



ON DALL'S PORPOISE INCIDENTALLY TAKEN
IN THE JAPANESE SALMON GILLNET FISHERY

ANNUAL REPORT TO THE
INTERNATIONAL NORTH PACIFIC FISHERIES COMMISSION

by

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Research was conducted in 1983 under the auspices of Article 10 of the International Convention of the High Seas Fisheries of the North Pacific Ocean as amended in 1978, and the Memorandum of Understanding signed in 1981 between the Governments of Japan and the United States. The areas of study by the United States were: A) censusing of marine mammal populations, particularly Dall's porpoise; B) monitoring of the incidental take of marine mammals; C) collection of biological samples and data from animals incidentally taken in the salmon gillnets; and D) study of response of Dall's porpoise to vessels. This report describes the studies conducted and preliminary results of the 1983 field work.

A. Censusing of marine mammals

U.S. biologists boarded three Japanese salmon research vessels for five cruises in 1983. Their duties were to conduct marine mammal sighting surveys, observe gillnet operations and marine mammal entanglements, and collect biological samples from incidentally taken marine mammals (Table 1). U.S. biologists also boarded U.S. Platforms of Opportunity Program vessels for six cruises to conduct marine mammal sighting surveys (Table 1).

Nineteen species of marine mammals were sighted during these cruises. The data are being analyzed and will be presented to the Scientific Subcommittee at the annual meeting.

B. Monitoring of the Incidental Take

Incidental take of marine mammals in the Japanese salmon mothership fishery was monitored by observers onboard catcherboats. In each mothership fleet one Japanese observer was aboard catcherboats throughout the fishing season and U.S. observers were aboard two catcherboats

during gillnet operations inside the U.S. FCZ. Scoutboats were not included in the studies since they did not return to the mothership each day and therefore could not meet the observer schedules.

On the catcherboats, observers conducted marine mammal sighting surveys to obtain information on the distribution and abundance of marine mammals in the fishing area, and for each gillnet operation they collected data on the environmental conditions, gear characteristics, and marine mammal, sea bird and salmon entanglements.

The total number of gillnet sets monitored by observers in the FCZ was 413 out of 6,217 sets (6.6%) (Table 2). The total percentage of monitored sets for the fishing season in all areas was 5.3% (478 out of 8,967).

A total of 210 entangled Dall's porpoise was observed during the 1983 fishing season (Table 3). The largest number of Dall's porpoise entangled in a single set was 5 compared to 8 in 1982.

Incidental take rates (number of porpoise taken per gillnet operation) were calculated using data on entanglements of Dall's porpoise collected by U.S. and Japanese biologists onboard three catcherboats in each fleet inside the U.S. FCZ (Table 4). In 1983, the observed rates varied from 0.26 to 0.72 porpoise per set. The take rates for each mothership fleet, calculated from data reported to the U.S. National Marine Fisheries Service, ranged from 0.36 to 0.44 (Table 4). These take rates include vessels with experimental gear.

Total incidental take was estimated for each mothership fleet based on the number of observed entanglements, number of gillnet operations observed and the total number of sets by that mothership fleet inside the U.S. FCZ. The estimates for each fleet were summed

to obtain the total incidental take for 1983 (refer to Jones and Actor, 1982, for methodology).

The estimated incidental take of Dall's porpoise inside the U.S. FCZ in 1983 is 2,906 (95% confidence limits: 2,442-3,389). The reported incidental take inside the U.S. FCZ is 2,399 Dall's porpoise (Table 5). The total incidental take by the salmon mothership fishery in all areas was reported to be 2,986. The estimated take is 4,280 (95% confidence limits: 3,562-4,997, Table 5).

During 80 standard research gillnet operations observed by U.S. biologists aboard salmon research vessels, a total of 11 Dall's porpoise were entangled. The entanglement rate was approximately 1.04 porpoise per 1,000 tans (or about 0.32 porpoise per 330 tans, the commercial net length).

Other species observed entangled during salmon gillnet operations were 2 Phocoena phocoena (harbor porpoise) and 5 Callorhinus ursinus (northern fur seal).

C. Research Aboard Japanese Salmon Motherships

One marine mammal biologist was onboard each Japanese salmon mothership while the vessel operated inside the U.S. FCZ. The purpose of the studies was to continue research begun in 1978 on the characterization of the incidental take and to collect biological samples and data from Dall's porpoise and other marine mammals incidentally taken in the salmon gillnets. The biologists were also responsible for transmitting data on the daily incidental take of Dall's porpoise, northern fur seals and northern sea lions from the U.S. and Japanese observers and the mothership fleets to the National Marine Fisheries Service for monitoring the quotas under the Marine Protection Act permit for these species.

Each biologist worked aboard the mothership for 3 days and then transferred to a catcherboat for up to six days to monitor the incidental take of marine mammals. This rotation of the observers continued throughout the period the fleet operated inside the U.S. FCZ.

A total of 1,044 Dall's porpoise were returned and dissected onboard the four motherships inside the U.S. FCZ in 1983. This represents about 44% of the total reported incidental take inside the U.S. FCZ (2,399 Dall's porpoise). In addition, 43 porpoise were collected and frozen aboard the motherships during operations south of the U.S. FCZ, prior to embarkation of the U.S. observers. Japanese nationals dissected 138 Dall's porpoise captured in the Bering Sea, north of the U.S. FCZ. One truei-type of Dall's porpoise was collected, the remainder were dalli-type.

Table 6 lists the number and percentage of Dall's porpoise captured for the three take categories (dead, alive and released, and lost during retrieval) in each area. The number dissected onboard each mothership is also listed for each area. As in 1982 (Jones and Actor, 1982), the proportion of the total porpoise take that is dissected is low, varying by fishing area and mothership fleet. In the U.S. FCZ, the percent dissected ranges from 37 to 51. As stated previously, this could result in a serious bias in the estimates of biological parameters.

D. Response of Dall's Porpoise to Survey Vessels

During the period August 16-27, the study began in 1982 on the response of Dall's porpoise to a vessel was continued using a charter vessel and helicopter in Prince William Sound, Alaska. Preliminary examination of the 1983 data indicates no response of Dall's porpoise to

the vessel. This is in contrast to 1982 results where 29% of the animals responded to the vessel.

A second project to examine the responses of Dall's porpoise to a vessel in offshore waters was postponed due to scheduling problems. It is tentatively rescheduled for summer 1984.

REFERENCES

- Jones, L. L. and L. Actor 1982. Progress Report on 1982 Field Research on Dall's Porpoise Incidentally Taken in the Japanese Salmon Gillnet Fishery. Submitted to Annual Meeting of International North Pacific Fisheries Commission. 16 pages.

Table 1. 1983 Dall's Porpoise Sighting Surveys Aboard Japanese Research and U. S. Platforms of Opportunity Program Vessels.

<u>NAME</u>	<u>VESSEL</u>	<u>DATES</u>	<u>AREA</u>
L. Actor	NOAA Ship Discoverer	3-21 March	Dutch Harbor-Honolulu
J.V. Rosapepe	Miller Freeman	23 Mar-13 Apr	Western GoA Shelikof-Straits
G. Joyce	Hokushin Maru	4 May-13 June	Kushiro-N. Pac.- Kushiro
J. Clark	NOAA Ship Chapman	13-22 May	Seattle-Prince William Sound
D. Withrow	Oshoro Maru	5-25 June	Hakodate-Kodiak
D. Pippenger	Hokushin Maru	23 June-3 Aug	Kushiro-N. Pac.- Kushiro
E. Biggs	Oshoro Maru	29 Jun-15 Aug	Kodiak-Seward- Nome-Hakodate
G. Joyce	Hokusei Maru	11 Jul-10 Aug	Hakodate-N. Pac.- Hakodate
J. Munson	Miller Freeman	18-26 July	Seattle-Adak
M. Smith	USCGC Polar Star	25-27 July	SE. Alaska
D. Kelt	NOAA Ship Surveyor	16 Aug-15 Oct	Seattle-Nome Kodiak-Seattle

Table 2. Summary of gillnet operations observed in 1983 by U.S. and Japanese marine mammal observers onboard Japanese salmon mothership catcherboats.

Mothership	Area	No. of Operations ^{1/}	Numbers of Sets Observed		No. Days No Fishing	Date with No U.S. Observer
			U.S.	Japan		
Jinyo Maru	South of FCZ	344	0	8	0	
	U.S. FCZ	1,592	64	36	3	June 10; July 5,28
	Bering Sea*	293	0	7	1	-
		<u>2,229</u>		<u>51</u>		
Kizan Maru	South of FCZ	343	0	8	0	
	U.S. FCZ	1,654	77	37	3	June 10; July 3,28
	Bering Sea*	280	0	7	0	
		<u>2,277</u>		<u>52</u>		
Meiyo Maru	South of FCZ	342	0	8	1	
	U.S. FCZ	1,509	71	34	2	June 10; July 27
	Bering Sea *	421	0	10	1	
		<u>2,272</u>		<u>52</u>		
Nojima Maru	South of FCZ	300	0	7	1	
	U.S. FCZ	1,462	69	33	2	June 10; July 17
	Bering Sea*	427	0	11	1	
		<u>2,229</u>		<u>51</u>		

*Bering Sea refers to Bering Sea area north of U.S. Fishery Conservation Zone.

^{1/} Data from Federation of Japan Salmon Fisheries Cooperative Association submitted to National Marine Fisheries Service.

Table 3. The frequency of the number of Dall's porpoise entangled per gillnet set in 1981 - 1983. Data collected by marine mammal observers on catcherboats of the Japanese salmon mothership fishery.

Number of Porpoise/Set										
Year	0	1	2	3	4	5	6	7	8	Total sets
1981	322	75	14	5	0	1	0	0	0	417
1982	271	114	32	14	7	3	1	0	1	443
1983	324	112	33	5	3	1	0	0	0	478

Table 4. Observed incidental take rates for Dall's porpoise in the Japanese mothership salmon gillnet fleets in the U.S. Fishery Conservation Zone in 1981-1983, northwestern North Pacific Ocean.

Observer	1981				1982				1983			
	JINYO	KIZAN	MEIYO	NOJIMA	JINYO	KIZAN	MEIYO	NOJIMA	JINYO	KIZAN	MEIYO	NOJIMA
1	0.41	0.33	0.22	0.17	0.95	0.81	0.95	0.41	0.72	0.43	0.41	0.45
2	0.40	0.41	0.28	0.21	0.96	0.83	0.90	0.62	0.26	0.36	0.57	0.63
3	0.44	0.48	0.13	0.29	0.67	0.76	0.54	0.29	0.47	0.33	0.50	0.65
4	0.25	0.36	0.13	0.29	0.38	0.49	0.79	0.50	0.54	0.38	0.44	0.51
Mean	0.38	0.40	0.19	0.24	0.74	0.72	0.80	0.46	0.49	0.37	0.47	0.56
Fleet ^{1/}	0.19	0.20	0.17	0.18	0.35	0.37	0.36	0.38	0.38	0.36	0.37	0.44

^{1/} Fleet Incidental Take Rates calculated from data reported by Japan Fisheries Agency to the International North Pacific Fisheries Commission, 1981-1982 and from data reported by the Federation of Japan Salmon Fisheries Cooperative Association to the U.S. National Marine Fisheries Service in 1983.

Table 5. Reported and estimated incidental take and (95% confidence limits) of Dall's porpoise by the Japanese mothership fishery based upon observed take rates and total fishing effort by area in 1981 - 1983. Reported incidental take is from annual reports to the International North Pacific Fisheries Commission by the Japan Fisheries Agency.

Year	U.S. FCZ			Bering Sea (North of FCZ)			All Areas		
	Reported	Estimated ^{1/}	n	Reported	Estimated	n	Reported	Estimated ^{1/}	n
1980	838	5,888	18	91	1,595	18	1,000	8,970	18
1981	1,136	1,850 (1,493-2,206)	398	144	172 ^{2/}	31	1,361	2,862 (2,100-3,109)	462
1982	2,395	4,187 (3,494-4,881)	414	588	835 ^{2/}	33	3,189	5,903 (4,924-6,879)	475
1983	2,399	2,906 (2,442-3,389)	413	451	575 ^{2/} (221-742)	35	2,986	4,280 (3,562-4,997)	478

^{1/} Estimate based upon data of four observers per mothership fleet in 1981 -1983 in U.S. FCZ; one observer monitoring 4 or 5 gillnet operations per fleet in 1980. Estimate for All Areas is based upon observed rates in U.S. FCZ.

^{2/} Estimate based upon data from one observer per fleet.

Table 6. 1983 incidental take of Dall's porpoise by the Japanese salmon mothership fleets by area and category. Number of animals reported (from report submitted by the Federation of Japan Salmon Fisheries Cooperative Association to National Marine Fisheries Service) for each category and (percent of take) for each area. Number of animals dissected aboard each mothership and (percent of the total take) for each area.

Mothership	Area	Category			Total take	Number dissected
		Dead	alive	Lost		
JINYO MARU	South of FCZ	16(44)	7(19)	13(36)	36	10(63)
	U.S. FCZ	256(43)	133(22)	212(35)	601	233(39)
	Bering Sea*	37(31)	32(27)	51(43)	120	32(27)
		<u>309</u>	<u>172</u>	<u>276</u>	<u>757</u>	<u>275(36)</u>
KIZAN MARU	South of FCZ	26(70)	7(19)	4(11)	37	13(35)
	U.S. FCZ	312(52)	176(29)	114(19)	602	274(46)
	Bering Sea*	33(38)	34(40)	19(22)	86	31(36)
		<u>371</u>	<u>217</u>	<u>137</u>	<u>725</u>	<u>318(44)</u>
MEIYO MARU	South of FCZ	12(46)	3(12)	11(42)	26	10(38)
	U.S. FCZ	250(45)	81(15)	224(40)	555	208(37)
	Bering Sea*	69(48)	22(15)	53(37)	144	61(42)
		<u>331</u>	<u>106</u>	<u>288</u>	<u>725</u>	<u>279(38)</u>
NOJIMA MARU	South of FCZ	22(59)	4(11)	11(30)	37	10(27)
	U.S. FCZ	383(60)	62(10)	196(31)	641	329(51)
	Bering Sea*	13(13)	13(13)	75(75)	101	14(14)
		<u>418</u>	<u>79</u>	<u>282</u>	<u>779</u>	<u>359(46)</u>

*Bering Sea refers to the area in the Bering Sea outside the U.S. FCZ.