1989年照洋丸アカイカ調査航海報告

Cruise report of flying squid survey by the Shoyo-Maru in 1989

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Cruise report of flying squid survey by the Shoyo-Maru in 1989

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要　約

照洋丸による1989年度北太平洋中部海域のアカイカ調査は、6月27日から8月15日の間、流し網調査29点と海洋観測25点（流し網調査点を含んで54点）において行われた。流し網による漁獲の大部分はアカイカと非遡河性魚類で、海産哺乳類と海鳥の混獲は少ない。アカイカを始め主要魚種、海産哺乳類及び海鳥について生物学的資料と標本が採集された。海産哺乳類の目視調査は調査船の航海時に行われた。また海洋学的資料はCTD, GEK及びサリノサーモグラフによって収集された。往航時にはアメリカのオブザーバーが、帰航時にはカナダのオブザーバーが乗船した。

北太平洋中部海域のアカイカ調査は、水産庁調査船照洋丸（全長72 m）によって1986年から始められ、1989年においても6月27日から8月15日の間に行われた。調査海域は39.5°～46.5°N、172.5°～152.5°Wの範囲で、流し網調査点は29点、海洋観測点は25点である（流し網調査点を含んで54点，図1）。

使用された流し網は、1反の長さが浮子綱で約50 m、深さ約8.5 mである。網目の大きさは調査網が48 mm～157 mm（10種類、各5反）商業網が115 mm（50反）で、過去3年と異なり33 mm～42 mm（3種類、各2反）の調査網と大目網（166 mmまたは197 mm 10反）が除かれている。

流し網の漁獲の大部分はアカイカと非遡河性魚類であって、海産哺乳類と海鳥の混獲は少ない（表1）。揚網中の脱落は可能な限り正確に計数された。漁獲物のうちアカイカの一部と海鳥類の全部が全体標本として持帰られた。そしていか類、サケ科魚類、その他の主要な魚種と海産哺乳類について生物学的データと研究標本が採集された。

海産哺乳類の目視調査は調査船の航行時に実施された。

海洋観測は、流し網調査点を含む54点で行われ1000 mまでの水温と塩分がCTDによって記録された。その他、GEKによって流し網調査点の表層の流れが計測され、またサリノサーモグラフによって表層の水温と塩分が20分毎に記録されている。

U.S. NATIONAL MARINE MAMMAL LABORATORY の B. TURNOCK 氏が海産哺乳類の目視調査とアカイカの漁獲状況視察のため東京～シヤトル間に乗船された。そしてシヤトル～東京間は、CANADA DEPT. FISHERIES AND OCEANS PACIFIC BIOLOGICAL STATION の D. WHITAKER 氏がサケ科魚類についての標本採集とアカイカ調査を視察するため乗船された。

Table 1. Catch record (in number) by gillnet of Shoyo-Maru in 1989. (upper:research net "non-selective", lower:commercial net)

Date set	St.	Location set (N)	haul (W)	Surface temp. (c°)	Tans res. com.	Cephalopods Fly. Squid	B.C. Squid	Others	Non-anadromous Pomfret	Skipjack	Albacore	Blue shark	Armor head	Square tail	Others	Anadromous Chum	Coho	Steelhead	Total	Marine Mammal[a] Fur seal	P.W. Dol.	Birds[a] Shearwater
6.27	2[b]	39-26.9	172-46.5	16.4	50	9	-	-	66	-	-	-	-	-	2	-	-	-	-	-	-	-
6.28		39-31.8	172-47.8	16.5	50	14	-	-	22	-	-	-	-	-	1	-	-	-	-	-	-	-
6.28	4	40-29.3	172-29.8	13.8	50	2	30	-	68	-	1	-	-	-	2	-	-	-	-	-	3	1
6.29		40-29.8	172-27.3	13.8	50	13	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	1
6.29	6	41-30.3	172-30.0	13.7	50	-	98	1	80	-	-	-	-	-	-	8	1	-	9	-	-	-
6.30		41-32.0	172-32.0	13.4	50	-	1	-	16	-	-	-	-	-	1	11	3	-	14	-	-	1
6.30	8	42-30.3	172-30.2	12.9	50	-	3	-	124	-	-	-	-	-	-	16	18	-	34	-	-	-
7. 1		42-34.3	172-31.6	12.9	50	-	1	-	44	-	-	-	-	-	-	12	129	1	142	-	-	-
7. 1	10	43-29.8	172-30.2	12.0	50	-	51	-	53	-	-	-	-	-	5	57	22	-	79	-	-	-
7. 2		43-33.0	172-29.1	11.9	50	-	-	-	23	-	-	-	-	-	3	76	75	-	151	-	-	1
7. 3	11	43-32.2	164-59.2	13.1	50	-	7	2	96	-	-	-	-	3	-	-	-	-	-	-	-	-
7. 4		43-33.8	164-53.6	12.9	50	-	-	-	23	-	-	-	1	-	2	-	9	-	9	-	-	-
7. 4	13	42-32.1	164-59.9	14.6	50	4	26	1	39	-	-	-	7	-	2	-	-	-	-	-	-	1
7. 5		42-34.0	164-56.2	14.8	50	11	-	-	28	-	-	-	-	-	3	-	-	-	-	-	-	-
7. 5	15	41-29.8	164-59.1	14.7	50	1	10	-	3	-	-	-	164	-	-	-	-	-	-	-	-	-
7. 6		41-32.1	164-54.2	14.9	50	-	-	-	2	-	-	-	1	-	-	-	-	-	-	-	-	-
7. 7	16	44-31.2	157-29.8	13.1	50	-	32	-	323	-	-	1	-	-	3	16	2	1	19	-	-	-
7. 8		44-31.7	157-29.0	13.0	50	-	-	-	222	-	-	-	1	-	1	8	5	6	19	-	-	-
7. 8	18	43-30.6	157-28.6	13.9	50	-	15	-	23	-	-	-	27	-	3	-	-	-	-	-	-	-
7. 9		43-30.3	157-28.3	13.7	50	23	-	-	19	-	-	-	8	-	-	-	-	-	-	-	-	-
7. 9	20	42-30.2	157-30.7	15.1	50	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
7.10		42-30.4	157-33.4	14.8	50	1	-	-	-	-	2	-	-	-	1	-	-	-	-	1	-	-
7.10	22	41-29.9	157-29.7	17.8	50	-	-	1	19	-	5	37	-	-	5	-	-	-	-	-	-	-
7.11		41-31.3	157-33.3	16.9	50	29	-	-	3	-	3	26	-	-	1	-	-	-	-	-	-	-
7.11	24	40-29.9	157-29.8	18.8	50	169	-	2	11	-	3	3	-	-	1	-	-	-	-	-	-	-
7.12		40-31.6	157-27.3	18.7	50	13	-	-	-	-	26	2	-	-	1	-	-	-	-	-	-	-
7.12	s1	39 30.0	157-29.6	19.2	50	1119	-	-	-	-	4	1	-	8	1	-	-	-	-	-	-	-
7.13		39-30.0	157-20.0	18.6	50	8	-	1	-		6	2	-	-	-	-	-	-	-	-	-	-
7.28	26	41-59.9	152-29.7	18.7	50	1425	-	-	10	-	1	5	-	1	3	-	-	-	-	-	-	-
7.29		41-59.2	152-31.2	18.7	50	36	-	-	2	-	-	4	-	-	-	-	-	-	-	-	-	-
7.29	29	43-30.3	152-29.5	17.2	50	92	2	-	5	-	5	6	-	102	-	-	-	-	-	-	-	-
7.30		43-29.6	152-22.1	16.8	50	229	-	-	3	-	2	16	-	-	-	-	-	-	-	-	-	2[c]

CPUE = 142/50 = 2.84 Fish/h

Table 1. Continued.

Date set haul	St.	Location set (N) haul (W)	Surface temp. (c°)	Tans res. com.	Cephalopods Fly. Squid	B.C. Squid	Oth ers	Non-anadromous Pomfr et	Skip jack	Albac ore	Blue shark	Armor head	Square tail	Oth ers	Anadromous Chum	Coho	Steel head	Tot al	Marine Mammal* Fur seal	P.W. Dol.	Birds* Shear water
7.30	31	44-30.2 152-28.9	16.3	50	40	1	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
7.31		44-29.8 152-24.5	15.9	50	204	-	-	-	-	1	1	-	-	2	-	-	-	-	-	-	-
7.31	33	45-30.0 152-28.8	15.4	50	52	9	-	31	-	-	-	-	-	-	-	-	-	-	-	-	-
8. 1		45-30.0 152-24.5	15.2	50	155	-	-	14	-	-	-	4	-	-	-	-	-	-	-	-	-
8. 1	35	46-30.3 152-29.3	14.1	50	2	1	-	13	-	-	-	2	1	1	1	-	-	1	-	-	-
8. 2		46-30.5 152-23.9	14.1	50	10	-	-	10	-	-	-	1	-	1	-	-	-	-	-	-	-
8. 3	36	46-28.7 157-29.7	14.4	50	152	1	-	11	-	-	1	1	3	-	-	-	-	-	1	-	-
8. 4		46-27.7 157-25.1	14.2	50	503	-	-	7	-	-	-	-	-	1	-	-	-	-	-	-	5
8. 4	38[b]	45-31.8 157-44.1	15.5	50	3	3	-	-	-	1	2	1	-	-	-	-	-	-	-	-	-
8. 5		45-31.8 157-46.0	15.4	50	9	-	-	1	-	2	3	-	-	2	-	-	-	-	-	-	-
8. 5	40	44-29.4 157-28.7	16.9	50	3	-	-	1	-	-	3	-	-	1	-	-	-	-	-	-	-
8. 6		44-30.5 157-28.3	16.6	50	5	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1
8. 6	42	43-29.7 157-29.4	19.0	50	132	-	-	107	-	3	2	-	-	1	-	-	-	-	-	-	-
8. 7		43-30.5 157-22.8	18.5	50	70	-	-	16	-	12	1	-	-	-	-	-	-	-	-	-	-
8. 8	43	46-30.0 165-00.6	13.6	49[d]	2	112	-	17	-	-	-	-	7	-	1	-	-	1	2[e]	-	-
8. 9		46-31.2 164-57.9	13.4	48[d]	6	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	1
8.10	45	45-29.2 164-59.5	13.0	50	3	13	1	1	-	-	-	2	1	-	-	-	-	-	-	-	-
8.11		45-26.3 164-57.4	13.1	50	6	1	-	17	-	-	-	7	-	1	-	-	1	1	-	-	1
8.11	47	44-30.0 165-00.2	14.6	50	5	6	-	12	-	4	-	28	-	1	-	-	-	-	-	-	-
8.12		44-32.5 164-56.9	14.5	49[d]	11	-	-	42	-	8	-	-	-	-	-	-	-	-	-	-	3
8.12	49[b]	43-40.1 165-00.1	16.1	50	129	-	-	525	-	-	-	-	2	-	-	-	-	-	-	-	-
8.13		43-38.5 164-54.1	15.4	50	64	-	-	769	-	-	-	-	-	1	-	-	-	-	-	-	-
8.13	51	42-29.4 164-58.7	17.7	50	461	-	-	3	3	-	-	-	1	1	-	-	-	-	-	-	-
8.14		42-29.1 164-59.6	17.4	50	21	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-
8.14	53	41-29.5 164-59.7	18.5	50	604	-	-	5	4	-	1	-	-	1	-	-	-	-	-	-	-
8.15		41-30.0 164-59.3	18.4	50	6	-	-	-	20	-	-	-	-	68[g]	-	-	-	-	-	-	-

Remarks [a] Not included mammales dropped from the net alive and sea-birds released alive.

[b] Station shifted to avoid the gillnet of squid fishing fleet.

[c] One of them dropped from the net when hauling.

[d] Excluded number of tans entangled.

[e] One of them dropped from the net when hauling.

[g] Fifty five of them were Hyperoglyphe spp.

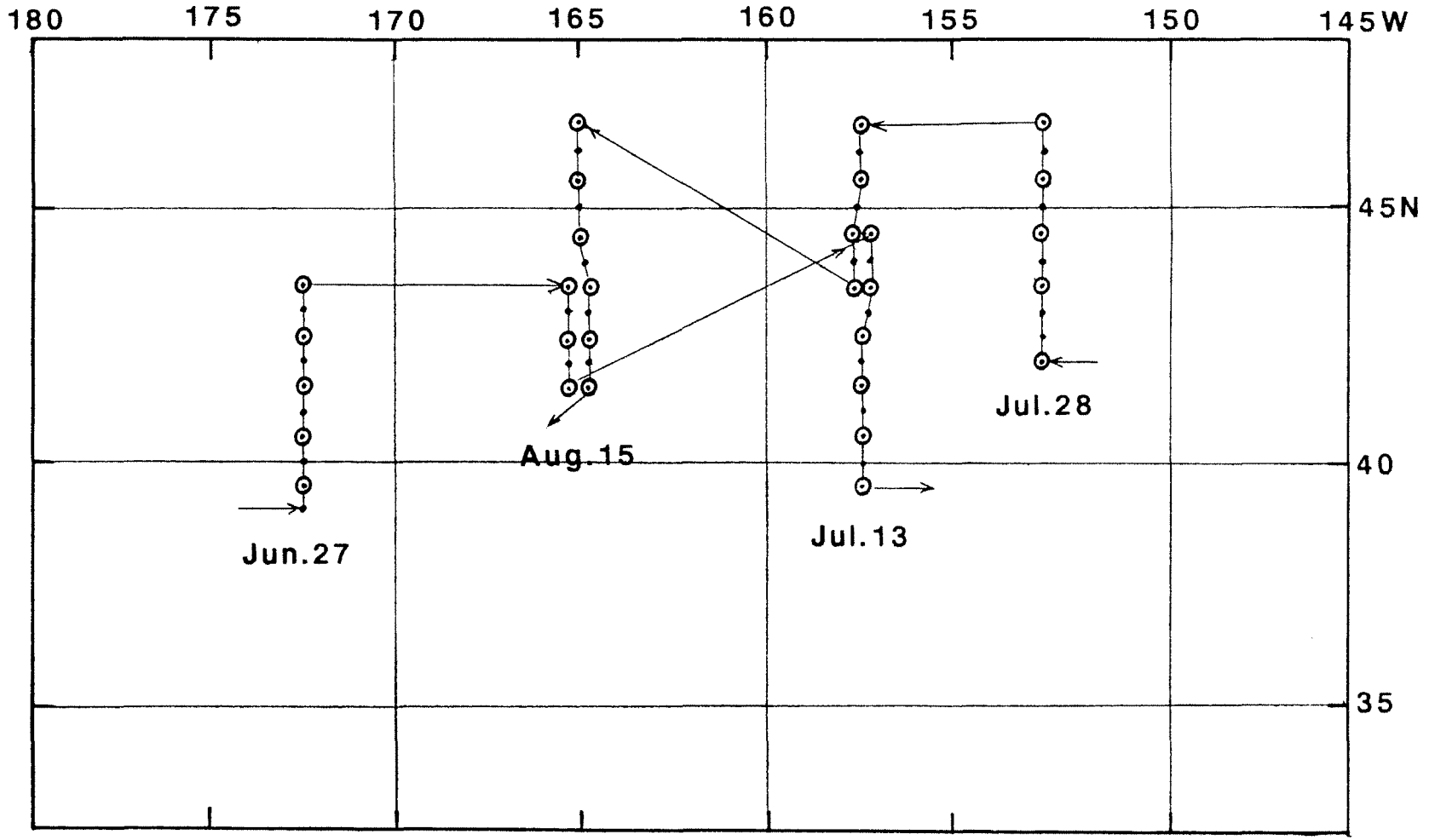

Figure 1. The location of fishing and oceanographic stations.

O fishing station

• oceanographic station

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TRANSLATION

CRUISE REPORT OF FLYING SQUID SURVEY BY THE SHOYO MARU IN 1989

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ABSTRACT

The flying squid survey by the Shoyo maru in the central North Pacific Ocean in 1989 was conducted from June 27 to August 15 at 29 stations for the driftnet survey and 25 stations for oceanographic observations (54 stations including driftnet stations). Most of the catch by driftnet was flying squid and non-anadromous species, the incidental take of marine mammals and seabirds was low. Biological information and samples on the major species including flying squid, marine mammals and seabirds were collected. The sighting surveys on marine mammals were conducted during the cruise of the research vessel. In addition, oceanographic information was collected by CTD, GEK, and Salino thermograph. During the outgoing cruise, an U.S. scientist embarked, but on the return cruise a Canadian scientist embarked.

Cruise Report

The survey on flying squid in the central North Pacific Ocean has been conducted by the Fisheries Agency of Japan with the Shoyo maru (72 m in length) since 1986. In 1989, the survey was conducted from June 27 to August 15. The survey area was the area which is encompassed by 39.5° to 46.5°N, 172.5° to 152.5°W, and the number of stations was 29 for the driftnet survey and 25 for the oceanographic observations (54 including driftnet stations, Fig. 1).

For the driftnet used, the length of one tan was about 50 m at the float line, and the depth was about 8.5 m. For the size of mesh, the research net ranged from 48 mm to 157 mm (10 kinds, 5 tans each), and the commercial net was 115 mm (50 tans) which was different from the past 3 years and the research net ranged from 33 mm to 42 mm (3 kinds, 2 tans each) and the large-mesh nets (166 mm or 197 mm, 10 tans) were omitted.

Most of the catch by driftnet was flying squid and non-anadromous species, and the incidental take of marine mammals and seabirds was low (Table 1). The drop-out of these species from the net during the hauling was counted as accurately as possible. A part of flying squid and all seabirds from the catch was brought back as a whole sample. In addition, the biological data and research samples of squids, salmonids, other major species, and marine mammals were collected.

A sighting survey for marine mammals was conducted when the research vessel was cruising.

Oceanographic observations were made at 54 stations including the driftnet survey stations, and water temperatures and salinities up to a depth of 1,000 m were recorded by CTD. In addition, surface current at the driftnet survey stations was measured by GEK, and water temperatures and salinities at the surface were recorded by the salino-thermograph every twenty minutes.

Mr. B. Turnock, U.S. National Marine Mammal Laboratory was on board the research vessel from Tokyo to Seattle for the sighting survey and observations of the fishing conditions for flying squid. And then, Mr. Whitaker, Canada Department of Fisheries & Oceans, Pacific Biological Station, was also on board the research vessel from Seattle to Tokyo for sampling of salmonids and monitoring of the flying squid survey.

Table 1 and Fig. 1 are in English in the Japanese document.