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RESULTS OF
U.S. OBSERVATIONS OF THE JAPANESE MOTHERSHIP
SALMON FISHERY DURING 1984

by

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U.S. SALMON OBSERVER PROGRAM IN 1984

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 placed observer teams similar to those used since 1978 on board each of the Japanese salmon motherships operating within the U.S. FCZ in 1984. One observer monitored salmon operations in each fleet.

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

- 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 five catcher boats and the identification number of each of the five catcher boats;
 - b) the catch weights of salmon, by species, for catcher boats not actually observed; the total effort and effective effort in tons 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 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.
- 7) Collect up to 200 steelhead trout per mothership fleet.

Schedule--The four U.S. salmon observers left Seattle on June 1, 1984, and traveled via Anchorage and Adak, Alaska, before boarding Japanese patrol vessels on June 6, 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>	June 9 - June 29 and July 8 - July 24
<u>Meiyo maru</u>	June 9 - July 4 and July 15 - July 25
<u>Nojima maru</u>	June 9 - July 8 and July 17 - July 25
<u>Jinyo maru</u>	June 9 - June 25 and July 6 - July 26

From June 26 to July 16, the four fleets either fished in the central Bering Sea or were in transit. The Kizan maru operated outside the FCZ from June 30 - July 8, and the Meiyo maru was either in transit or seaward of the FCZ July 5-14; the Nojima maru was either moving or seaward of the FCZ July 9-16; the Jinyo maru was moving or seaward of the FCZ from June 26 to July 6. The U.S. observers boarded the motherships when the vessels reentered the FCZ and observed salmon catches until July 24-26. The observers boarded Japanese patrol vessels on July 24-26 and remained on board until all observers were picked up and returned to Adak, Alaska, on July 26-28; they returned to Seattle on July 27-30 for debriefing.

Coverage--Salmon fishing operations of the mothership fleets in 1984 followed the pattern observed by U.S. observers in 1978-1983. Each fleet of 43 catcher boats set gillnets in late afternoon and began retrieving 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 weighing stations with about one-minute intervals

between weighings and nine minutes between the arrival of consecutive catcher boats (Table 1). The six scout boats delivered fish on an irregular schedule and 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.

The U.S. salmon observers collected scales from 5,371 chinook salmon for use in continent-of-origin studies of chinook salmon in the mothership fishing area inside the FCZ and scales from 395 steelhead trout (Table 2). The steelhead trout were frozen in the round and returned to Seattle for additional biological studies.

Catcher boats (scout boats excluded) from the four fleets were sampled with nearly the same frequency except for one vessel which was slightly under sampled and a few which were seen relatively more frequently than the other vessels (Fig. 1). The test of the hypothesis that all catcher boats were sampled uniformly in the four fleets was not rejected at $p=0.01$ (Table 3).

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. During the last day of fishing, two observers boarded transfer vessels and departed the motherships before the catcher boats delivered the catch of the previous night.

SALMON OBSERVER PROGRAM PROBLEMS

No salmon missing the adipose fins were returned to U.S. salmon observers for examination. Greater emphasis must be placed on recovering potentially coded-wire tagged salmon in future mothership operations.

Table 1.--Numbers of daily catcher-boat landings observed or not observed by U.S. salmon observers in 1984.

1984 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	18	25	6	37	19	24	15	28	58	114
11	19	24	0	43	19	24	19	24	57	115
12	18	25	19	24	19	24	19	24	75	97
13	19	24	19	24	19	24	19	24	76	96
14	19	24	19	24	19	24	19	24	76	96
15	21	22	19	24	19	24	19	24	78	94
16	19	24	19	24	19	24	19	24	76	96
17	22	21	19	24	19	24	19	24	79	93
18	18	25	19	24	19	24	19	24	75	97
19	20	23	19	24	19	24	19	24	77	95
20	17	26	18	25	19	24	19	24	73	99
21	20	23	19	24	19	24	19	24	77	95
22		Storm		Storm		Storm		Storm		
23		Storm		Storm		Storm		Storm		
24	19	24	19	24	17	26	19	24	74	98
25	19	24	19	24	18	25	0	43	56	116
26	20	23	19	24	19	24		Moving	58	71
27	19	24	19	24	18	25		Out of FCZ	56	73
28		Moving		Storm		Storm		Out of FCZ		
29	5	38	19	24	18	25		Out of FCZ	42	87
30		Out of FCZ	19	24	19	24		Out of FCZ	38	48
July 1		Out of FCZ	19	24	18	25		Out of FCZ	37	49
2		Out of FCZ	19	24	17	26		Out of FCZ	36	50
3		Out of FCZ	19	24	19	24		Out of FCZ	38	48
4		Out of FCZ	14	29	19	24		Out of FCZ	33	53
5		Out of FCZ		Moving	19	24		Moving	19	24
6		Out of FCZ		Storm	19	24		Moving	19	24
7		Out of FCZ		Out of FCZ	19	24	19	24	38	48
8		Out of FCZ		Out of FCZ	17	26	19	24	36	50
9		Moving		Out of FCZ		Moving	19	24	19	24
10	18	25		Out of FCZ		Out of FCZ	19	24	37	49
11	17	26		Out of FCZ		Out of FCZ	19	24	36	50
12	19	24		Out of FCZ		Out of FCZ	19	24	38	48
13	21	22		Out of FCZ		Out of FCZ	19	24	40	46
14	18	25		Out of FCZ		Out of FCZ	19	24	37	49
15	18	25	20	23		Out of FCZ	19	24	57	72
16	19	25	20	23		Out of FCZ	19	24	58	72
17	18	25		Moving	13	30	19	24	50	79
18	19	24	19	24		Moving	19	24	57	72
19	16	27	19	24	18	25	19	24	72	100
20	18	25	19	24	16	27	19	24	72	100
21	19	24	19	24	19	24	19	24	76	96
22	18	25	19	24	15	28	19	24	71	101
23	21	22	19	24	17	26	19	24	76	96
24	0	43	19	24	19	24	19	24	57	115
25	--	--	0	43	12	31	19	24	31	98
26	--	--			--	--	4	39	4	39
TOTAL	571	805	553	823	613	849	608	854	2,345	3,331
Percentage	41	59	40	60	42	58	42	58	41	59

Table 2.--Numbers of chinook salmon and steelhead trout sampled for scales by U.S. salmon observers on board Japanese salmon motherships in 1984.

Vessel	Number Sampled	
	Chinook	Steelhead
<u>Kizan maru</u>	1,124	35
<u>Meiyo Maru</u>	1,494	130
<u>Nojima maru</u>	1,557	31
<u>Jinyo maru</u>	<u>1,196</u>	<u>199</u>
Total	5,371	395

Table 3.--Japanese mothership salmon fishery, 1984 U.S. salmon observer coverage.

Vessel	Landings Observed		Days Observed	Test of Uniform Sampling χ^2 , 36 d.f.
	No.	%		
<u>Kizan maru</u>	571	41	31	19.1
<u>Meiyo maru</u>	553	40	31	23.2
<u>Nojima maru</u>	613	42	34	18.9
<u>Jinyo maru</u>	<u>608</u>	<u>42</u>	<u>34</u>	29.1
Total	2,345	41	130	

FREQUENCY OF OBSERVING EACH CATCHER BOAT
BY MOTHERSHIP FLEET, 1984

