

Not to be cited by
INPFC Document number

INPFC
DOCUMENT

Ser. No. 3441

Rev. No.

1989年に日本の科学調査船で行なった
北太平洋アカイカ資源調査の概要

**Outline of Flying Squid Investigations
by Japanese Scientific Vessels
in the North Pacific in 1989**

早瀬茂雄・谷津明彦・伊藤 準
Shigeo Hayase, Akihiko Yatsu and Jun Ito
遠洋水産研究所
Far Seas Fisheries Research Laboratory

1989年 9月
September 1989
水産庁
Fisheries Agency of Japan

この文書を引用する場合は下記による：

早瀬茂雄・谷津明彦・伊藤 準. 1989. 1989年に日本の科学調査船で行なった北太平洋アカイカ資源調査の概要. 8頁. (第36回INPFC定例年次会議提出文書. 1989年10月. 米国, シアトル). 水産庁, 遠洋水産研究所. 日本. 〒424 清水市折戸 5-7-1

1989年に日本の科学調査船で行なった
北太平洋アカイカ資源調査の概要
Outline of Flying Squid Investigations
by Japanese Scientific Vessels
in the North Pacific in 1989

早瀬茂雄・谷津明彦・伊藤 準
遠洋水産研究所

要 約

1989年に計4隻の調査船により北太平洋のアカイカ資源調査が行なわれた(4隻の中の1隻は現在も調査が進行中である)。これらの調査の目的はアカイカの資源量や分布・成長などの生物特性に関する知見、日周行動や産卵生態などの知見、及び流し網で漁獲(混獲)される他の魚種や海産哺乳動物・海鳥などに関する生物情報を収集するためのものである。

は じ め に

北太平洋のアカイカは我が国には非常に重要な水産資源であり、その資源調査は1984年より北海道区水産研究所によってなされてきた。これにより夏・秋季のアカイカの分布生態やさサケ科魚類との分布の関連性、あるいは流し網にかかる魚類や海産哺乳動物の混獲などについての資料が蓄積されつつある。1988年10月以降遠洋水産研究所は、北海道区水産研究所等により数年来行なわれてきた東経170度以東のアカイカ資源調査を継承することとなり、1989年には4隻の科学調査船を運航させてアカイカの資源調査を行なった。本報告を作成した目的は1989年に日本の科学調査船によってなされた北太平洋アカイカ資源調査の実施経過を総括することにある。

1989年調査船によるアカイカ資源調査

(A) 調査船名及び乗船調査員名

船名	所属	総トン数	馬力	調査員名
(1) 北鳳丸	水産庁用船	441.42 トン	1,300 馬力	早瀬茂雄 (遠洋水研)
(2) 照洋丸	水産庁	1,362 トン	2,000 馬力	川崎正和 (水産庁資源課) × 2 基 川崎恵弘 (水産庁資源課) B. Turnock(米), D. Whitaker(加)
(3) 若鳥丸	水産庁用船	273 トン	1,300 馬力	谷津明彦 (遠洋水研)
(4) 第3 歓喜丸	水産庁用船	246.93 トン	850 馬力	土門 隆 (水産庁資源課)

(B) 調査時期と日程

(1) 北鳳丸	1989.4.12~5.24	(43 日間、函館基点)
(2) 照洋丸	1989.6.20~8.25	(67 日間、東京基点)
(3) 若鳥丸	1989.7.11~8.12	(33 日間、函館基点)
(4) 第3 歓喜丸	1989.8.24~10.19	(57 日間、山田基点)

(1) 北鳳丸		(2) 照洋丸		(3) 若鳥丸		(4) 第3 歓喜丸	
月日	出入港	月日	出入港	月日	出入港	月日	出入港
4/12	函館出港	6/20	東京出港	7/11	函館出港	8/24	山田出港
4/30	ホノルル入港	7/19	シアトル入港				
5/ 3	ホノルル出港	7/23	シアトル出港				
5/24	函館入港	8/25	東京入港	8/12	函館入港	10/19	山田入港

(C) 調査海域 (図1) と調査項目

- (1) 北鳳丸：北太平洋ハワイ諸島北西海域：アカイカ産卵調査
- (2) 照洋丸：北太平洋東部漁場：新北限線周辺水域におけるアカイカ及びサケ科魚類の分布調査

(3) 若鳥丸：北太平洋西部漁場：流し網によるアカイカの時間帯別漁獲試験

(4) 第3歓喜丸：北太平洋東部漁場：流し網によるアカイカの水深帯別漁獲

試験及びいか釣り試験

(D) 調査の概要

(1) 北鳳丸：北太平洋ハワイ諸島北西海域において4—5月にボンゴネットによるアカイカ類稚仔の採集(16定点, 20回曳網)、流し網及び手釣りによるアカイカ産卵親魚の漁獲試験(8定点)、各定点における海洋観測などを行なった。

(2) 照洋丸：7—8月の北太平洋東部漁場における流し網によるアカイカ漁獲試験。海洋観測は流し網調査点29点を含む54定点でなされた。また海産哺乳動物類の目視調査は調査船の航行時に実施された。この調査ではMR. B. TURNOCK (U. S. NATIONAL MARINE MAMMAL LABORATORY) が東京～シアトル間に、MR. D. WHITAKER (CANADA DEPT. FISHERIES AND OCEANS PACIFIC BIOLOGICAL STATION) がシアトル～東京間に各々乗船し、調査及びその視察に加わった。

(3) 若鳥丸：7—8月の北太平洋西部漁場における流し網によるアカイカ漁獲試験(17定点)。特に流し網の浸漬時間帯を変化させることによるアカイカ等の漁獲量の差異について調査した。また各定点における海洋観測も行なわれた。

(4) 第3歓喜丸：9—10月の北太平洋東部漁場における流し網によるアカイカ漁獲試験。特に商業用流し網を表層(浮子網の深度0m)と表層下(同3m)に同時に設置し、アカイカに対する漁獲効率の比較並びに海鳥などの混獲回避の効果についての試験調査。また流し網と同じ定点でのいか釣り機によるアカイカ漁獲試験及び脱落尾数の調査も行なう。結果のとりまとめ及び報告は調査終了後行なわれる。

第36回 INPFC 年次会議提出文書

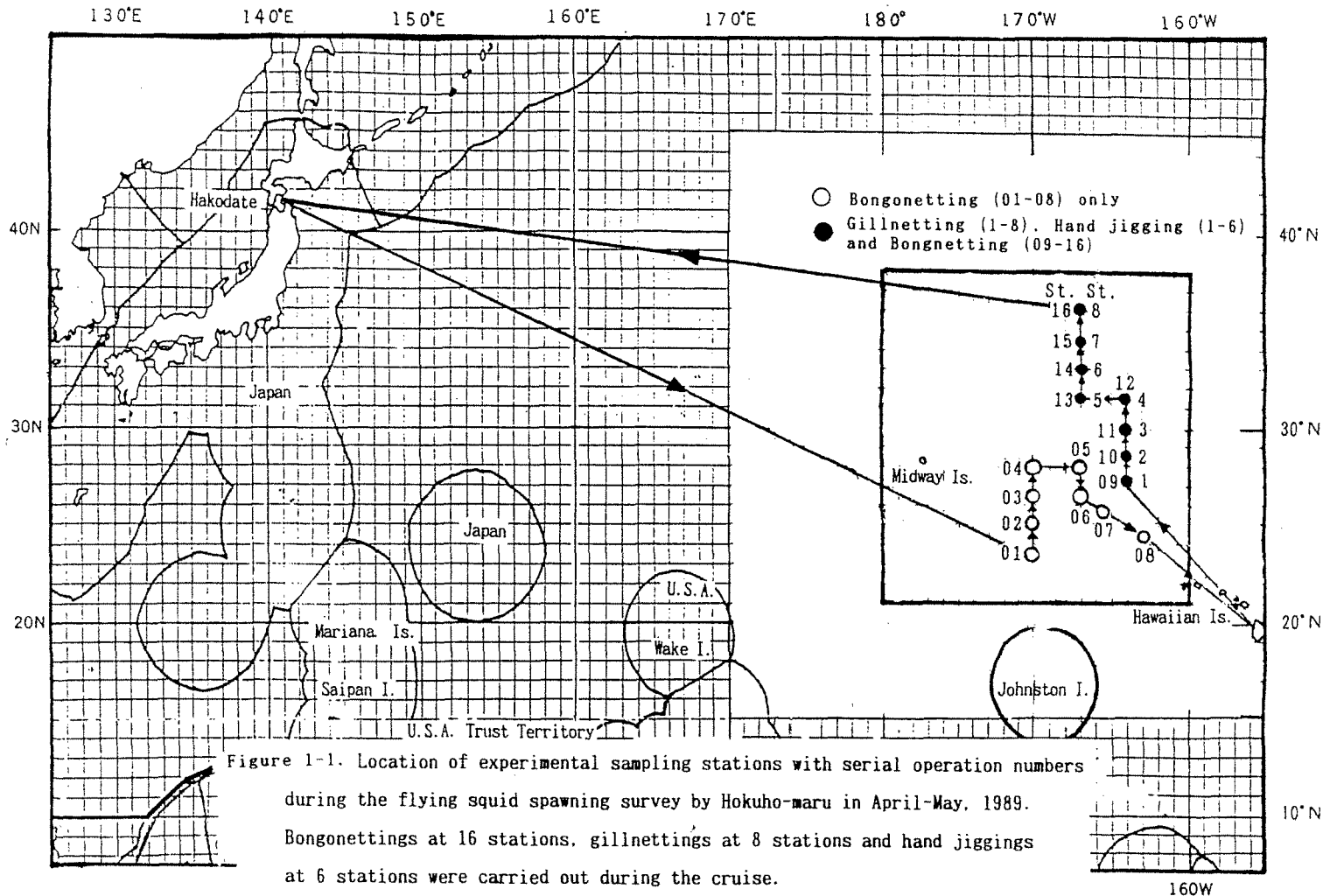
Murata, M., Y. Nakamura and H. Saito, 1989. Report on the fishing survey on flying squid by the Shoyo-Maru, Kanki-Maru No. 3, Hoyo-Maru No. 78 and Hokuho-Maru in the North Pacific in 1988. Document submitted to the International North Pacific Fisheries Commission, p. 25.

Hayase, S. 1989. Cruise Report of Flying Squid Spawning Survey by the Hokuho-Maru in April-May, 1989. Document submitted to the International North Pacific Fisheries Commission, p. 21.

Kawasaki, S., J. Ito and K. Yamanaka. 1989. Cruise report of flying squid survey by the Shoyo-Maru in 1989. Document submitted to the International North Pacific Fisheries Commission, p. 5.

Yatsu, A. 1989. Cruise report of flying squid survey by the *Wakatori-Maru* in

July/August, 1989. Document submitted to the International North Pacific
Fisheries Commission, p. 20.



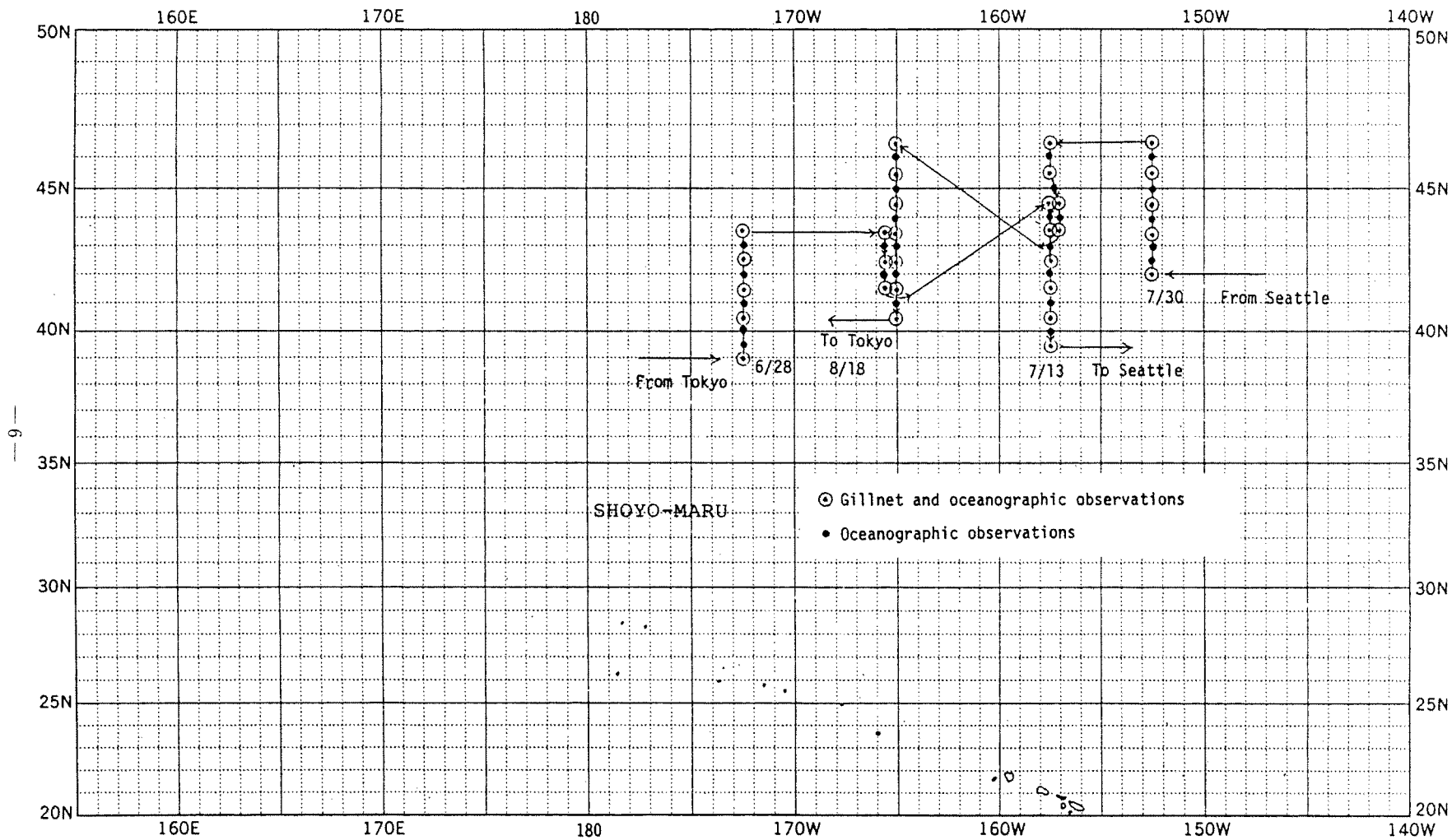


Figure 1-2. continued.(Shoyo-MarU)

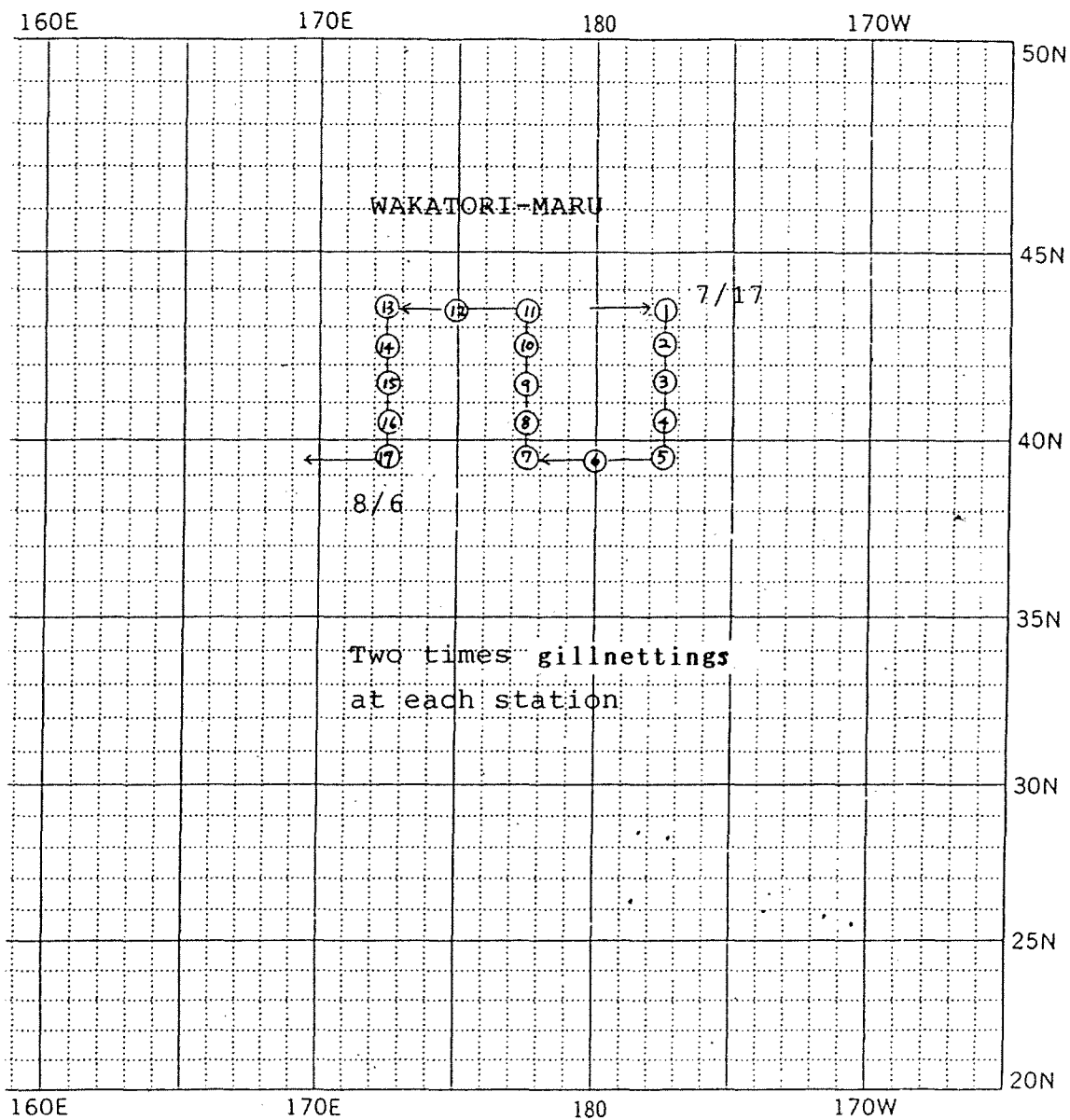


Figure 1-3. continued.(Wakatori-Marui)

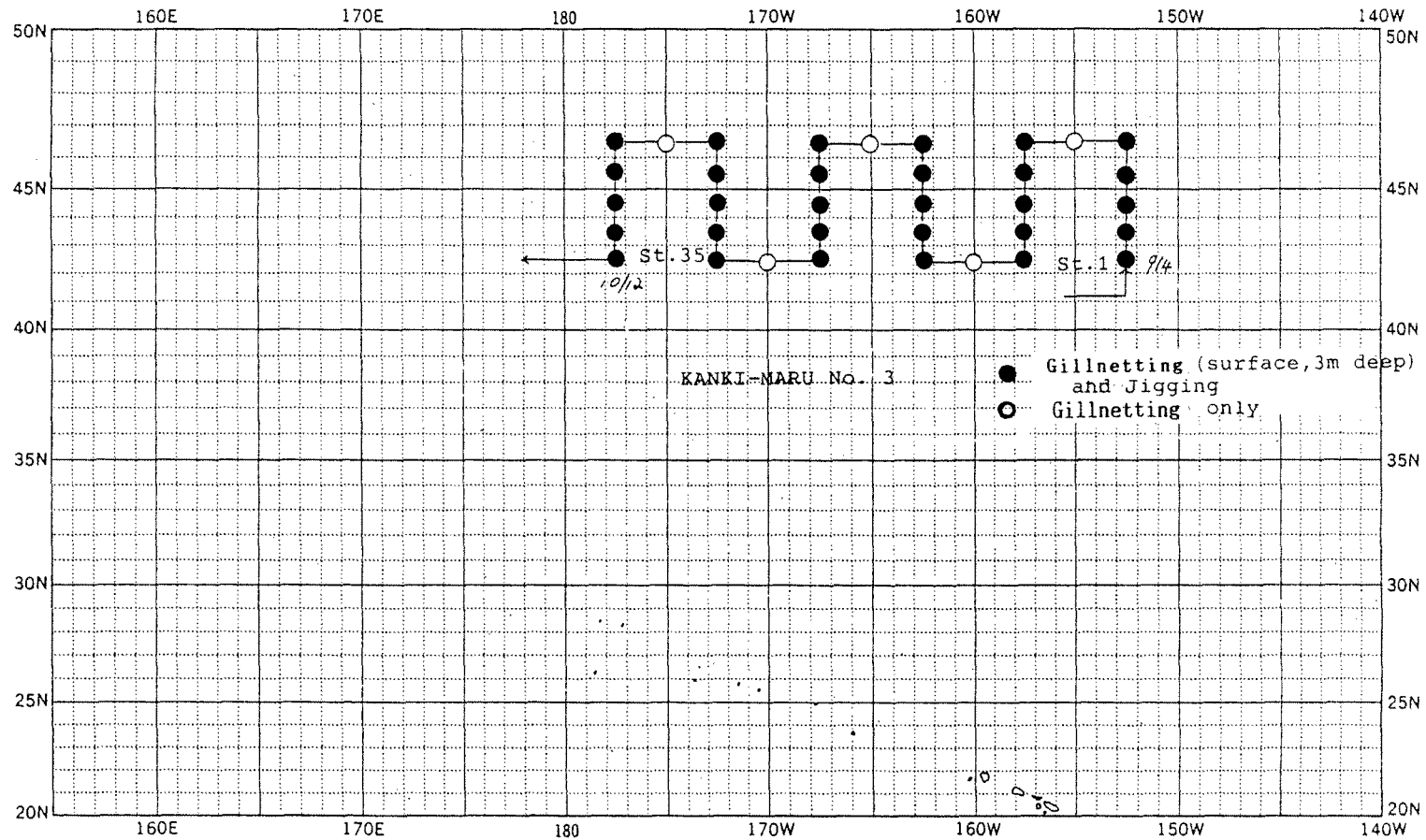


Figure 1-4. continued. (Kanki-Marú, No. 3)

TRANSLATION

**OUTLINE OF FLYING SQUID INVESTIGATIONS BY JAPANESE
SCIENTIFIC VESSELS IN THE NORTH PACIFIC IN 1989**

Shigeo Hayase, Akihiko Yatsu and Jun Ito
Far Seas Fisheries Research Laboratory

1989 September
Fisheries Agency of Japan

THIS PAPER MAY BE CITED IN THE FOLLOWING MANNER:
Hayase, Shigeo, Akihiko Yatsu and Jun Ito. 1989. Outline of flying squid investigations by Japanese scientific vessels in the North Pacific in 1989. (Document submitted to the Annual Meeting of the International North Pacific Fisheries Commission, Seattle, Washington, 1989 October.) 8 p. Fisheries Agency of Japan, Far Seas Fisheries Research Laboratory, 5-7-1 Orido, Shimizu, Shizuoka, Japan 424.

OUTLINE OF FLYING SQUID INVESTIGATIONS
BY JAPANESE SCIENTIFIC VESSELS
IN THE NORTH PACIFIC IN 1989

Shigeo Hayase, Akihiko Yatsu and Jun Ito
Far Seas Fisheries Research Laboratory

ABSTRACT

In 1989, a total of 4 Japanese research vessels conducted the surveys on flying squid stocks in the North Pacific Ocean (one of the four vessels is presently conducting the survey). The objectives of these surveys were to collect information on the biomass of flying squid and findings regarding biological and ecological characteristics such as distribution, growth, diurnal rotation and spawning behaviour as well as biological information regarding other fishes, marine mammals and seabirds caught incidentally by commercial gillnets.

INTRODUCTION

Recently, flying squid, Ommastrephes bartrami, in the North Pacific Ocean becomes one of the most important fishery resources in our country, Japan. Therefore, since 1984, the fishing surveys on flying squid have been conducted by the Hokkaido Regional Fisheries Laboratory. As the results from those surveys, such informations as the distribution of flying squid particularly during the summer and fall fishing seasons, and relationships on distributions between flying squid and salmonids are being accumulated. Some informations on the incidental catch of fishes and marine mammals which are entangled in the gillnets are also available. Since October 1988, the Far Seas Fisheries Research Laboratory has succeeded the work on flying squid investigations in waters east of 170° E which had been conducted by the Hokkaido Regional Fisheries Research Laboratory for several years as mentioned above. And in 1989, four Japanese scientific research vessels conducted research works on flying squid stocks in the North Pacific Ocean.

The objectives of this report is to summarize the progress of research works on flying squid stocks in the North Pacific Ocean which was conducted by four Japanese scientific research vessels in 1989.

RESEARCH WORKS ON FLYING SQUID STOCKS IN THE NORTH PACIFIC
BY JAPANESE SCIENTIFIC RESEARCH VESSELS IN 1989

(A) Names of research vessels and names of researchers on board

NAME OF VESSELS	OWNED/CHARTERED BY	GT/HP	NAME OF RESEARCHER
1. <u>Hokuho maru</u>	Fisheries Agency of Japan (chartered)	441.42 GT 1,300 hp	Shigeo Hayase (Far Seas Fish. Res. Lab.)
2. <u>Shoyo maru</u>	Fisheries Agency of Japan (owned)	1,362 GT 2,000hp x2	Seiwa Kawasaki (Resources Div.FAJ) Toshihiro Kawasaki (Resources Div.FAJ) B. Turnock (U.S.) D. Whitaker(Canada)
3. <u>Wakatori maru</u>	Fisheries Agency of Japan(chartered)	273 GT 1,300 hp	Akihiko Yatsu (Far Seas Fish. Res. Lab.)
4. <u>Kanki maru No.3</u>	Fisheries Agency of Japan(chartered)	246.93 GT 850 hp	Takashi Domon (Resources Div.FAJ)

(B) Research periods and itinerary

1. <u>Hokuho maru</u>	1989 April 12 to May 24 (for 43 days; Hakodate as baseport)
2. <u>Shoyo maru</u>	1989 June 20 to August 25 (for 63 days; Tokyo as baseport)
3. <u>Wakatori maru</u>	1989 July 11 to August 12 (for 33 days; Hakodate as baseport)
4. <u>Kanki maru No.3</u>	1989 August 24 to October 19 (for 57 days; Yamada as baseport)

	HOKUHO MARU	SHOYO MARU	WAKATORI MARU	KANKIMARU NO.3
DEP ;	Apr. 12	June 12	July 11	AUG. 24
PORT;	Hakodate	Tokyo	Hakodate	Yamada
ARR ;	Apr. 30	July 19		
PORT;	Honolulu	Seattle		
DEP ;	May 3	July 23		
PORT;	Honolulu	Seattle		
ARR ;	May 24	Aug. 25	Aug. 12	Oct. 19
PORT;	Hakodate	Tokyo	Hakodate	Yamada

(C) Areas surveyed (Fig.1) and items studied

1. Hokuho maru Northwestern areas of the Hawaiian Islands in the North Pacific: research on spawning characteristics of flying squid
2. Shoyo maru Eastern fishing grounds in the North Pacific: research on distributions of flying squid and salmonids in surrounding areas of the new northern boundary by gillnets
3. Wakatori maru Western fishing grounds in the North Pacific: fishing experiment by time zone on flying squid by gillnets
4. Kanki maru No.3 Eastern fishing grounds in the North Pacific: fishing experiment by depth on flying squid by gillnets and jiggings

(D) Outline of research

(1) Hokuho maru : sampling survey on flying squid larvae by bongonets (16 stations, 20 tows), fishing experiment for collection of matured squid by gillnets (8 stations) and by jiggings (6 stations), and oceanographic observations at each station in the northwestern waters of the Hawaiian Islands of the North Pacific Ocean during the period of April to May.

(2) Shoyo maru : fishing experiment on flying squid by gillnets in the eastern fishing grounds of the North Pacific Ocean during the period of July to August. Oceanographic observations were conducted at 54 stations including 29 stations for gillnet operations. The sighting survey of marine mammals was also conducted when the research vessel was cruising. In this survey, Mr. B. Turnock (U. S. National Marine Mammal Laboratory) and Mr. D. Whitaker (Canada Department of Fisheries and Ocean, Pacific Biological Station) were on board the vessel from Tokyo to Seattle and from Seattle to Tokyo, respectively. They conducted their own surveys and observed Japanese research works.

(3) Wakatori maru : fishing experiment of flying squid by gillnets in the western fishing grounds of the North Pacific during the period of July to August. In particular, experimental fishing survey was conducted for testing the differences of catch on flying squid by changing soaking time zone when gillnet was operated. Oceanographic observations at each station were also conducted.

(4) Kanki maru No. 3 : fishing experiment of flying squid by gillnets in the eastern fishing grounds of the North Pacific during the period of September to October. In particular, two commercial gillnets, one with floatline at the surface (0m) and another with the floatline under the surface (3m), will be set at the same time for comparison of fishing efficiency on flying squid and other fishes as well as the experimental testing on effectiveness to allow the escape from the incidental take of seabirds. In addition, fishing experiment on flying squid by squid jigging at the same station as that by gillnets. Compiling of the results and reports will proceed after the survey.

LIST OF DOCUMENTS SUBMITTED TO THE 36TH INPFC ANNUAL MEETING

- Murata, M., Y. Nakamura and H. Saito. 1989. Report on the fishing survey on flying squid by the Shoyo maru, Kanki maru No.3, Hoyo maru No. 78 and Hokuho maru in the North Pacific in 1988. Document submitted to the International North Pacific Fisheries Commission, p. 25
- Hayase, S. 1989. Cruise report of flying squid spawning survey by the Hokuho maru in April-May, 1989. Document submitted to the International North Pacific Fisheries Commission, p. 21
- Kawasaki, S., J. Ito and K.Yamanaka.1989. Cruise report of flying squid survey by the Shoyo maru in 1989. Document submitted to the International North Pacific Fisheries Commission, p. 5
- Yatsu, A. 1989. Cruise report of flying squid survey by the Wakatori maru in July/August, 1989. Document submitted to the International North Pacific Fisheries Commission, p. 20

Figure 1 is in English in the Japanese document.

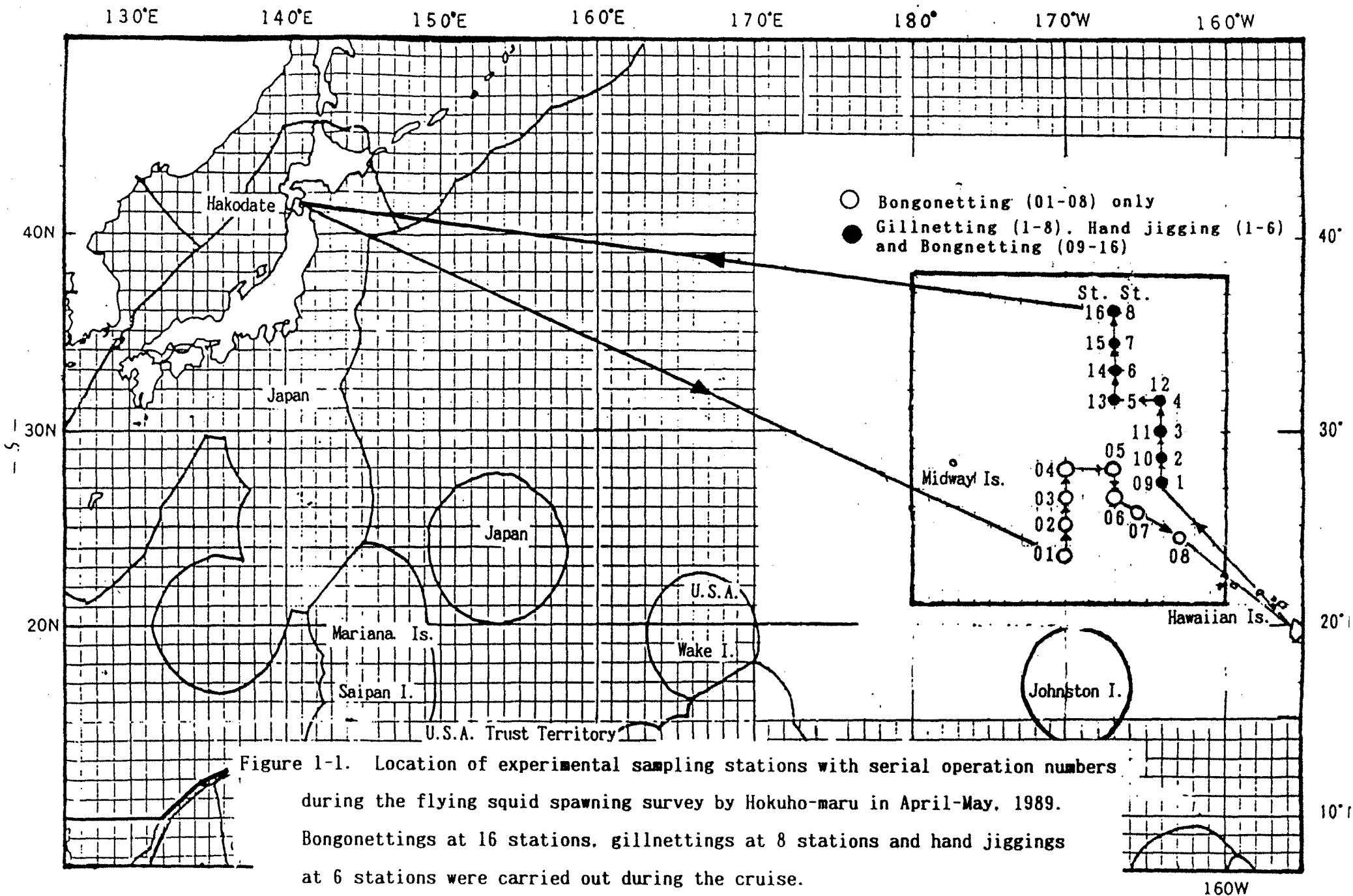


Figure 1-1. Location of experimental sampling stations with serial operation numbers during the flying squid spawning survey by Hokuho-maru in April-May, 1989. Bongonettings at 16 stations, gillnettings at 8 stations and hand jiggings at 6 stations were carried out during the cruise.

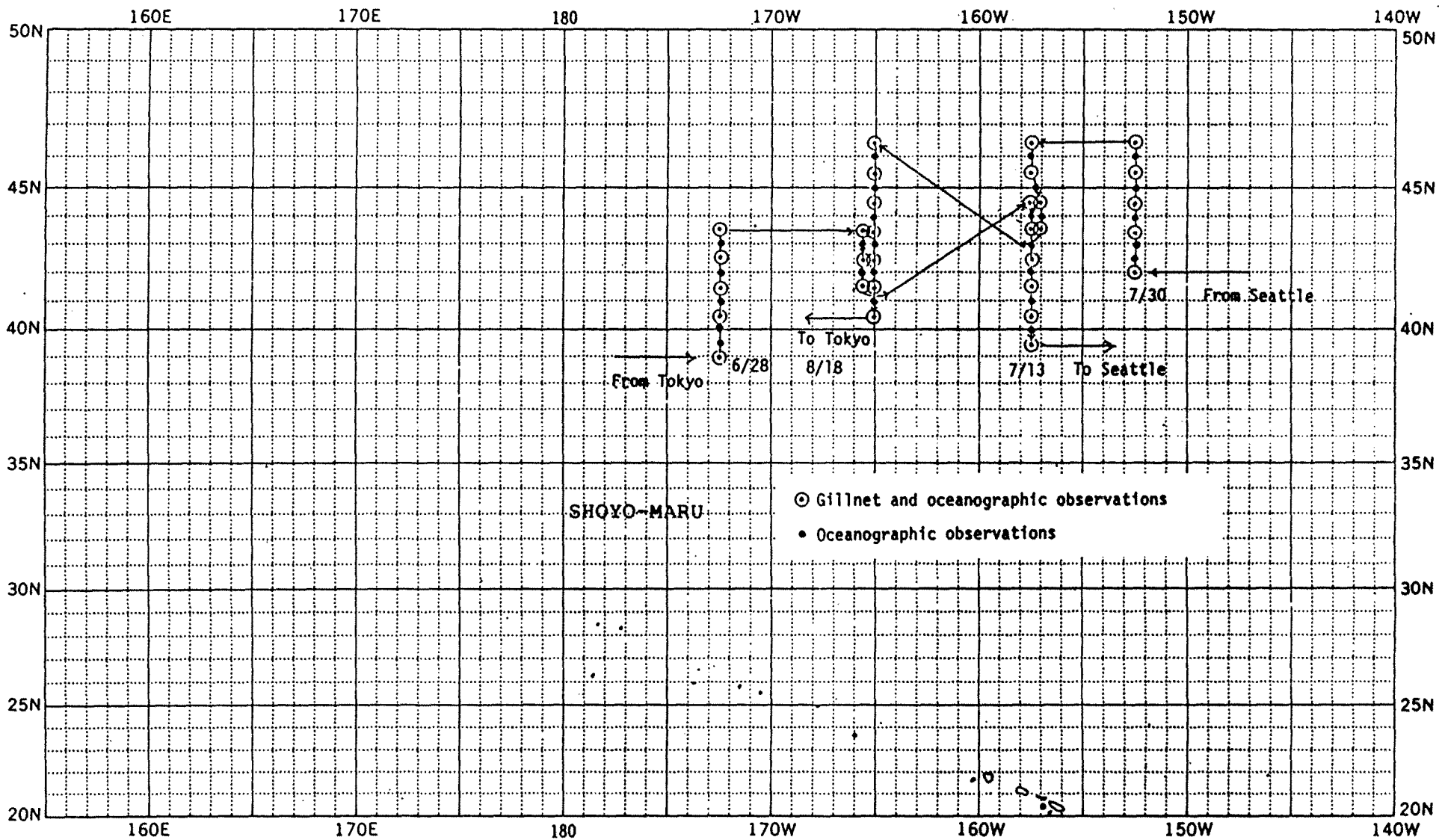


Figure 1-2. continued.(Shoyo-Maruo)

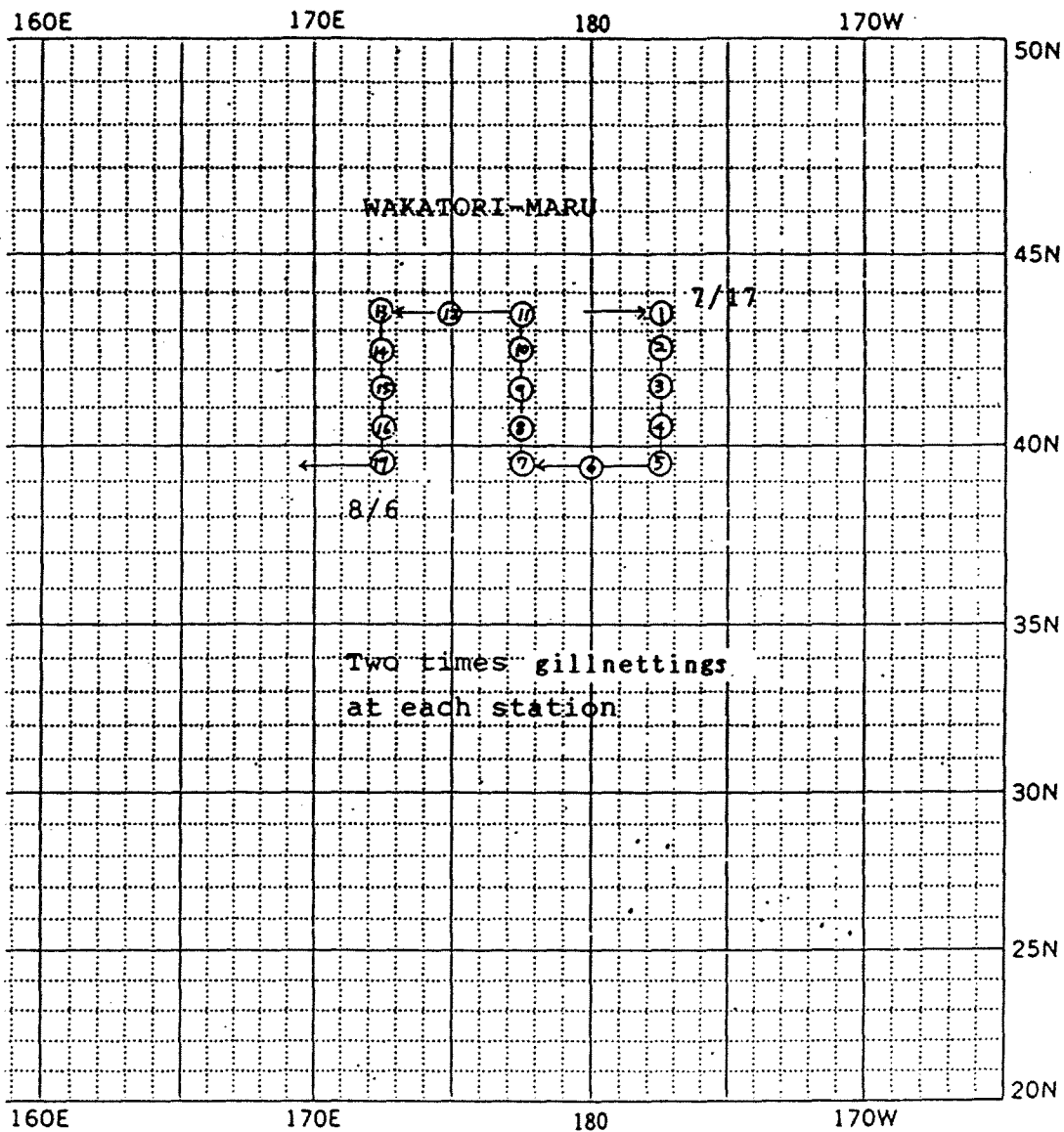


Figure 1-3. continued. (Wakatori-Marui)

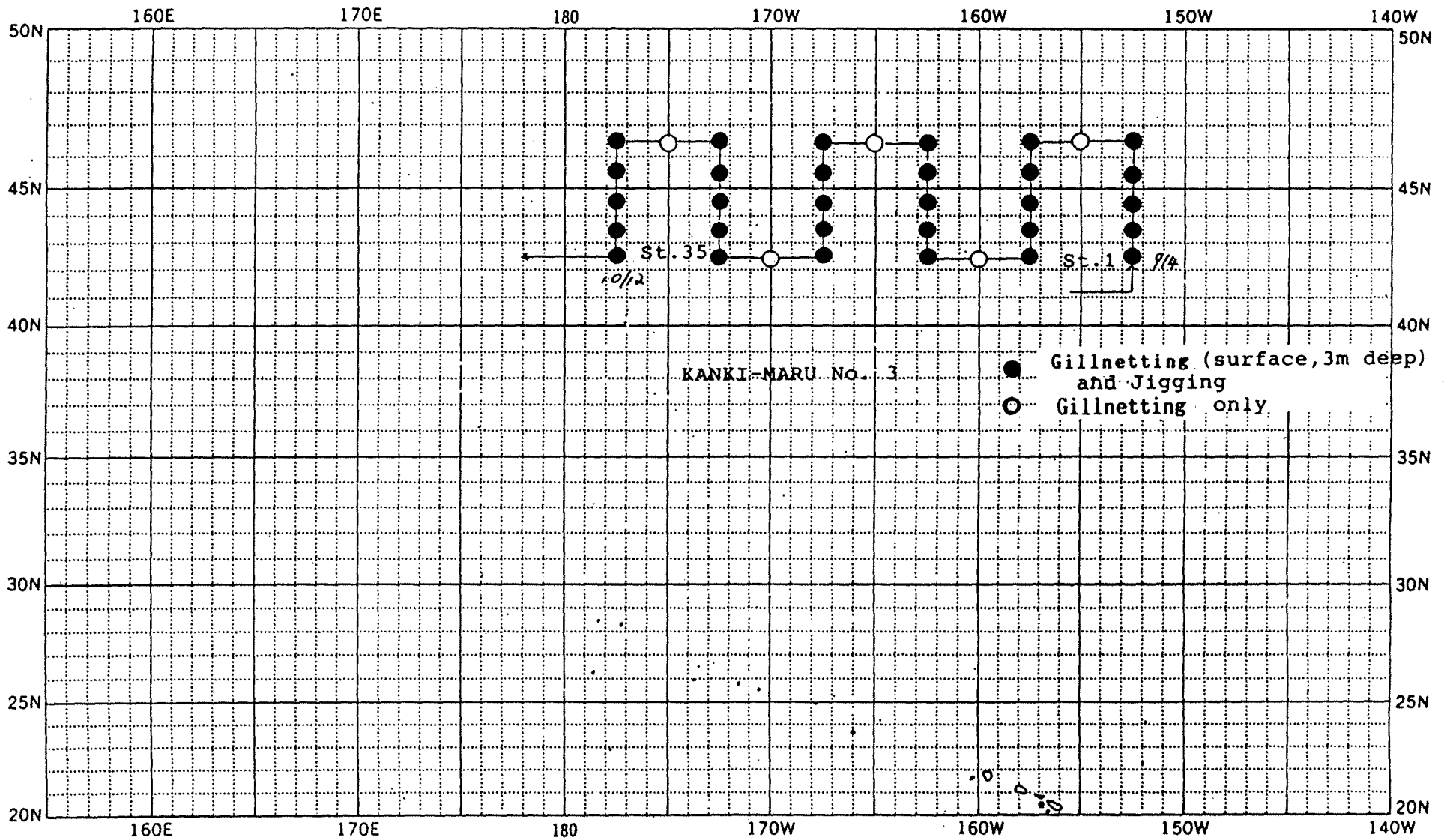


Figure 1-4. continued. (Kanki-Mar, No. 3)