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RESULTS OF
U.S. OBSERVATIONS OF THE JAPANESE MOTHERSHIP
SALMON FISHERY DURING 1983

by

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PREFACE¹

Preliminary discussions on the 1983 U.S. salmon observer program took place at an informal meeting with Japanese mothership fleet commanders in Tokyo at the time of the 1982 Annual Meeting. Those discussions were not conclusive. At the Nanaimo meeting of the Ad Hoc Salmon Research Coordinating Group in March 1983, the United States submitted a proposal for U.S. observations of the Japanese mothership salmon fishery during 1983 (Doc. 2623). Under this plan, deployment and duties of U.S. salmon observers aboard the Japanese motherships fishing in the U.S. FCZ in 1983 were to be similar to those in previous years.

In Document 2623, the United States also outlined a plan to establish a system of regular placement of observers aboard each fleet's catcher boats. The program reflected principally the concern of the United States and Canada over the reported catch of chinook salmon, most of which are of western Alaska and Canadian Yukon River origin; and the desire to have catcher-boat observations of salmon made by trained salmon observers. Japan noted the concern over this problem which it was working toward eliminating. Considerable discussion took place on the level of catcher-boat observations planned. Japan noted the logistical problems the program raised and the great difficulty of accommodating salmon observers in addition to the marine mammal observers, particularly since it is Japan's understanding that duties of the marine mammal observers aboard catcher boats include observations on chinook salmon. Therefore, the United States proposed alternatively that in 1983 there be observations of five, preferably separate, gillnet operations by a U.S. salmon observer aboard catcher boats for each mothership fleet fishing in the U.S. FCZ in July, with additional observations of operations by U.S. salmon observers to be arranged for the month of June if possible. Japan agreed on the understanding that this was a target figure and the placement of observers would be in full consultation with the fleet commanders recognizing their responsibility for safety of the observers. Japan stated that it would cooperate as much as possible in the observer program and that U.S. salmon observers could, after consultation with catcher-boat fishing masters, have access to the fishing decks for species identification of salmon and biological sampling of steelhead trout after nets have been retrieved. Japan stated that it would expect fleet commanders and observers to report in writing at the end of the season on any reasons for nonfulfillment of observer program objectives. Pages 2 and 3 contain the original sampling plan as proposed by the United States in Document 2623; pages 4 and 5 contain the revised plan which was adopted by the three national sections at the Nanaimo meeting.

¹ Source: INPFC Document 2626 (Rev.)

U.S. SALMON OBSERVER PROGRAM IN 1983

As part of the Annex [Paragraph 1(c)] to the amended International Convention for the High Seas Fisheries of the North Pacific Ocean (INPFC), the Government of Japan may be required by the Government of the United States to accept scientific observers on board vessels fishing within the United States Fishery Conservation Zone (U.S. FCZ). The United States plans to place observer teams similar to those used since 1978 on board each of the Japanese salmon motherships and occasionally on catcher boats operating within the U.S. FCZ in 1983. One observer will monitor salmon operations in each fleet.

Mothership Observations in 1983

Salmon observers will be placed aboard the motherships to collect data on total catch, fishing effort, and average weight of each species. The salmon observers' duties are:

- 1) Observe and record daily catch weights of salmon, by species, as the fish are transferred from each of the catcher boats to the mothership. Each day, the observer must obtain the following information in writing or tables from the fleet commander or Japan Fisheries Agency (JFA) inspector:
 - a) the average weight of 30 fish of each salmon species, if available, from each of 5 catcher boats and the identification number of each of the 5 catcher boats;
 - b) the catch weights of salmon, by species, for catcher boats not actually observed; the total effort and effective effort in tans of gillnet for each catcher boat in the fleet; and the geographical coordinates where each catcher boat sets its nets; and
 - c) the latitude and longitude of the mothership at noon Japan Standard Time and air and surface-water temperatures.
- 2) Record daily the catch weight of salmon, by species, from each of the scout boats in the mothership fleet. (Data obtained from the ship's log or from the JFA inspector.) Also record the total fishing effort and effective fishing effort in tans of gillnet and latitude and longitude of each set for each of the scout boats.
- 3) Summarize daily catcher-boat landings, by salmon species; summarize catch-effort data, by 1° x 1° INPFC statistical area; and prepare a radio message for transmission to the National Marine Fisheries Service Alaska Regional Office, Juneau, Alaska.
- 4) Randomly select one weighing container of each species each day and count the salmon within it to determine average weight of fish in the container and compare this figure with the average obtained by weighing groups of 30 fish.
- 5) Collect biological data including scales from chinook salmon.

Catcher-Boat Observations in 1983

In each fleet, salmon observers will be placed aboard catcher boats selected by mutual agreement between the salmon observer and fleet commander every third day of the fishing season. The observer will spend one day aboard the catcher boat followed by two days aboard the mothership and continue this sampling schedule until the end of the fishing season within the U.S. FCZ. The observers' duties are:

- 1) Observe and record the time of day of setting the nets, record the number of salmonids dropping out of the net and lost to the sea during net retrieval, and estimate the number of salmonids landed by species each day while on board.
- 2) Record the total fishing effort and effective fishing effort in tans of gillnet and latitude and longitude to the nearest degree and whole minute where the nets were initially set.
- 3) Collect biological data including body weight and length from each species and scales from chinook salmon and sockeye salmon. All steelhead trout will be collected by the observer and frozen whole for transfer back to the United States with frozen specimens of marine mammals.
- 4) Observe and record the incidence of salmonids missing the adipose fin and sample snouts from all salmonids missing the adipose fin.
- 5) Photograph the operation of the catcher-boat crew and gear during setting and retrieving the nets and document the procedures for handling fish brought aboard by taking photographs of deck operations until the catch is transferred to the mothership.

When the observer returns to the mothership after the catcher-boat landings are transferred, he will resume his duties on board the mothership as described above.

When the motherships and catcher boats are fishing seaward of the U.S. FCZ, the salmon observers will consider themselves guests of the mothership and conduct themselves in accordance with procedures agreed upon by the United States and Japanese governments.

U.S. SALMON OBSERVER PROGRAM IN 1983
(Revised)

As part of the Annex [Paragraph 1(c)] to the amended International Convention for the High Seas Fisheries of the North Pacific Ocean (INPFC), the Government of Japan may be required by the Government of the United States to accept scientific observers on board vessels fishing within the United States Fishery Conservation Zone (U.S. FCZ). The United States plans to place observer teams similar to those used since 1978 on board each of the Japanese salmon motherships and occasionally on catcher boats operating within the U.S. FCZ in 1983. One observer will monitor salmon operations in each fleet.

Mothership Observations in 1983

Salmon observers will be placed aboard the motherships to collect data on total catch, fishing effort, and average weight of each species. The salmon observers' duties are:

- 1) Observe and record daily catch weights of salmon, by species, as the fish are transferred from each of the catcher boats to the mothership. For each day's catch, the observer must obtain the following information in writing or tables from the fleet commander or Japan Fisheries Agency (JFA) inspector:
 - a) the average weight of 30 fish of each salmon species, if available, from each of 5 catcher boats and the identification number of each of the 5 catcher boats;
 - b) the catch weights of salmon, by species, for catcher boats not actually observed; the total effort and effective effort in tans of gillnet for each catcher boat in the fleet; and the geographical coordinates where each catcher boat sets its nets; and
 - c) the latitude and longitude of the mothership at noon Japan Standard Time and air and surface-water temperatures.
- 2) Record daily the catch weight of salmon, by species, from each of the scout boats in the mothership fleet. (Data obtained from the ship's log or from the JFA inspector.) Also record the total fishing effort and effective fishing effort in tans of gillnet and latitude and longitude of each set for each of the scout boats.
- 3) Summarize daily catcher-boat landings, by salmon species; summarize catch-effort data, by 1° x 1° INPFC statistical area; and prepare a radio message for transmission to the National Marine Fisheries Service Alaska Regional Office, Juneau, Alaska.
- 4) Randomly select one weighing container of each species each day, when aboard, and count the salmon within it to determine average weight of fish in the container and compare this figure with the average obtained by weighing groups of 30 fish.

- 5) Collect biological data including scales from chinook salmon and steelhead trout.
- 6) Observe and record the incidence of salmonids missing the adipose fin and sample the snouts from all salmonids missing the adipose fin.

When the motherships and catcher boats are fishing seaward of the U.S. FCZ, the salmon observers will consider themselves guests of the mothership and conduct themselves in accordance with procedures agreed upon by the United States and Japanese governments.

Catcher-Boat Observations in 1983

In each fleet, the salmon observer will be placed aboard catcher boats according to the following plans adopted at the March 1983 meeting of the Ad Hoc Salmon Research Coordinating Group:

- 1) The goal is for each observer to board catcher boats and observe operations during five, preferably separate, days in July. The observers will attempt to arrange for additional catcher boat observations in June.
- 2) The timing of trips on catcher boats and the selection of catcher boats to be visited will be determined by the fleet commander, in communication with the observers.

The observers' duties are:

- 1) Observe and record the time of day of setting the nets, record the number of salmonids dropping out of the net and lost to the sea during net retrieval, and estimate the number of salmonids landed aboard the catcher boat by species each day while on board. When conditions are considered to be safe by the fishing master (Sendo), the observer will have access to the landed catch on deck in order to determine species composition and estimate the numbers of fish by species and to take scale samples and biological data from any steelhead trout.
- 2) Record the total fishing effort and effective fishing effort in tans of gillnet and latitude and longitude to the nearest degree and whole minute where the nets of the catcher boat were initially set.
- 3) Collect biological data including body weight and length from steelhead trout which will be frozen whole for transfer back to the United States with frozen specimens of marine mammals.
- 4) Photograph the operation of the catcher-boat crew and gear during setting and retrieving the nets and document the procedure for handling fish brought aboard by taking photographs of deck operations until the catch is transferred to the mothership.

When the observer returns to the mothership after the catcher-boat landings are transferred, he will resume his duties on board the mothership as described above.

Schedule--The four U.S. salmon observers left Seattle on 4 June 1983 and traveled via Anchorage and Adak, Alaska, before boarding a Japanese vessel on 6 June Japan Standard Time (JST) for transfer to the motherships. The motherships were observed as follows:

<u>Vessel</u>	<u>Dates Observer on Board (JST)</u>
<u>Kizan maru</u>	9 June - 25 June and 2 July - 28 July
<u>Meiyo maru</u>	9 June - 26 June and 6 July - 27 July
<u>Nojima maru</u>	9 June - 5 July and 16 July - 26 July
<u>Jinyo maru</u>	9 June - 26 June and 4 July - 27 July

From 26 June to 16 July, the fleets of the Jinyo maru, Kizan maru, and Meiyo maru either fished in the central Bering Sea or were in transit. The Kizan maru operated outside the FCZ 26 June-2 July, and the Meiyo maru was either in transit or seaward of the FCZ 26 June-6 July; the Nojima maru was either moving or seaward of the FCZ 5-16 July. The U.S. observers boarded the vessels when the vessels reentered the FCZ and observed salmon catches until 26-28 July. The observers boarded Japanese patrol vessels on 26-28 July and remained on board until all observers were picked up and returned to Adak, Alaska, on 29-30 July 1983; they returned to Seattle on 30-31 July for debriefing.

Coverage--Salmon fishing operations of the mothership fleets in 1983 followed the pattern observed by U.S. observers in 1978-1982. Each fleet of 43 catcher boats set gillnets in late afternoon and began pulling in the nets early the next morning. Catches were transferred daily to each of the four motherships. The catcher boats were moored at fore and aft weighing stations and the catch was transferred in mesh bags. Each bag contained a single species of salmon. The U.S. salmon observer could not monitor all catch weights because the catcher boats off-loaded at both places with about 1-minute intervals between weighings and 9 minutes between the arrival of consecutive catcher boats (Table 1). The six scout boats delivered fish, but their catches were not always weighed. Observers later compared their catch records with those furnished by the mothership business office. Few discrepancies were found between records. Most discrepancies were attributed to the observers' inexperience in reading the needle of the scale as it swung with the roll of the ship.

Catcher boats from the four fleets were sampled with nearly the same frequency except for three vessels which were slightly under sampled and three which were seen relatively more frequently than the other vessels (Fig. 1).

The U.S. salmon observers collected over 4,800 chinook salmon scales for use in continent-of-origin studies of chinook salmon in the mothership fishing area inside the FCZ and 8 scales from steelhead trout (Table 2).

Lack of Coverage--During the fishing season, all four motherships left the FCZ and returned. Salmon observers reboarded all vessels when the vessels returned to the FCZ and observed fishing operations until the end of the season.

The U.S. observers were unable to observe some landings immediately before and after 26 observer trips on board catcher boats in mid-June and the month of July (Table 3). No landings were observed in 7 of 155 observer days of sampling.

SALMON OBSERVER PROGRAM PROBLEMS

No adipose-clipped salmonids were returned to U.S. salmon observers for examination. Greater emphasis must be placed on recovering potentially coded-wire tagged salmonids in future mothership operations, especially steelhead trout.

Table 1.--Numbers of daily catcher-boat landings observed or not observed by U.S. salmon observers in 1983.

1983 Date	Mothership									
	Kizan maru		Meiyo maru		Nojima maru		Jinyo maru		All Motherships	
	Observed	Not Observed	Observed	Not Observed	Observed	Not Observed	Observed	Not Observed	Observed	Not Observed
June 10	19	24	16	27	19	24	16	27	70	102
11	21	22	19	24	19	24	19	24	78	94
12	19	24	19	24	19	24	19	24	76	96
13	18	25	19	24	17	26	19	24	73	99
14	No fishing		No fishing		18	25	No fishing		18	25
15	19	24	20	23	19	24	19	24	77	95
16	19	24	19	24	19	24	19	24	76	96
17	19	24	19	24	19	24	19	24	76	96
18	19	24	19	24	19	24	19	24	76	96
19	19	24	19	24	19	24	18	25	75	97
20	21	22	19	24	13	30	19	24	72	100
21	20	23	19	24	5	38	19	24	63	109
22	19	24	20	23	19	24	19	24	77	95
23	19	24	19	24	19	24	1	42	58	114
24	21	22	3	40	15	28	0	43	39	133
25	Out of FCZ		2	41	3	40	20	23	25	104
26	Out of FCZ		Out of FCZ		19	24	Moving		19	24
27	Out of FCZ		Out of FCZ		19	24	Out of FCZ		19	24
28	Out of FCZ		Out of FCZ		19	24	Out of FCZ		19	24
29	Out of FCZ		Out of FCZ		18	25	Out of FCZ		18	25
30	Out of FCZ		Out of FCZ		19	24	Out of FCZ		19	24
July 1	Out of FCZ		Out of FCZ		11	32	Out of FCZ		11	32
2	Out of FCZ		Out of FCZ		3	40	Out of FCZ		3	40
3	18	25	Out of FCZ		16	27	Out of FCZ		34	52
4	5	38	Out of FCZ		1	42	Out of FCZ		6	80
5	No fishing		Out of FCZ		Moving		0	43	0	43
6	4	39	Out of FCZ		Out of FCZ		0	43	4	82
7	5	38	19	24	Out of FCZ		7	36	31	98
8	4	39	2	41	Out of FCZ		19	24	25	104
9	19	24	9	34	Out of FCZ		5	38	33	96
10	12	31	19	24	Out of FCZ		6	37	37	92
11	6	37	0	43	Out of FCZ		19	24	25	104
12	19	24	14	29	Out of FCZ		0	43	33	96
13	8	35	0	43	Out of FCZ		12	31	20	109
14	13	30	6	37	Out of FCZ		19	24	38	91
15	18	25	19	24	Out of FCZ		Moving		37	49
16	5	38	6	37	Out of FCZ		0	43	11	118
17	5	38	4	39	18	25	1	42	28	144
18	4	39	19	24	17	26	19	24	59	113
19	No fishing		No fishing		No fishing		No fishing		--	--
20	11	32	20	23	2	41	19	24	52	120
21	19	24	18	25	20	23	19	24	76	96
22	19	24	4	39	20	23	19	24	62	110
23	19	24	19	24	Moving		19	24	57	72
24	19	24	19	24	5	38	19	24	62	110
25	19	24	19	24	4	39	18	25	60	112
26	8	35	19	24	14	29	3	40	44	128
27	19	24	19	24	--	--	6	37	44	85
28	14	29	--	--	--	--	--	--	14	29
TOTAL	564	1,070	505	1,000	486	933	474	1,074	2,029	4,077
% Observed	35		34		34		31		33	

Table 2.--Numbers of chinook salmon and steelhead trout scales collected by U.S. observers on board Japanese salmon mother-ships in 1983.

Vessel	Number of Scales	
	Chinook	Steelhead
<u>Kizan maru</u>	1,286	3
<u>Meiyo Maru</u>	1,100	3
<u>Nojima maru</u>	1,417	0
<u>Jinyo maru</u>	<u>1,010</u>	<u>2</u>
Total	4,813	8

Table 3.--Japanese mothership salmon fishery, 1983 U.S. salmon observer coverage.

Vessel	Catcher Boat Trips	Landings Observed		Days Observed
		No.	%	
<u>Kizan maru</u>	7	564	35	41
<u>Meiyo maru</u>	6	505	34	37
<u>Nojima maru</u>	7	486	34	35
<u>Jinyo maru</u>	<u>6</u>	<u>474</u>	<u>31</u>	<u>39</u>
Total	26	2,029	33	152

FIG. 1--FREQUENCY OF OBSERVING EACH CATCHER BOAT
BY MOTHERSHIP FLEET, 1983.

