPERATIVE HIGH SEAS
SALMONID TAGGING OPERATIONS IN 1991**

by

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ABSTRACT

In 1991 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 two legs (of three) of the tagging cruise, 546 salmon were tagged (1 sockeye, 111 chum, 433 pink, 1 coho). Fish were released near 42°N, 160°E in April, and south of 47°N between 164°E and 175°W in May. Data from the final leg of the tagging cruise (in June and 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 1991 in a high seas salmonid sampling and tagging program similar to programs conducted from 1983 to 1990 (Harris 1983, 1984, 1985; Kautsky and Harris 1986; Walker et al. 1988, 1989, 1990; Walker and Myers 1990). This year, for the first time, a U.S. participant boarded the Soviet research vessel in Vladivostok, U.S.S.R.

According to official cruise plans for 1991 (U.S.S.R. Ministry of Fisheries 1991), the main aims of the investigation were:

1. investigation of distribution and concentration of salmonids, primarily pink and chum salmon, in wintering areas and on migration routes, through catch and tagging;
2. collection of samples that allow characterization of biological and population structures of aggregations of salmon; and,
3. collection of data on abiotic and biotic characteristics of salmon habitats.

Soviet scientists are interested in forecasting run sizes as well as understanding the distribution and biology of Asian pink and chum salmon in the North Pacific. The timing and study areas of the cruise reflect these interests

The primary U.S. objective of this research is to determine the continent of origin of salmonids tagged south of 46°N. Also of importance to the U.S. is the collection of detailed data and scale samples from high seas sampling and tagging operations. Finally, this cooperative program provides a forum for exchange of information, data, and samples needed for ongoing research pertinent to other INPFC-related matters.

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. Following the receipt of these data, an addendum to this document will be provided to the Commission to complete the report of the entire 1991 survey. 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).

Fishing strategy, as well as methods of gear handling and catch processing aboard the Nemirov, were also similar to those in recent years. A Dennison tagging gun was used to attach 1 3/4-inch red anchor (tube-type) tags to smaller fish, which composed most of the catch. On larger fish, plastic "cinch-up" fasteners were used to attach 3/4-inch diameter red-and-white disc tags. 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; locations of seine sets are shown in Figure 1. Mr. Leopold participated as the U. S. scientist for the first two legs. A third leg that was scheduled to sample in the North Pacific Ocean was terminated before any sampling occurred. Mr. Ward participated as the U. S. scientist on this leg. FRI has not yet received catch and biological data and scale samples from the final segment of the cruise between Dutch Harbor, Alaska, and Vladivostok, U.S.S.R.

A total of 546 salmon (1 sockeye, 111 chum, 433 pink, 1 coho) was tagged and released in 12 sets from mid-April to late May in 1991 (Table 2). The small number of sets was due to poor weather and to time lost because of failure of several pieces of equipment. Tags were released between 41°N and 43°N west of 165°E (83%), and between 43°N and 47°N and between 175°E and 177°E (17%). About 70 percent of the fish caught in 1991 were tagged and released. The overall catch per unit effort (CPUE) of salmonids was 70.3 fish/set. This value is higher than the 1990 overall salmonid CPUE of 52.4 fish/set.

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

Six sets were made during the first leg (April 14 to April 27) between 41° and 43°N and between 160°E and 161°E. The catch was composed of 4 sockeye, 38 chum, and 602 pink salmon. Chum were mainly age .1. The salmonid CPUE was 107.3 fish/set.

Six sets were made during the second leg (May 13 to May 28); two were near 42°N, 164°E and four were between 43°N and 47°N along 176°W. The catch was composed of 1 sockeye, 110 chum, 28 pink, and 1 coho salmon. Most chum (76%) were age .1. The salmonid CPUE was 23.3 fish/set.

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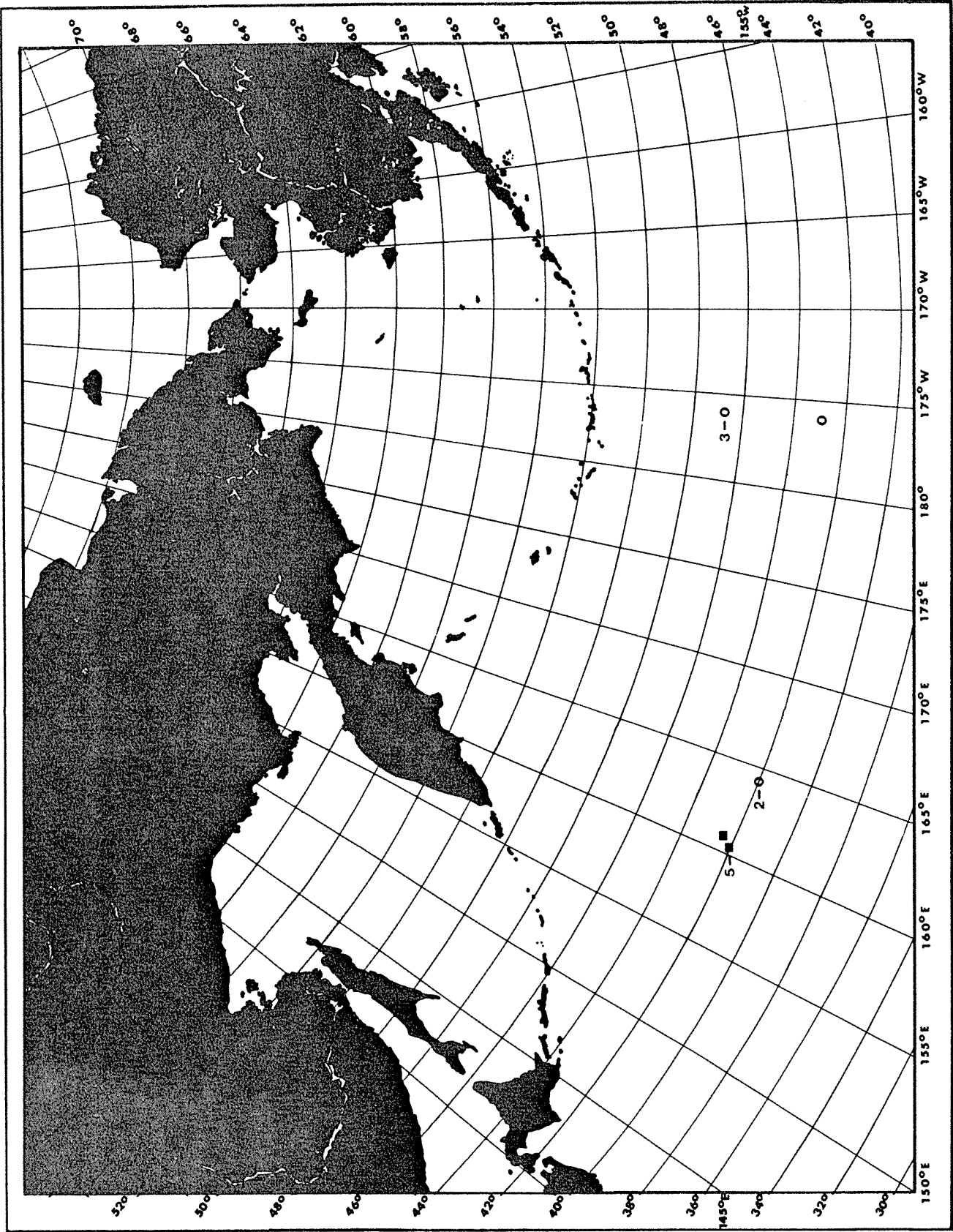


Fig. 1. Seine set locations for U.S.S.R.-U.S. cooperative salmon research in 1991 for the first (○) and second (■) legs of the tagging cruise (4/14-5/28/91).

Table 1. General cruise schedule of TINRO research vessel R/V Nemirov, 1991.

Dates	Location	Activity	Number of seine sets
5 April	Vladivostok, U.S.S.R.	R/V <u>Nemirov</u> leaves home port Mr. Leopold embarks	
14-27 April	North Pacific Ocean	Sampling	6
30 April - 1 May	Kuril Islands, U.S.S.R.	Port call	
13-28 May	North Pacific Ocean	Sampling	6
3-6 June	Dutch Harbor, Alaska	Mr. Leopold disembarks Mr. Ward embarks	
10-11 June	Dutch Harbor, Alaska	Third leg of cruise terminated Mr. Ward disembarks	
mid-June - July	North Pacific Ocean	Sampling	N/A
mid-July	Vladivostok, U.S.S.R.	R/V <u>Nemirov</u> returns to home port	

Table 2. Tag releases in the first four legs of U.S.S.R.-U.S. cooperative high seas salmonid research operations in 1991, by various sections of the North Pacific Ocean.

Region	Month	Species						Total
		Sockeye	Chum	Pink	Coho	Chinook	Steelhead	
North Pacific, S. of 43°N, W. of 165°E	April	0	26	415	0	0	0	441
	May	0	3	10	0	0	0	13
	Total	0	29	425	0	0	0	454
North Pacific, 43°-47°N, 177°-175°W	May	1	82	8	1	0	0	92
	Total	1	82	8	1	0	0	92
All regions	April	0	26	415	0	0	0	441
	May	1	85	18	1	0	0	105
	Total	1	111	433	1	0	0	546

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, 1991. Tags in the "Z" series are 3/4" red and white disk tags; tags in the "A" series are 1 3/4" red anchor tags.

Set No.	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	4/14	42-19	160-52E	6.6	0	0	36	0	0	0	36	0	10	0	0	0	10	A101-A104,A106-A107, A111-A113,A115
N02	4/21	42-02	160-20E	7.0	2	0	2	0	0	0	4	0	0	0	0	0	0	
N03	4/21	42-02	160-23E	7.2	0	0	206	0	0	0	206	0	70	0	0	0	70	A105,A108-A110,A114, A116-A120,A126-A149, A303-A304,A306-A313, A315,A376-A378, A380-A400,Z000
N04	4/22	42-01	160-24E	8.8	0	38	234	0	0	0	272	0	26	221	0	0	247	A301-302,A305,A314, A316-324,A326-A349, A351-A374,A379,A393, A401-A544,A546, A548-A551,A553-A558, A560-A585,Z001-Z003
N05	4/22	42-04	160-20E	7.8	2	0	0	0	0	0	2	0	0	0	0	0	0	
N06	4/27	41-58	160-17E	7.0	0	0	124	0	0	0	124	0	0	114	0	0	114	A350,A545,A547,A552, A559,A586-A690, Z004-Z007
Leg 1 totals:																		
				4	38	602	0	0	0	0	644	0	26	415	0	0	441	
N07	5/13	41-59	164-31E	7.3	0	0	7	0	0	0	7	0	0	1	0	0	1	Z008
N08	5/13	41-58	164-34E	7.3	0	3	12	0	0	0	15	0	3	9	0	0	12	A691-A693,Z009-Z012, Z014-Z018
N09	5/19	43-02	176-36W	9.2	0	29	0	0	0	0	29	0	25	0	0	0	25	A694-A696,A699-A711 Z013,Z019,Z021-Z027
N10	5/25	46-18	175-50W	6.5	0	70	9	0	0	0	79	0	49	8	0	0	57	A712-A753,Z020, Z028-Z041
N11	5/28	46-15	175-53W	6.4	0	0	0	0	0	0	0	0	0	0	0	0	0	
N12	5/28	46-15	175-50W	6.4	1	8	0	1	0	0	10	1	8	0	1	0	10	A754,Z042-Z050
Leg 2 totals:																		
				1	110	28	1	0	0	0	140	1	85	18	1	0	105	
Leg 1-2 totals:																		
				5	148	630	1	0	0	0	784	1	111	433	1	0	546	