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第32大吉丸によるベーリング海における
1985年度日米共同底魚資源調査中間報告

Preliminary report on 1985 Japan-U.S. cooperative Bering Sea
groundfish survey by Daikichi maru No.32

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水 産 庁

Fisheries Agency of Japan



第32大吉丸によるベーリング海における 1985年度日米共同底魚資源調査中間報告

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1985年度の水産庁による北洋底魚資源調査は、北転型スターン・トロール漁船第32大吉丸を用船し、5～9月の期間、東部ベーリング海において、日米共同のもとに現在実施されている。本報告は、5～7月に行なわれた第1次調査の概要を速報的にまとめたものである。

調 査 水 域

1982年と同様に東部ベーリング海大陸棚及び大陸斜面水域をA, B, Cの3水域に分け、更に、100～200, 201～400, 401～600 尋の3水深帯に区分し、定点を設定した(図1)。第1次調査では、アリューシャン列島アクタン島北側の定点からひき網を開始し、定点に沿って調査を進め、プリピロフ諸島のセント・ジョージ島の南側水域でひき網を終了した。

本報告の引用は下記に従うこと：

手島和之 1985. 第32大吉丸によるベーリング海における1985年度日米協同底魚資源調査中間報告(北太平洋漁業国際委員会提出文書). 8頁. 水産庁, 東京

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調査船及び漁具

第32大吉丸は総トン数349.96トンの北転型スターン・トロール漁船で、1979年以降の日米共同資源調査に従事した調査船とほぼ同じ型の船である。第32大吉丸の要目を表1に示した。また、本調査に使用した漁具及び付属漁具の仕様を表2に示した。

調査事項

1) 漁獲物調査

各定点では60分のひき網を実施した。全漁獲物を測定することを目標に、漁獲物を魚種（又は魚種群）毎にバネ秤で重量を測定して、漁獲物重量組成を求めた。漁獲量が5トン以上と多い場合には、魚種別の1籠平均重量と籠数により漁獲重量を推定した。スケトウダラ、ギンダラ、マダラ、カレイ類、メヌケ類などの主要魚種については、約200尾の標本を無作為に取り出し、雌雄に分けた後、体長穿孔カードを用いて、雌雄別体長組成を求めた。また、漁獲重量と標本尾数から漁獲尾数を推定した。更に、各定点において、主要魚種数種から年齢形質及び胃内容物を採集した。

2) 水温測定

2, 3 定点毎に、XBTを用いて底水温の測定を行なった。

3) トロール袖網の展開距離の測定

若林・手島（1985）により、トロール網の左側袖網先端に、音波が横方向に発信出来るようにネット・レコーダーを装着し、右側袖網先端からの反射音を記録紙上に記録し両袖網間隔を測定した。また、測定値を推定値と比較するために、小山（1974）の方法により、ひき網ごとにワープ間隔を2か所で測定した。

調査日程

第32大吉丸は、1985年5月14日塩釜を出港し、5月24日ダッチ・ハーバー港外で米国NMFS, Northwest and Alaska Fisheries CenterのShimada 調査員が乗船し、5月25日、 $54^{\circ}42'N$, $165^{\circ}57'W$ の地点より調査を開始した。途中6月6日燃油補給と米国調査員下船のためダッチ・ハーバーに入港した。6月8日より調査を再開し、7月7日に第1次調査を終了し、7月11日にアラスカ州セワードに入港した。

第32大吉丸は、7月19日セワードを出港し、8月現在ベーリング海において調査中である。

調査結果の概要

第1次調査では、調査水域滞在36日間に184回のひき網を実施した。夜間中層ひき12回と48時間連続操業12回及び根掛り等の不成功網4回を除く、156回のひき網資料が得られた。水深

帯別 60 分ひき網当たり魚種別平均漁獲量 (C P U E) を表 3 に, そして, 60 分当りに調整して得られたオヒョウの体長組成を表 4 に示した. また, 各ひき網定点及びオヒョウの漁獲尾数と漁獲位置を図 2 に示した.

ネット・レコーダーによる測定の結果, トロール袖網の展開距離は, 水深 300 m 以深でおよそ 36 m を示した.

文 献

- 小山武夫. 1974. 船尾式トロールについての実験的考察. 東海水研報. 77 : 171 - 249.
- 若林 清・手島和之. 1985. ネット・レコーダーによるトロール袖網展開距離の測定. 昭和 60 年度日本水産学会春季大会講演要旨. P. 9.

Table 1. Specifications of No. 32 Daikichi maru engaged in
1985 Bering Sea survey.

Overall length (m)	50.41
Gross tonnage (ton)	349.96
Shaft horsepower (PS)	2,500
Propeller	Controllable pitched propeller
Type of trawl	Stern trawl
Number of crew	26
Number of scientist a	3

a U.S scientist, May 34 to July 6.

Table 2. Specifications of trawl gear used for 1985
Bering Sea surevy.

Head rope length (m)	52.4
Footrope length (m)	63.9
Overall length of net (mm)a	80.3
Mesh size of codend (mm)b	100
Diameter of bobbins (mm)	450
Dandyline length (m)c	140
size of otterdoor (m)d	2.2 x 3.4
Weight of otterdoor (Kg)	2,600

a Including codend (22 m length)

b Triple-layered

c Otter pendant (13 m) + joining wire
(2 m) + single dandyline (65 m) +double
dandyline (60 m)

d Width x height

Table 3. Standardized catch in kg/60 min. trawled by species and species group and by depth zone during 1985 Bering Sea survey

Species	Depth zone		
	100-200 fm (52)	201-400 fm (73)	401-600 fm (31)
Yellowfin sole	-	-	-
Rock sole	0.1	-	-
Flathead sole	169.1	48.6	-
Deepsea sole	-	0.5	0.4
Alaska plaice	-	-	-
Greenland turbot	210.7	690.2	1,314.9
Arrowtooth fl.	920.0	413.6	22.1
P. halibut	104.4	77.4	1.4
Rex sole	15.4	15.2	0.4
Dover sole	0.7	0.5	0.1
Other flounders	-	-	-
Subtotal	1,420.4	1,246.0	1,339.3
Pacific cod	225.6	7.6	0.1
Pollock	77.7	7.9	0.6
Other cods	-	-	-
Subtotal	303.3	15.5	0.7
Sablefish	425.1	648.3	336.2
P. oceanic perch	35.7	2.5	0.0
Northern rockfish	0.3	0.0	-
Shortraker rockfish	16.6	41.2	2.0
Rougheye rockfish	15.7	8.9	0.1
Other rockfishes	0.0	0.0	-
Thornyheads	7.1	48.1	69.2
Herring	-	-	-
Eulachon	3.2	-	-
Atka mackerel	0.4	-	-
Sculpins	41.1	13.8	2.4
Poachers	0.4	0.2	0.1
Eelpouts	3.2	118.5	42.6
Snailfishes	7.2	4.8	2.9
Rattails	0.1	520.4	671.1
Sharks	0.1	3.4	7.9
Skates	27.3	14.1	9.0
Other fishes	3.3	1.6	1.3
Subtotal	586.8	1,425.8	1,144.8
Total of fishes	2,310.5	2,687.3	2,484.8
Octopuses	0.7	0.9	1.7
Squids	15.1	15.9	2.5
Pink shrimp	0.8	0.0	0.0
Sidestrip shrimp	0.2	0.6	-
Other shrimps	-	0.2	0.3
Neptunes	2.4	1.6	0.6
Subtotal	19.2	19.2	5.1
Total catch	2,329.7	2,706.5	2,489.9
Halibut no.	17.2	7.8	0.1

Table 4. Size composition of Pacific halibut caught during 1985 Bering Sea survey.

Length (mm)	No.	Length (mm)	No.	Length (mm)	No.
391 - 400	1	791 - 800	36	1191-1200	5
410		810	35	1210	1
420		820	37	1220	2
430		830	15	1230	3
440		840	34	1240	3
441 - 450		841 - 850	24	1241-1250	2
460		860	26	1260	1
470	1	870	35	1270	2
480	1	880	31	1280	4
490	3	890	19	1290	2
491 - 500	2	891 - 900	17	1291-1300	4
510	2	910	15	1310	3
520	2	920	18	1320	
530	3	930	15	1330	4
540	3	940	16	1340	3
541 - 550	6	941 - 950	19	1341-1350	2
560	1	960	6	1360	1
570	10	970	17	1370	
580	14	980	10	1380	1
590	17	990	14	1390	
591 - 600	29	991 -1000	22	1391-1400	1
610	18	1010	6	1410	2
620	27	1020	8	1420	
630	31	1030	10	1430	1
640	30	1040	9	1440	1
641 - 650	48	1041 -1050	12	1441-1450	
660	42	1060	5	1460	1
670	33	1070	7	1470	
680	46	1080	1	1480	1
690	42	1090	5	1490	
691 - 700	43	1091 -1100	10	1491-1500	1
710	65	1110	10	1510	1
720	39	1120	10	1520	
730	35	1130	5	1530	
740	33	1140	4	1540	
741 - 750	50	1141 -1150	5	1541-1550	
760	31	1160	7	1560	2
770	37	1170	7	1570	
780	42	1180	8	1580	
790	33	1190	5	1611-1620	1
				Total	1,467

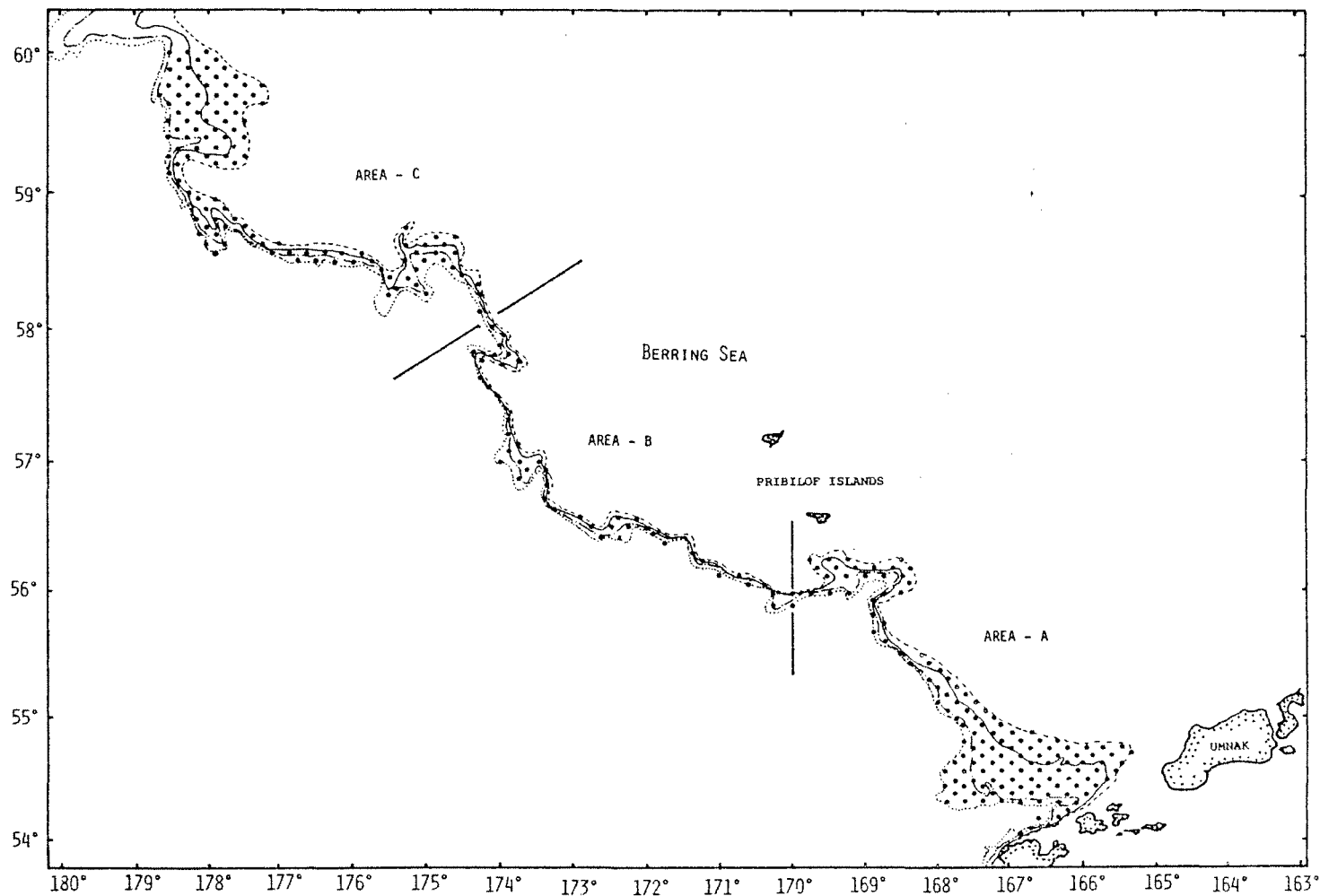


Fig. 1. Survey stations planned for 1985 Bering Sea survey.

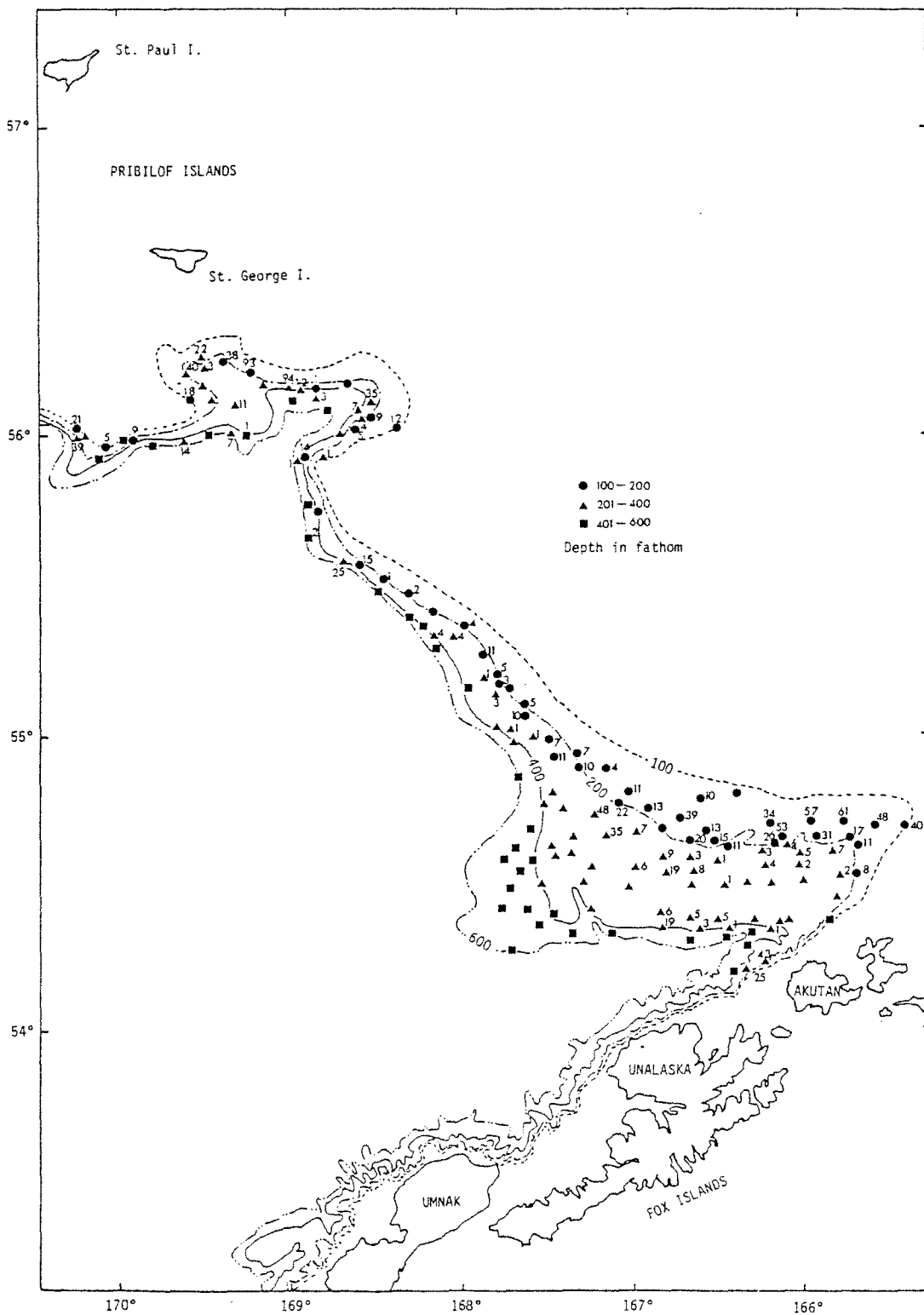


Fig. 2. Survey stations where the 1st leg of 1985 Bering Sea survey was conducted. The number of halibut caught and the position at which the halibut were caught are shown as stations with numbers.

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TRANSLATION

PRELIMINARY REPORT ON 1985 JAPAN-U.S. COOPERATIVE BERING SEA
GROUNDFISH SURVEY BY DAIKICHI MARU NO. 32

Kazuyuki Teshima
Fisheries Agency of Japan
1985 September

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Tokyo, Japan 100.

The Japan-U.S. joint survey on North Pacific groundfish resources by the Fisheries Agency of Japan in 1985 was conducted using the Daikichi maru No. 32, a landbased dragnet stern trawler, in the eastern Bering Sea during the period between May and September. This report summarizes activities during the first survey conducted between May and July.

Survey Area

As in 1982, the eastern Bering Sea continental shelf and continental slope area was divided into three regions: A, B, and C, and into depths between 100 and 200 fathoms, 201 and 400 fathoms, and 401 and 600 fathoms at fixed stations (Fig. 1). Trawl operations commenced at the station on the north side of Akutan Island in the Aleutian Islands, proceeded along stations, and were completed on the south side of St. George Island in the Pribilof Islands.

Research vessel and gear

The Daikichi maru No. 32 (349.96 GT) was a landbased dragnet stern trawler of almost the same type as research vessels engaged in the Japan-U.S. joint survey on groundfish resources since 1978. Specifications of the Daikichi maru No. 32 are shown in Table 1. Specifications of gears used during the survey are shown in Table 2.

Survey items

(1) Catches

Sixty-minute tows were conducted at each station. The catches were weighed with a spring scale by species (or species group) to obtain the weight composition of the catch. When the catch was in excess of 5 t, the catch weight was estimated using the average weight per basket by species and the number of baskets.

For major species such as pollock, sablefish, Pacific cod, flatfishes, and rockfishes, samples of about 200 individuals were taken randomly, separated by sex and body length compositions for each sex obtained using body length punch cards. In addition, the catch in numbers was estimated from the catch weight, sample weight, and sample numbers. Age characteristics and stomach contents were also collected from several major species at each station.

(2) Water temperature observations

Records of bottom water temperature were collected using XBTs at each two or three stations.

(3) Measurements of wing opening in the trawl

A net recorder was attached to the tip of the left wing of the net (Wakabayashi and Teshima 1985), and the reflections from the tip of right wing recorded to determine the distance between wings. For comparison of the value measured and the value estimated, the warp distance was measured using Koyama's (1974) method at two locations for each tow.

Survey period

The Daikichi maru No. 32 departed from Shiogama on May 14, 1985. Mr. A. Shimada, U.S. scientist of Northwest and Alaska Fisheries Center, NMFS, was taken aboard off Dutch Harbour on May 24 and the survey commenced in waters of 54°42'N and 165°57'W on May 25. During the survey, the Daikichi maru No. 32 entered Dutch Harbour for refueling and disembarkation of the U.S. scientist on June 6. The survey was resumed on June 8, the first survey was completed on July 7, and the vessel proceeded to Seward, Alaska.

The Daikichi maru No. 32 departed from Seward on July 19 and was still conducting research activities in the Bering Sea as of August.

Outline of research results

In the first survey, a total of 184 trawling operations were conducted during 36 days in the survey area. Data were obtained for 156 trawling operations, excluding 12 mid-layer trawl operations during night time, 12 twenty-four hour continuous operations, and 4 unsuccessful trawl operations terminated by snagging. CPUEs by depth, by 60-minute tow, and by species are shown in Table 3. The length composition of halibut obtained for standardized 60-minute tows is shown in Table 4. Numbers of halibut caught at each trawl station, and the position caught are shown in Fig. 2. Measurement with the net recorder, showed the opening of the wing nets of the trawl to be 36 m at depth of 300 m or more.

References

- Oyama, Takeo. 1974. Experimental considerations on stern trawler. Tokai Fish. Res. Lab. Bulletin No. 77: 171-249.
- Wakabayashi, Kiyoshi, and Kazuyuki Teshima. 1985. Measurement of opening distance of the wing nets of trawl by net recorder. Outline of speech given at the spring conference at the Japanese Society of Scientific Fisheries, 9 p.

TABLES 1 TO 4 AND FIGS. 1 AND 2 ARE IN ENGLISH IN THE JAPANESE DOCUMENT