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1988年いか流し網漁業オブザーバー調査結果

**Summary of Observation for Japanese Squid Driftnet  
Fishery in the North Pacific in 1988**

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Fisheries Agency of Japan

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1988年いか流し網漁業オブザーバー調査結果  
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要 約

1988年6～11月の間、10隻のいか流し網漁船に11名のオブザーバーが乗船し、464回の流し網操業の漁獲状況（日付、位置、表面水温、気象、漁具、使用反数、魚種別漁獲尾数など）を観察記録した。操業回数、使用反数、及び下記の種の月別緯度1度X経度5度升目別CPUEが示された：アカイカ、イシイルカ、カマイルカ、セミイルカ、オットセイ、ミズナギドリ科合計、エトピリカ、ツノメドリ、シロザケ、ギンザケ、サケ科合計。

1. は じ め に

1981年から米国は、我が国母船式さけ・ます漁業が米国200海里水域で操業する際に海産哺乳類の混獲許可証を所持することが必要としてきた。この関係で、当該許可対象の1種であるイシイルカを混獲することが知られているいか流し網漁業の米国オブザーバーによるモニタリングを米国政府は1987年に日本政府に求めてきた。日本政府はこの要求に応じ、両国政府による数回の協議の結果、4名の米国及び10名の日本の科学的オブザーバーを1988年漁期に我が国いか流し網漁船10隻へ乗船させることで1988年4月決着を見た。但し、この米国オブザーバーの受け入れの前提条件は、そもそもの経緯から、1988年漁期に我が国母船式さけ・ます漁船が米国200海里水域内で操業し得ることであった。しかし、この前提条件が米国の国内事情により満たされなかったため、米国オブザーバーは乗船せず、所期のプログラムは我が国オブザーバーのみで実施された。本報告は、その調査結果の概要をまとめたものである。

2. 方 法

いか流し網漁業に従事する主要な漁船のタイプから合計10隻を選定し、11名のオブザーバーを乗船させた。各漁船の要目と航海の概要を表1に示した。第18豊富丸のデータが1回しかないのは、オブザーバーを運ぶ船に急病人が発生し乗船が遅れたためである。全ての操業(533,618反)が観察され、種別漁獲量が記録された。

船上で記録した漁獲量はアカイカとシマガツオを除き漁獲尾数であり、アカイカとシマガツオは

漁獲重量である。ここで言う漁獲量とは羅網して船上に引き揚げられた数量である（但し、海産哺乳類及び海鳥では生死別に計数され、本報告ではそれらの合計を漁獲尾数とした）。アカイカとシマガツオは本報告では尾数に換算して示した。また、本報告では1反を50mとして標準化して用いた。イルカ類と海鳥の査定は、写真または持ち帰った標本に基づき、それぞれ和田志郎博士（遠洋水産研究所）及び小城春雄助教授（北海道大学水産学部）により確認された。

### 3. 結 果

#### 1) 操業観察回数

月別緯度1度X経度5度別の操業観察回数を図1に示した。

#### 2) 種別漁獲尾数

種別月別の漁獲尾数とCPUE（100反当り漁獲尾数）を表2と表3に各々示した。

種の査定はハシボソミズナギドリを除き正確と信じられた。オブザーバーがハシボソミズナギドリと記録し持ち帰った標本の多くはハイイロミズナギドリであった（小城春雄助教授による）。そのため、本報告では両種の標本の比率から正しいと思われる値を推定して用いた。海産哺乳類の生死別の漁獲頭数は以下の通り：イシイルカ生2、死55；カマイルカ生4、死73；セミイルカ生3、死111；マイルカ生0、死4；オットセイ生91、死43。

#### 3) 主要種の月別緯度1度X経度5度別CPUE

以下の種の月別緯度1度X経度5度別のCPUE（100反当り漁獲尾数）を図2～12に示した：アカイカ、イシイルカ、カマイルカ、セミイルカ、オットセイ、ミズナギドリ科合計、エトピリカ、ツノメドリ、シロザケ、ギンザケ、サケ科合計。なお、漁獲がない月は省略してある。

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Table 1. Specifications of vessels and outline of cruises used for observation.

NAME OF VESSEL	GROSS TONNAGE	TYPE OF VESSEL	NAME OF OBSERVER	OPERATION DAYS	PERIOD OF OPERATION	LAT. (N)		LONGITUDE	
						MIN.	MAX.	WEST	EAST
Eiho Maru #31	309	Squid drift netter	T. Umeki	79	Jun. 2-Sep. 14	38	45	175 W	145 W
Yuryo Maru #85	308	Squid jigger	H. Shinohara	77	Jun. 22-Oct. 7	39	45	179 W	145 W
Kofuku Maru #88	374	Squid drift netter	M. Yokomoto	83	Jun. 16-Oct. 7	39	45	176 E	145 W
Syosei Maru #53	65	Salmon drift netter*	M. Yamazaki	27	Jul. 5-Aug. 1	39	41	171 E	177 E
Hosei Maru #36	119	Salmon drift netter*	S. Shiitsu	35	Jul. 7-Aug. 12	40	42	173 E	173 W
Ryoun Maru #17	349	Bottom long-liner	Y. Iwasaki	63	Jul. 10-Oct. 1	41	45	170 E	145 W
Houfu Maru #18	127	Salmon drift netter**	T. Sakurai	1	Jul. 31	40		175 E	
Yamasan Maru #7	127	Salmon drift netter**	M. Yamazaki	29	Aug. 30-Oct. 6	41	44	173 E	177 E
Myojin Maru #31	297	Squid drift netter	K. Sano	38	Sep. 7-Nov. 7	39	45	178 W	164 W
Sankichi Maru #73	289	Squid drift netter	K. Izumi and N. Tajima	32	Sep. 5-Oct. 22	41	41	170 E	179 E

\*landbased

\*\*mothership catcher

Table 2. Operation number, effort, and catch by species by month.

			Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Total
Number of operation			39	142	113	127	41	2	464
Total effort in tan			45,248	161,296	142,212	141,973	40,909	1,980	533,618
Species name	Abbreviation	Japanese name							
Flying squid	FS	Aka-ika	233,955	588,001	272,093	200,265	55,044	400	1,349,758
Boreal clubhook squid	BCS	Tsume-ika	2	77	6	90	4	0	179
Eight-armed squid	EAS	Tako-ika	0	33	7	67	0	0	107
Pomfret	PO	Shimagatsuo	93,970	119,694	63,097	43,815	6,891	375	327,842
Albacore	AL	Binnaga	97	11,344	13,935	6,530	502	0	32,408
Skipjack	SK	Katsuo	0	0	4,528	5,332	9,046	2,120	21,026
Yellowtail	YE	Hiramasa	107	2,121	653	178	79	0	3,138
Blue shark	BS	Yoshikiri-zame	1,520	4,249	5,327	2,660	435	124	14,315
Dall's porpoise	DP	Ishi-iruka	5	19	3	29	1	0	57
Pacific white-sided dolphin	PWD	Kama-iruka	1	27	22	27	0	0	77
Northern right whale dolphin	NRD	Semi-iruka	4	66	17	21	6	0	114
Common dolphin	CD	Ma-iruka	0	3	0	2	0	0	5
Striped dolphin	SDP	Suji-iruka	0	0	0	0	0	0	0
(Total dolphins)	TD	(Iruka Goukei)	10	115	42	79	7	0	253
Northern fur seal: alive	NFS	Ottosei: seizon	(4)	(40)	(15)	(39)	(3)		(91)
dead	NFS	Ottosei: shibou	(9)	(19)	(5)	(9)	(1)		(43)
total	NFS	Ottosei: sei-shi goukei	13	49	20	48	4	0	134
Marine turtles	MT	Umi-game-rui	0	1	1	0	1	0	3
Shrot tailed albatross	STA	Ahoudori	0	0	0	0	0	0	0
Black-hooted albatross	BFA	Kuroashi-ahoudori	0	4	8	9	6	0	27
Laysan albatross	LA	Ko-ahoudori	4	24	8	8	20	0	64
(Total albatrosses)	TA	(Ahoudori Goukei)	4	28	16	17	26	0	91
Sooty shearwater	SS	Haiiro-mizunagidori	69	563	86	519	349	11	1,597
Short tailed shearwater	STS	Hashiboso-mizunagidori	2	7	8	165	16	1	199
Flesh footed shearwater	FFS	Akaashi-mizunagidori	0	1	0	1	20	0	22
Buller's shearwater	BS	Minami-onaga-mizunagidori	0	4	1	5	1	0	11
Northern fulmer	NF	Furuma-kamome	3	4	7	16	3	7	40
(Total shearwaters)	TS	(Mizunagidori Goukei)	74	579	102	706	389	19	1,869
Tufted puffin	TP	Etopirika	24	7	0	0	0	0	31
Horned puffin	HP	Tasunomedori	22	11	0	0	0	0	33
(Total puffins)	TP	(Umisuzume Goukei)	46	18	0	0	0	0	64
Leach's storm-petrel	LSP	Koshijiro-umitsubame	0	0	0	2	0	0	2
(Total seabirds)	GT	(Umidori Goukei)	124	625	118	725	415	19	2,026
Sockeye salmon	SOCK	Beni-zake	0	0	0	0	0	0	0
Chum salmon	CHUM	Shiro-zake	24	0	0	10	16	0	50
Pink salmon	PINK	Karafuto-masu	3	0	0	0	0	0	3
Coho salmon	COHO	Gin-zake	16	0	3	2	0	0	21
Chinook salmon	CHI	Masunosuke	5	0	1	0	0	0	6
Steelhead	STE	Tetsu	4	0	0	0	0	0	4
(Total salmons)	TOTAL	(Sake-masu Goukei)	52	0	4	12	16	0	84
Grand total		Soukei	329,850	726,309	359,831	259,801	72,444	3,038	1,751,273

Table 3. CPUE (catch in number per 100 tans) by species by month.

			Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Total
Number of operation			39	142	113	127	41	2	464
Total effort in tan			45,248	161,296	142,212	141,973	40,909	1,980	533,618
Species name		Japanese name							
Flying squid	FS	Aka-ika	517.05	364.55	191.33	141.06	134.55	20.20	252.94
Boreal clubhook squid	BCS	Tsume-ika	0.00	0.05	0.00	0.06	0.01	0.00	0.03
Eight-armed squid	EAS	Tako-ika	0.00	0.02	0.00	0.05	0.00	0.00	0.02
Pomfret	PO	Shimagatsuo	207.68	74.21	44.37	30.86	16.84	18.94	61.44
Albacore	AL	Binnaga	0.21	7.03	9.80	4.60	1.23	0.00	6.07
Skipjack	SK	Katsuo	0.00	0.00	3.18	3.76	22.11	107.07	3.94
Yellowtail	YE	Hiramasa	0.24	1.31	0.46	0.13	0.19	0.00	0.59
Blue shark	BS	Yoshikiri-zame	3.36	2.63	3.75	1.87	1.06	6.26	2.68
Dall's porpoise	DP	Ishi-iruka	0.01	0.01	0.00	0.02	0.00	0.00	0.01
Pacific white-sided dolphin	PWD	Kama-iruka	0.00	0.02	0.02	0.02	0.00	0.00	0.01
Northern right whale dolphin	NRD	Semi-iruka	0.01	0.04	0.01	0.01	0.01	0.00	0.02
Common dolphin	CD	Ma-iruka	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Striped dolphin	SDP	Suji-iruka	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(Total dolphins)	TD	(Iruka Goukei)	0.02	0.07	0.03	0.06	0.02	0.00	0.05
Northern fur seal: alive	NFS	Ottosei: seizon	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)		(0.02)
dead	NFS	Ottosei: shibou	(0.02)	(0.01)	(0.00)	(0.00)	(0.00)		(0.01)
total	NFS	Ottosei: sei-shi goukei	0.03	0.03	0.01	0.03	0.01	0.00	0.03
Marine turtles	MT	Umi-game-ru	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Short tailed albatross	STA	Ahoudori	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Black-hooded albatross	BFA	Kuroashi-ahoudori	0.00	0.00	0.01	0.01	0.01	0.00	0.01
Laysan albatross	LA	Ko-ahoudori	0.01	0.01	0.01	0.01	0.05	0.00	0.01
(Total albatrosses)	TA	(Ahoudori Goukei)	0.01	0.02	0.01	0.01	0.06	0.00	0.02
Sooty shearwater	SS	Haiiro-mizunagidori	0.15	0.35	0.06	0.37	0.85	0.56	0.30
Short tailed shearwater	STS	Hashiboso-mizunagidori	0.00	0.00	0.01	0.12	0.04	0.05	0.04
Flesh footed shearwater	FFS	Akaashi-mizunagidori	0.00	0.00	0.00	0.00	0.05	0.00	0.00
Buller's shearwater	BS	Minami-onaga-mizunagidori	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Northern fulmer	NF	Furuma-kamome	0.01	0.00	0.00	0.01	0.01	0.35	0.01
(Total shearwaters)	TS	(Mizunagidori Goukei)	0.16	0.36	0.07	0.50	0.95	0.96	0.35
Tufted puffin	TP	Etopirika	0.05	0.00	0.00	0.00	0.00	0.00	0.01
Horned puffin	HP	Tasunomedori	0.05	0.01	0.00	0.00	0.00	0.00	0.01
(Total puffins)	TP	(Umisuzume Goukei)	0.10	0.01	0.00	0.00	0.00	0.00	0.01
Leach's storm-petrel	LSP	Koshijiro-umitsubame	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(Total seabirds)	GT	(Umidori Goukei)	0.27	0.39	0.08	0.51	1.01	0.96	0.38
Sockeye salmon	SOCK	Beni-zake	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chum salmon	CHUM	Shiro-zake	0.05	0.00	0.00	0.01	0.04	0.00	0.01
Pink salmon	PINK	Karafuto-masu	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Coho salmon	COHO	Gin-zake	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Chinook salmon	CHI	Masunosuke	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Steelhead	STE	Tetsu	0.01	0.00	0.00	0.00	0.00	0.00	0.00
(Total salmons)	TOTAL	(Sake-masu Goukei)	0.11	0.00	0.00	0.01	0.04	0.00	0.02
Grand total		Soukei	728.98	450.30	253.02	182.99	177.09	153.43	328.19

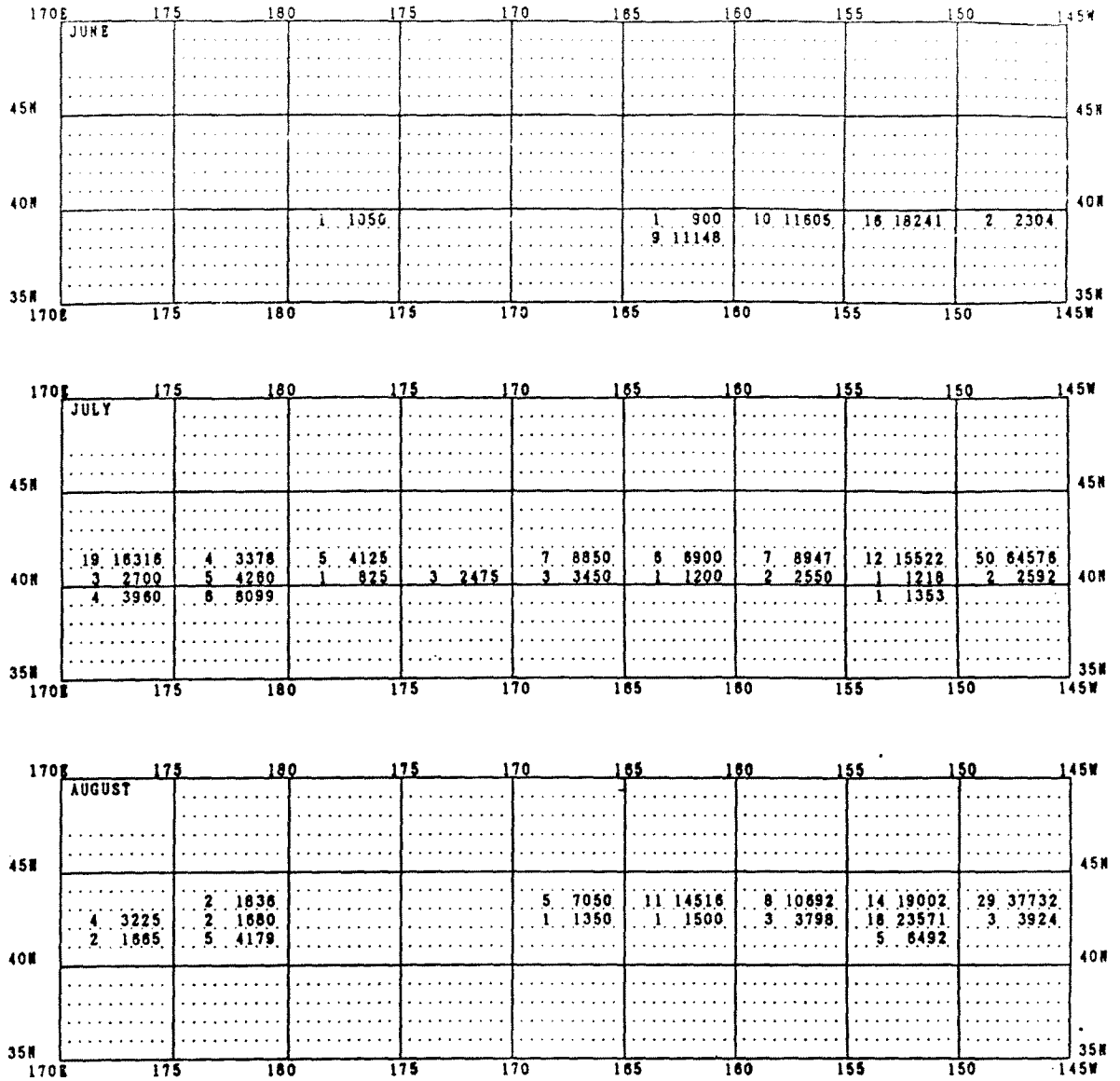


Fig. 1. Number of operation (left) and effort in ton (right) by 1°x5° square by month.

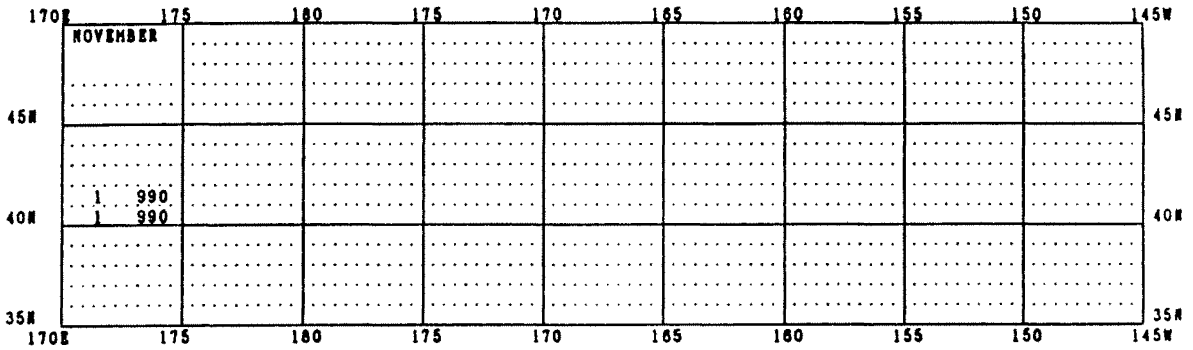
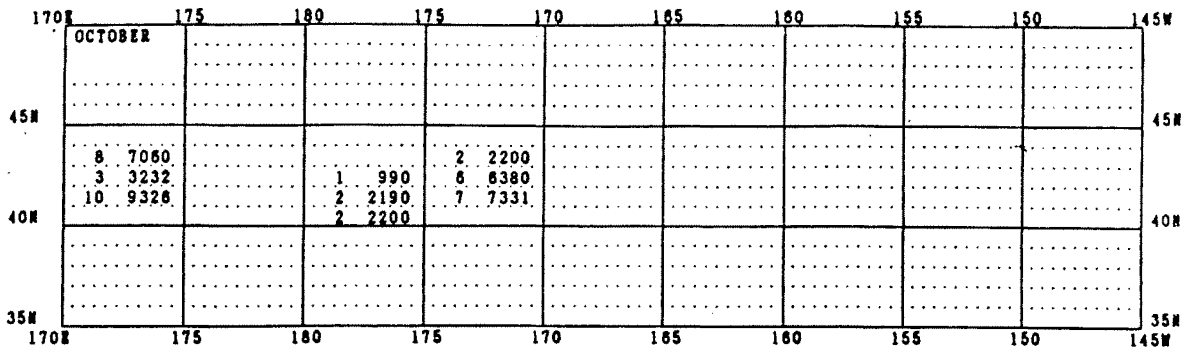
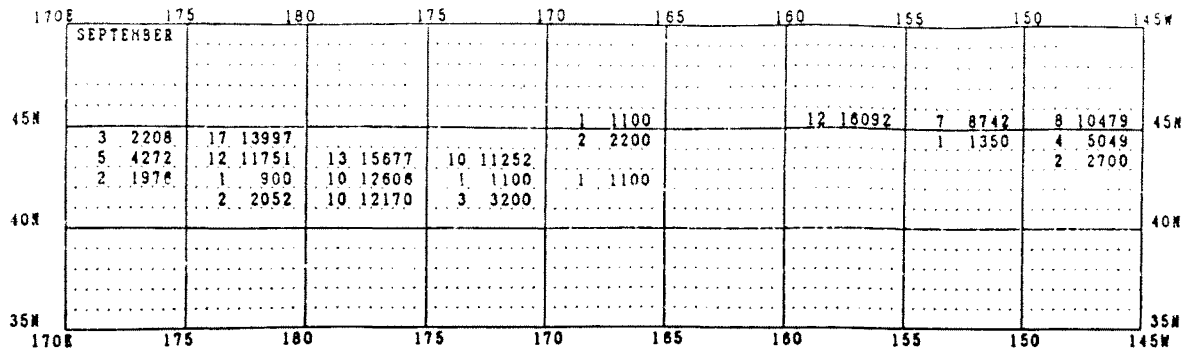


Fig. 1. Continued.



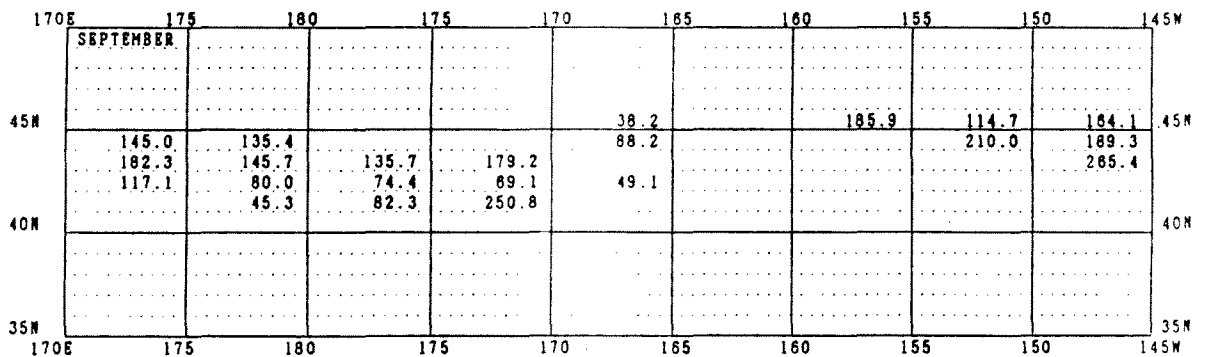
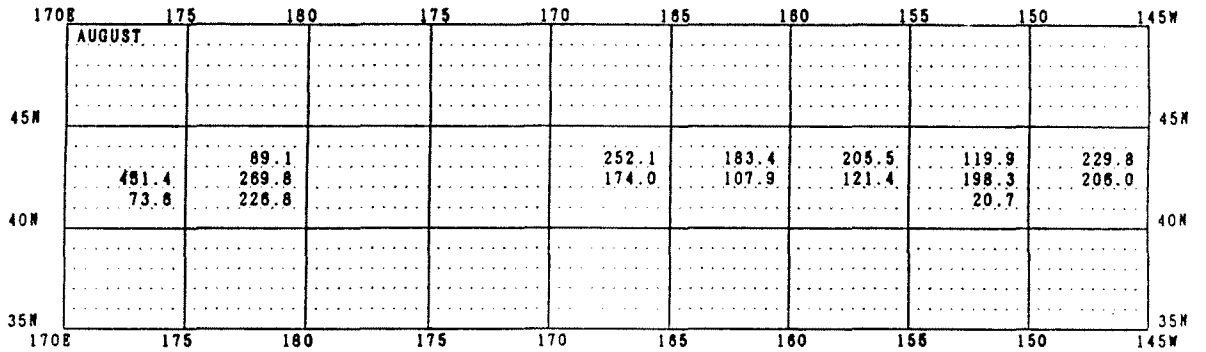
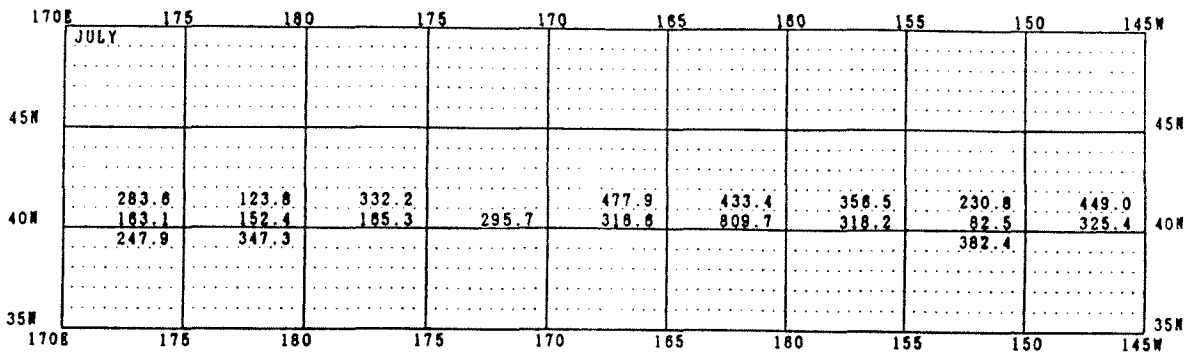
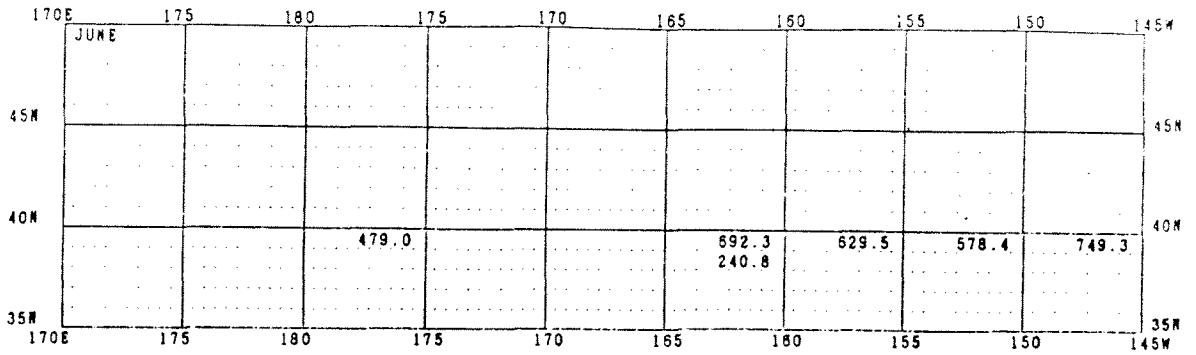


Fig. 2. CPUE (number per 100 tans) of flying squid.

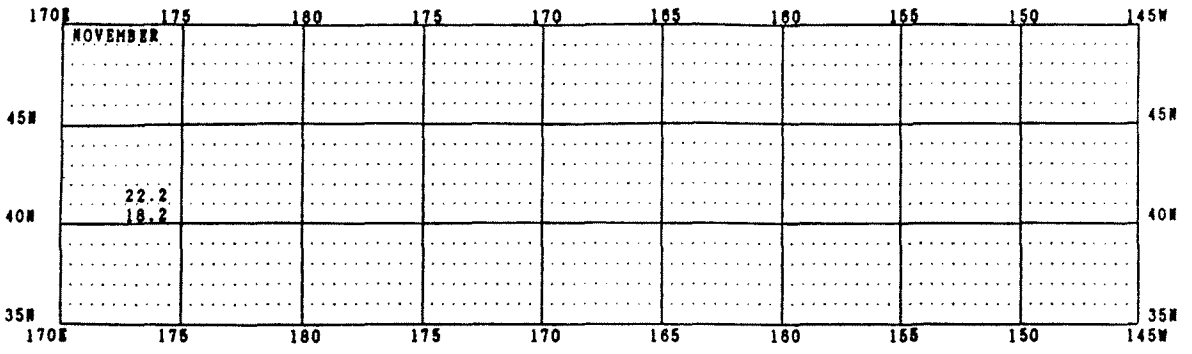
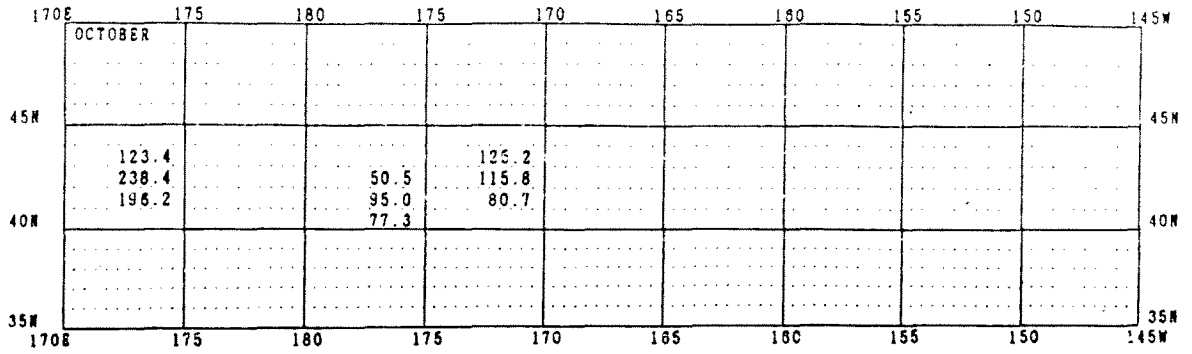


Fig. 2. continued.

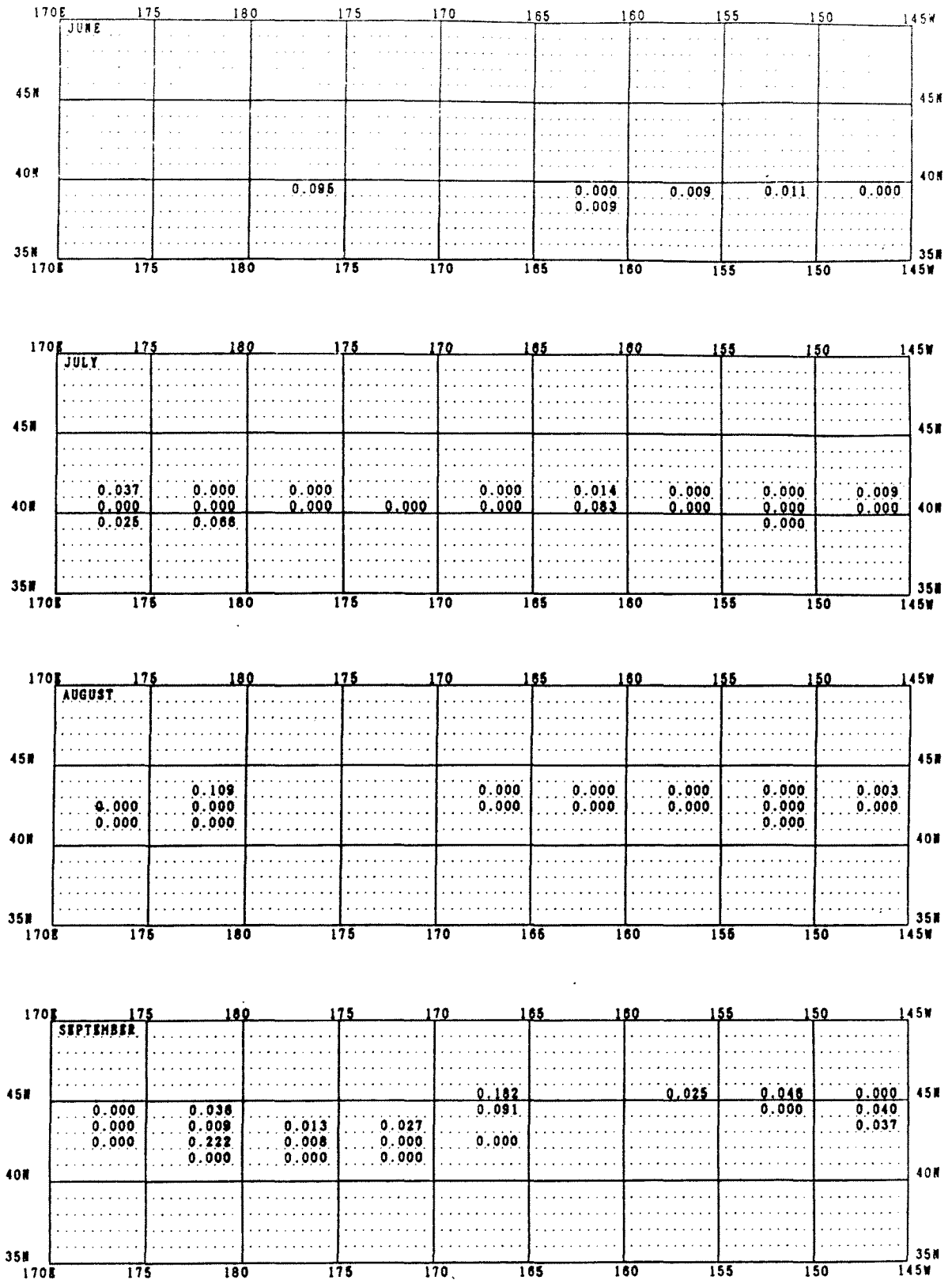


Fig. 3. CPUE (number per 100 tans) of Dall's porpoise, including both dead and alive individuals.

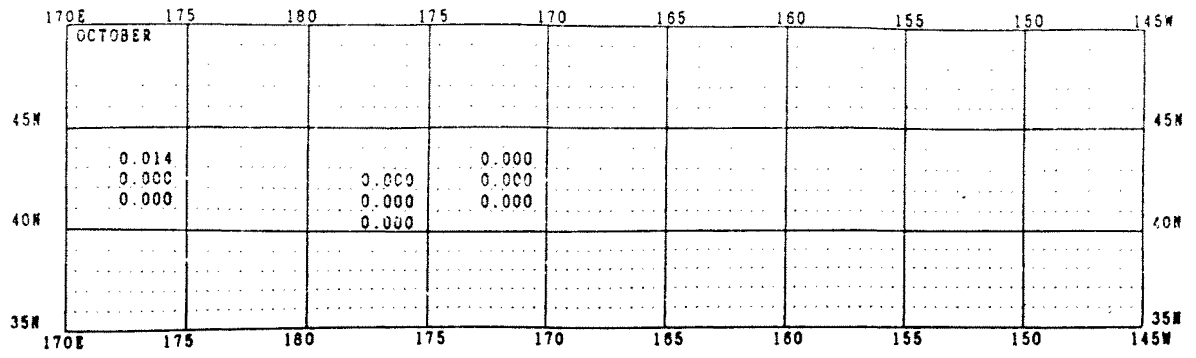


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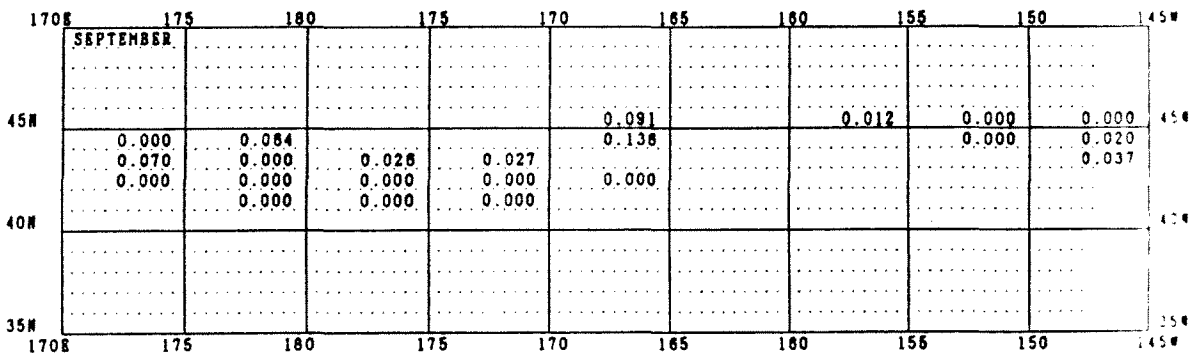
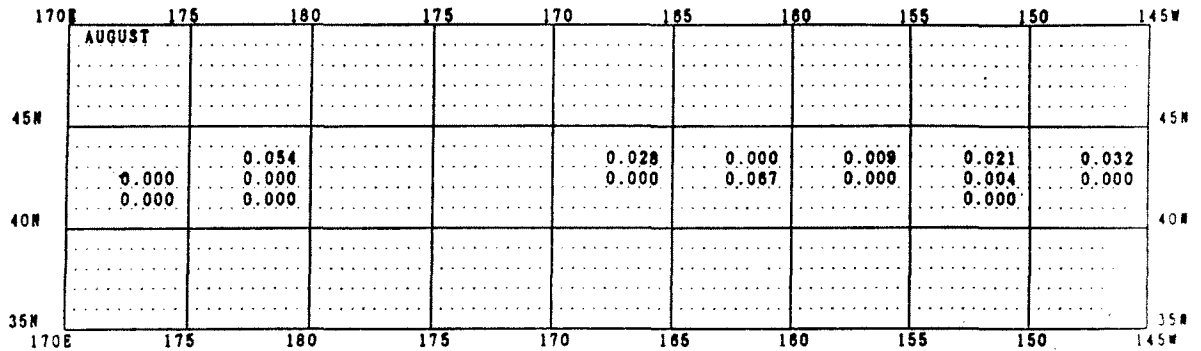
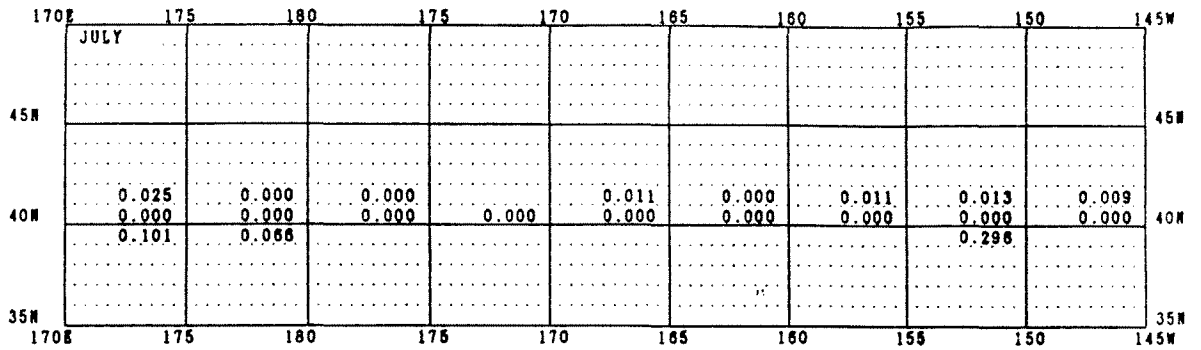
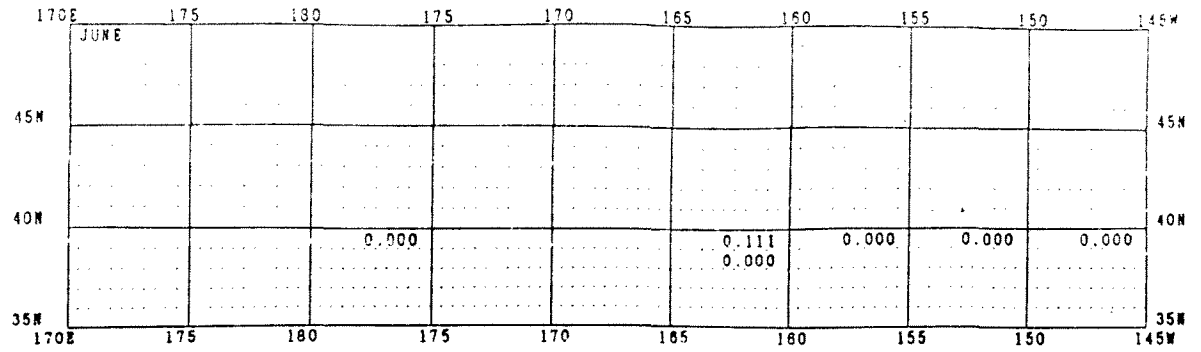


Fig. 4. CPUE (number per 100 tows) of Pacific white-sided dolphin, including both dead and alive individuals.

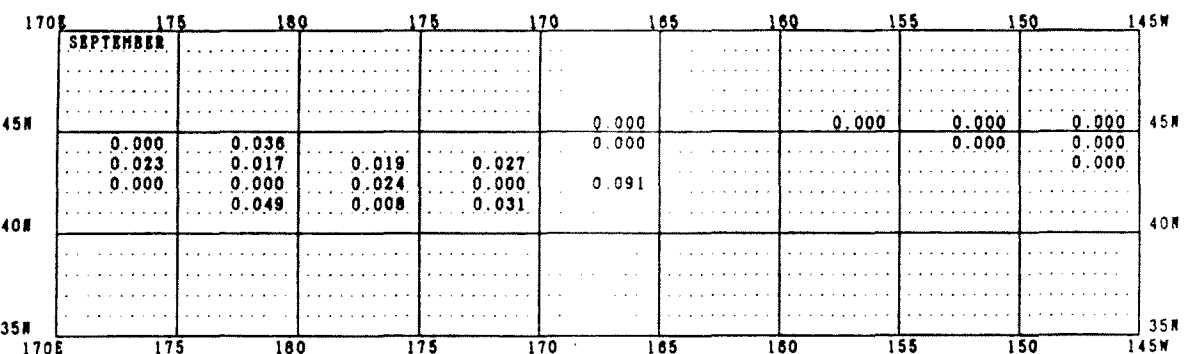
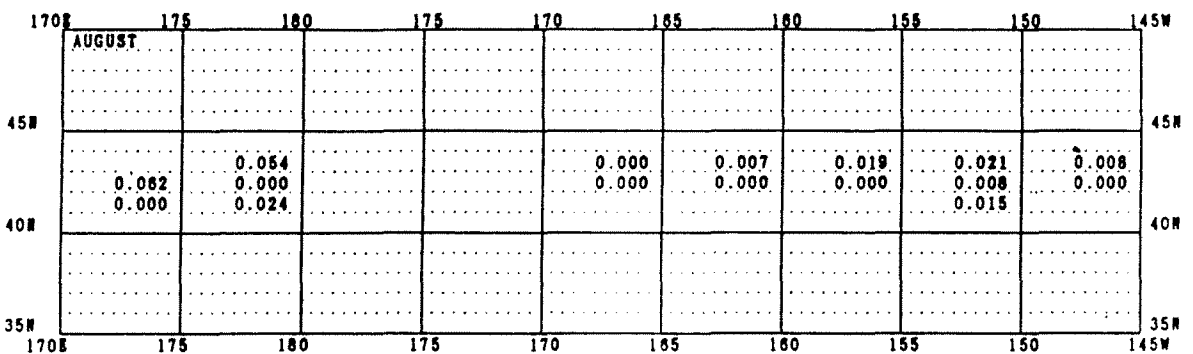
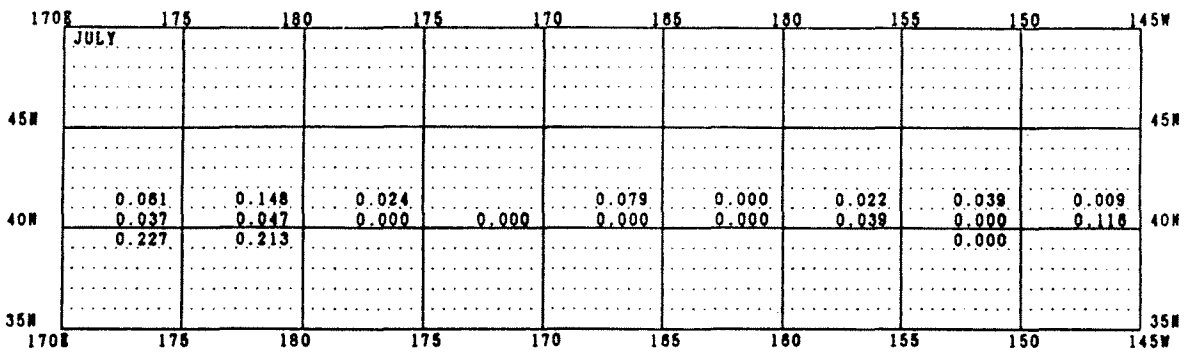
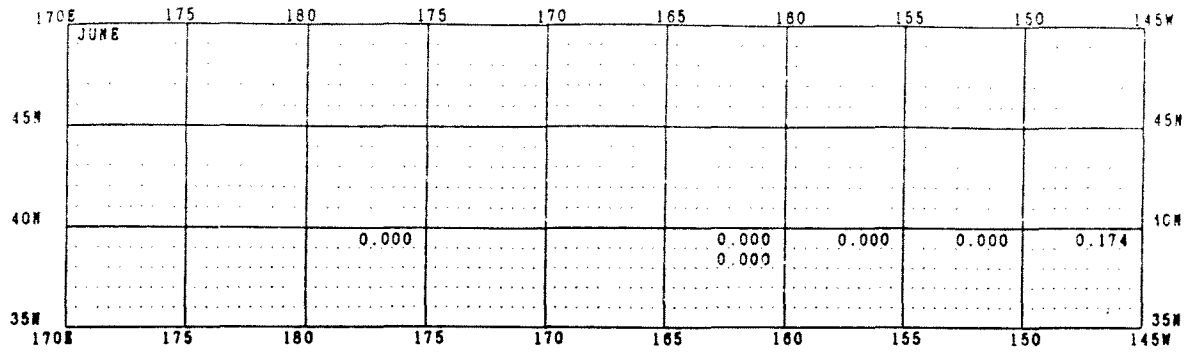


Fig. 5. CPUE (number per 100 tans) of northern right whale dolphin, including both dead and alive individuals.

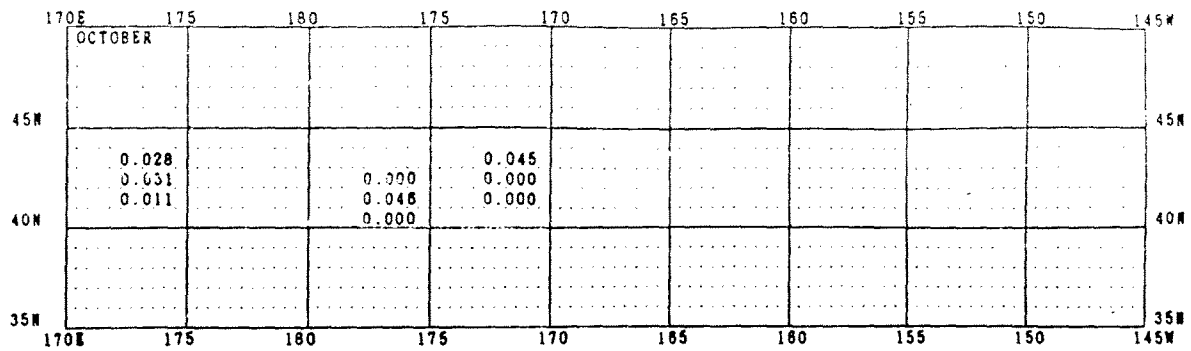


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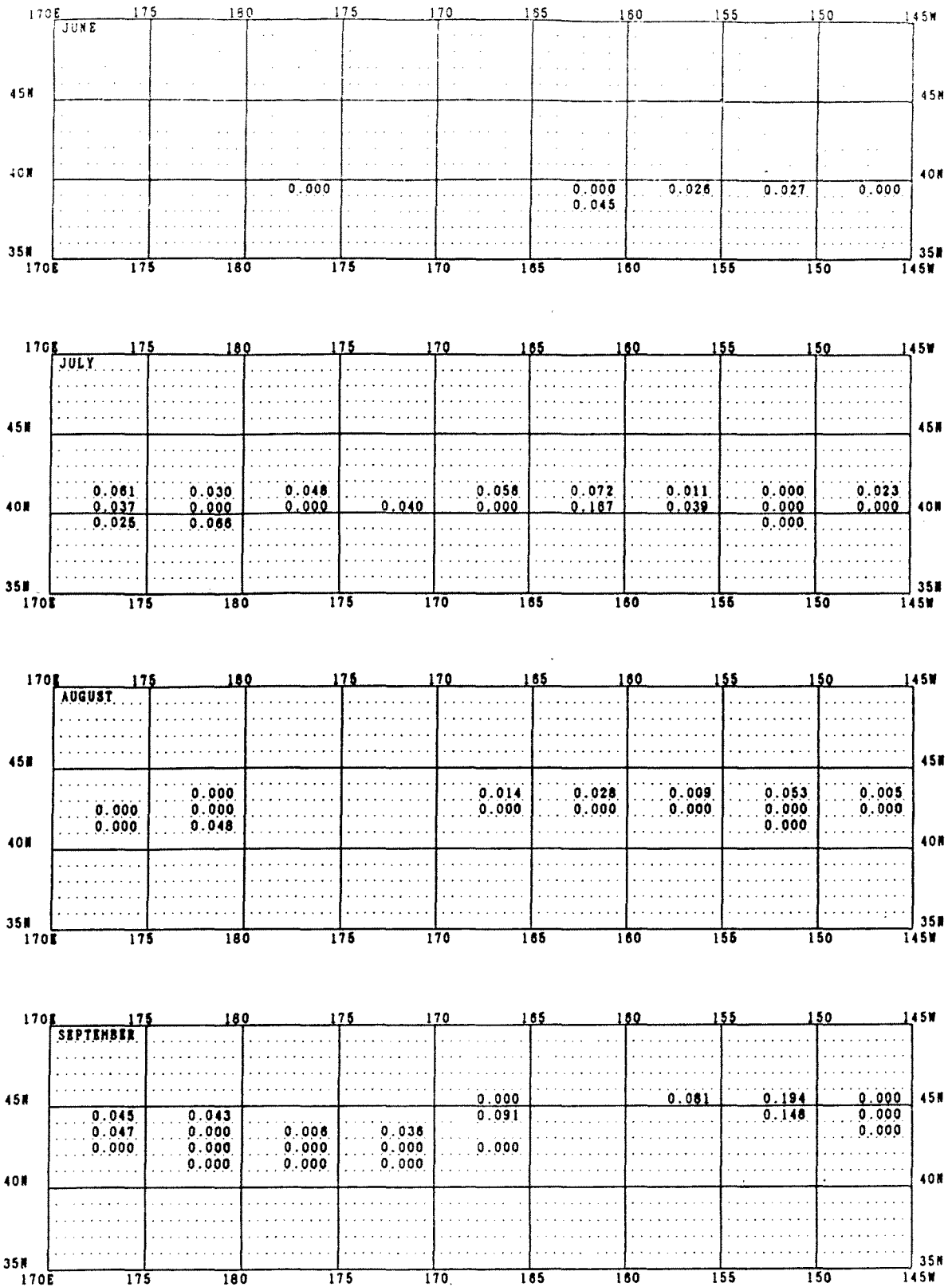


Fig. 6. CPUE (number per 100 tows) of northern fur seal, including both dead and alive individuals.



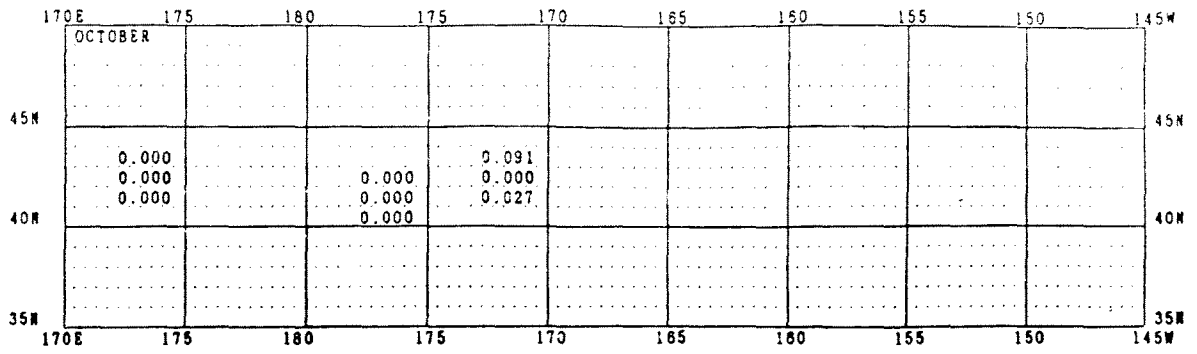


Fig. 6. continued.

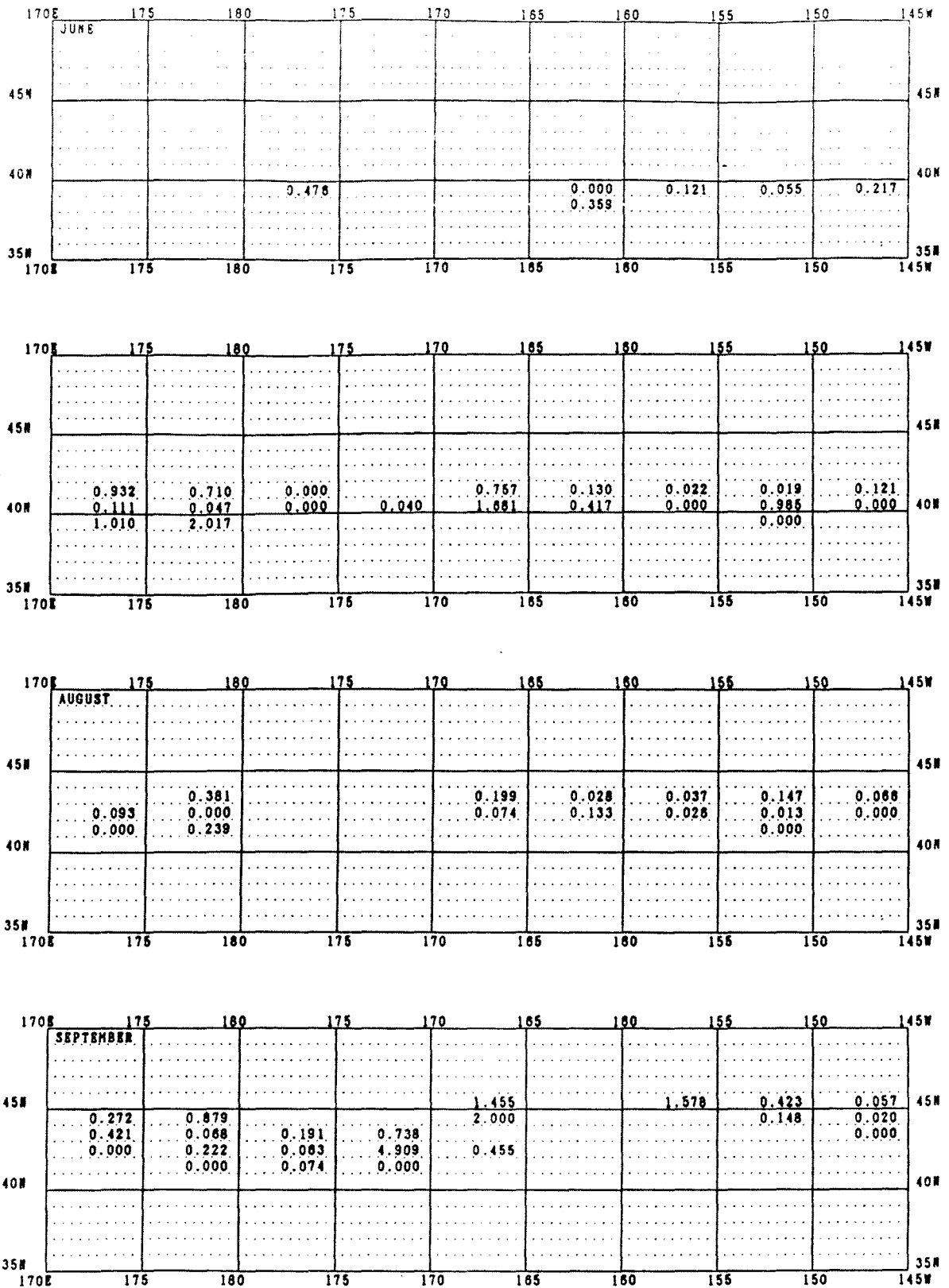


Fig. 7. CPUE (number per 100 tows) of total searwaters, including both dead and alive individuals.

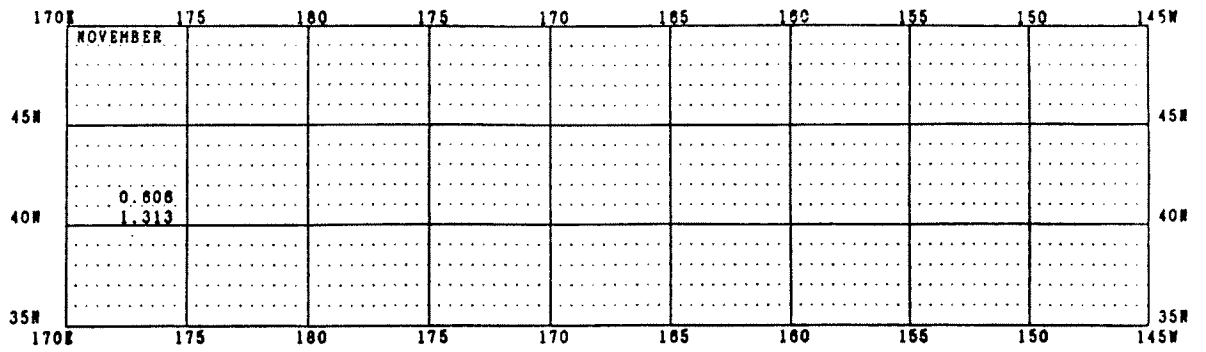
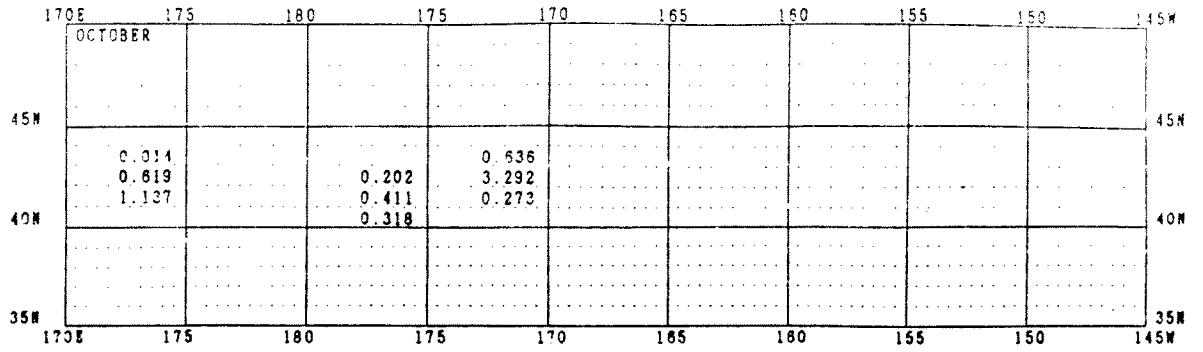


Fig. 7. continued.

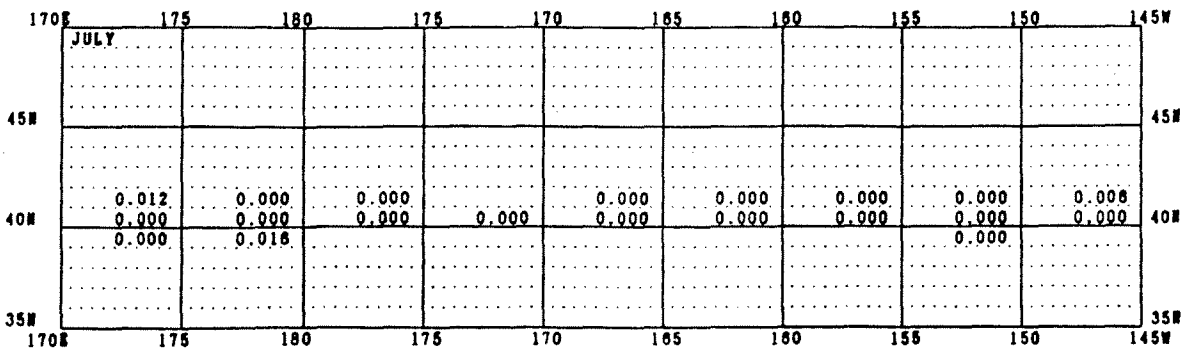
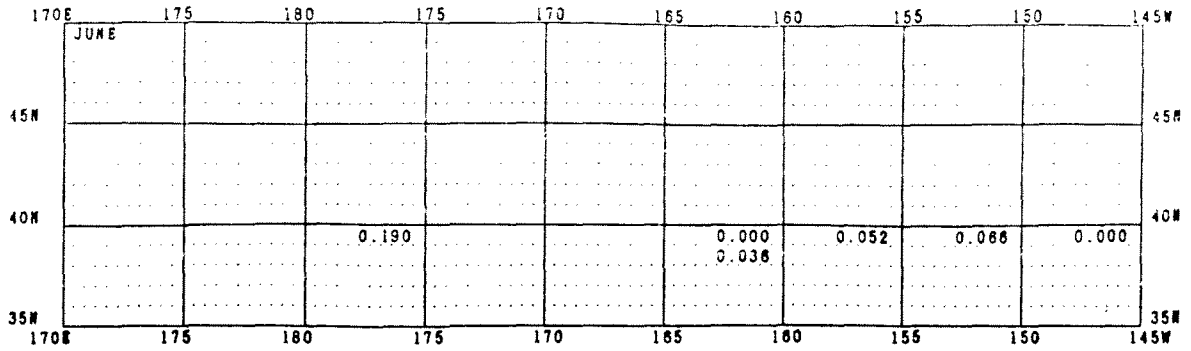


Fig. 8. CPUE (number per 100 tans) of tufted puffin, including both dead and alive individuals.

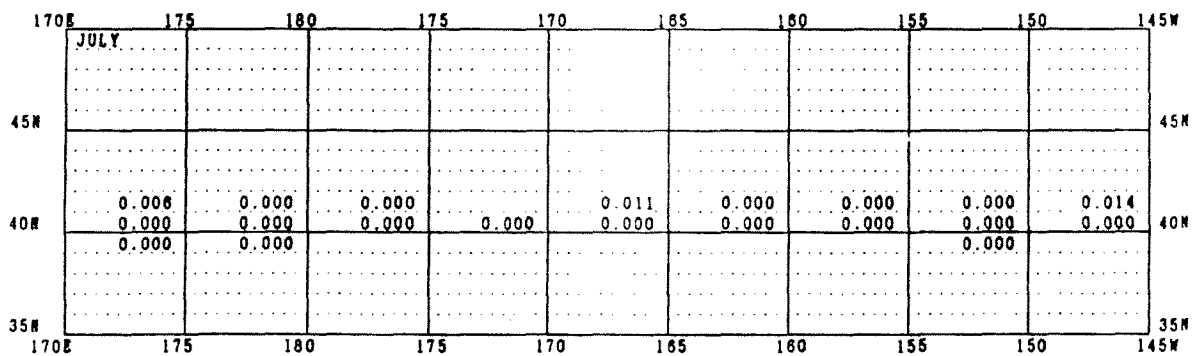
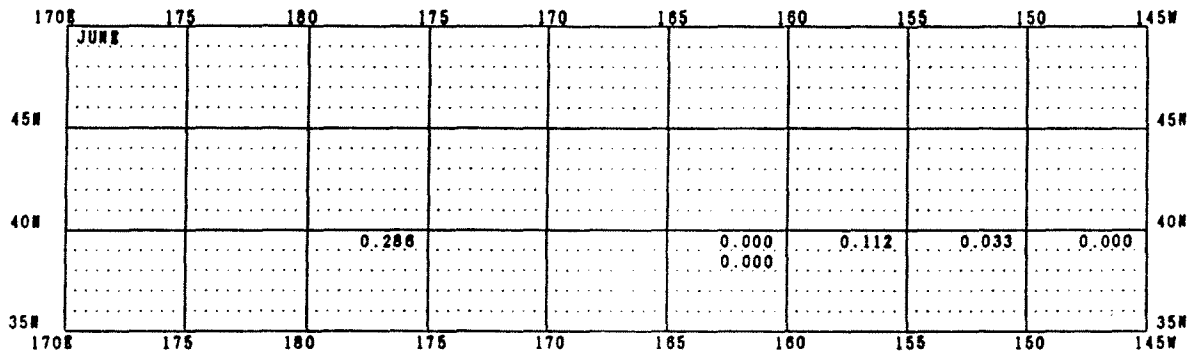


Fig. 9. CPUE (number per 100 tans) of horned puffin, including both dead and alive individuals.

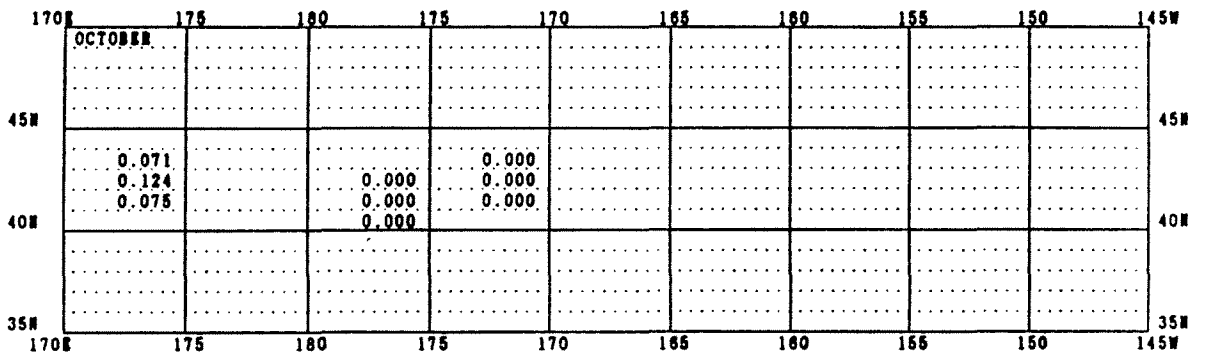
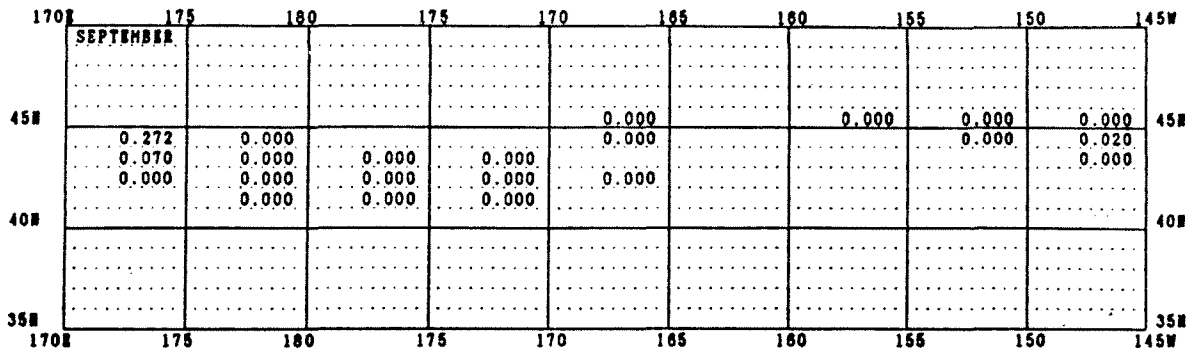
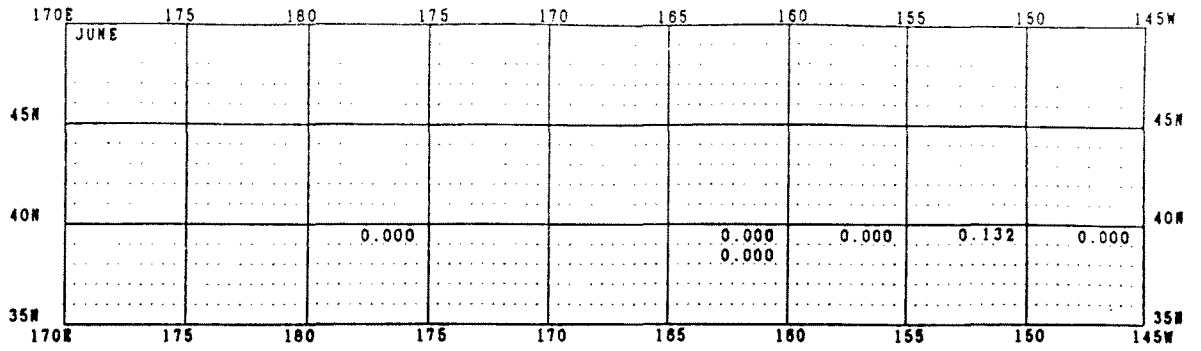


Fig. 10. CPUE (number per 100 tons) of chum salmon.

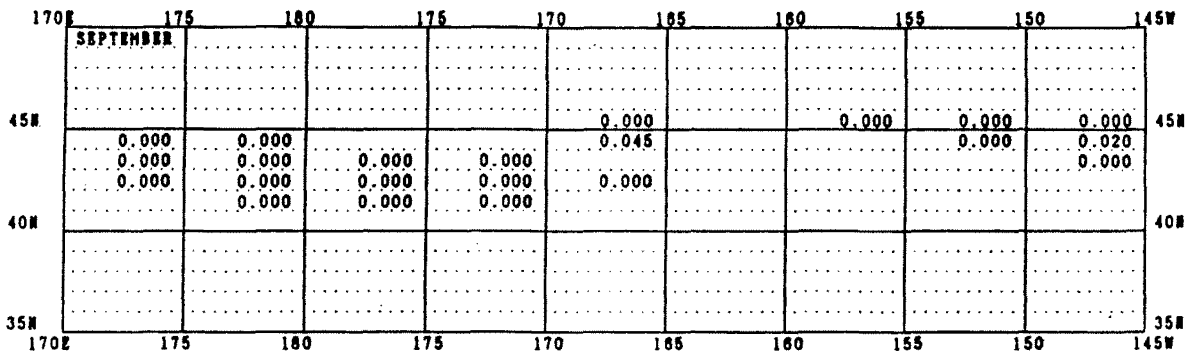
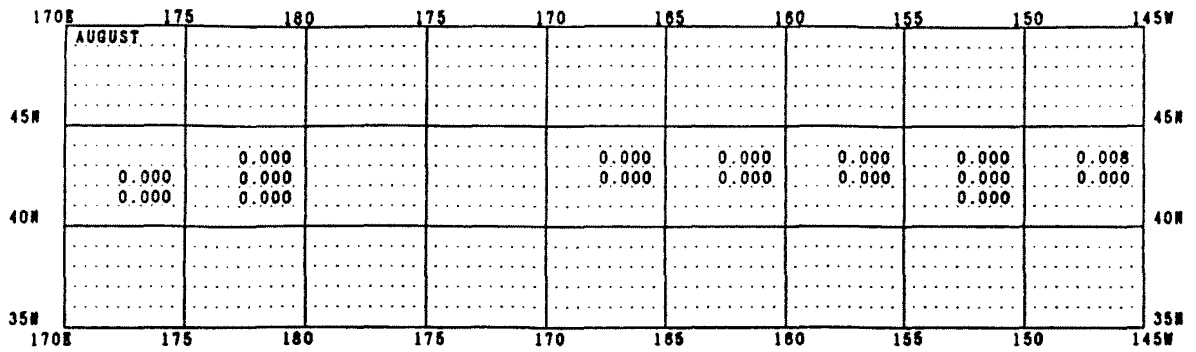
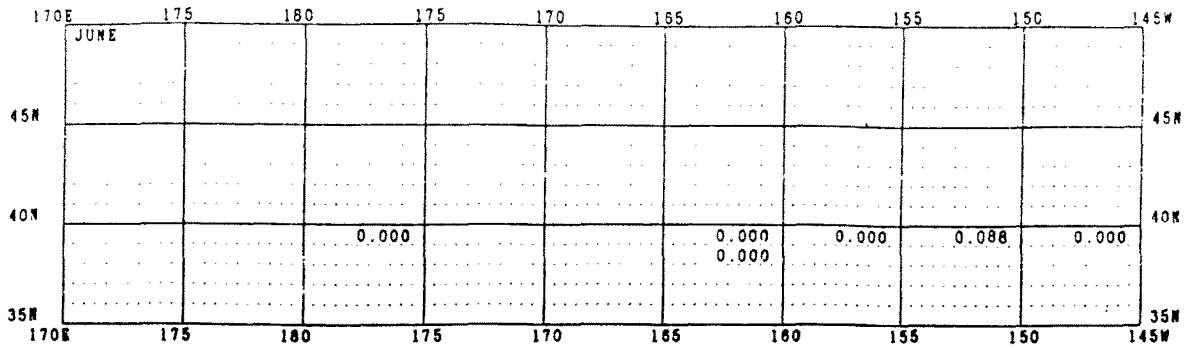


Fig. 11. CPUE (number per 100 tans) of coho salmon.

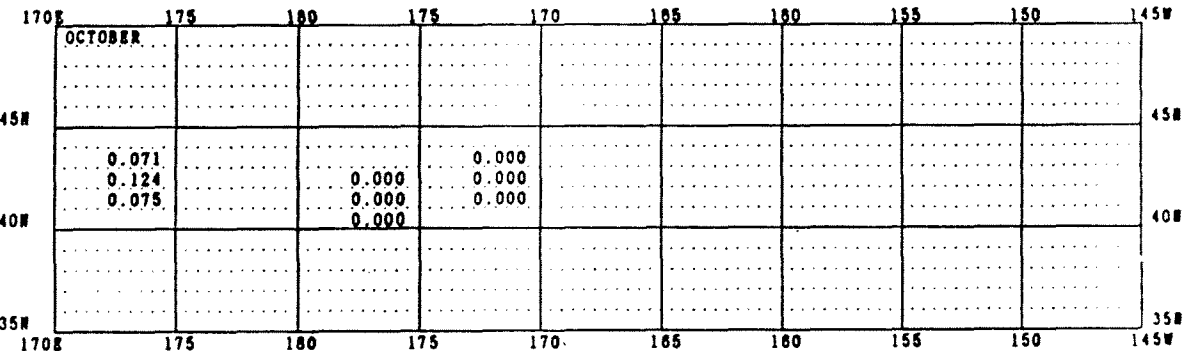
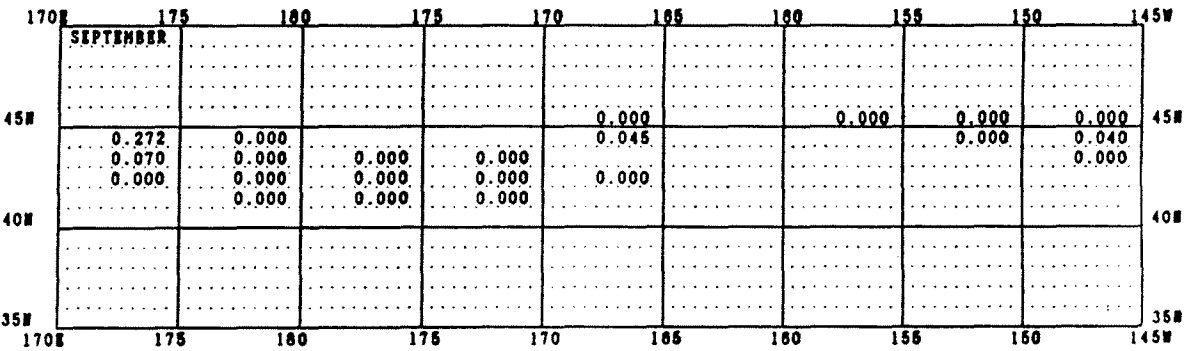
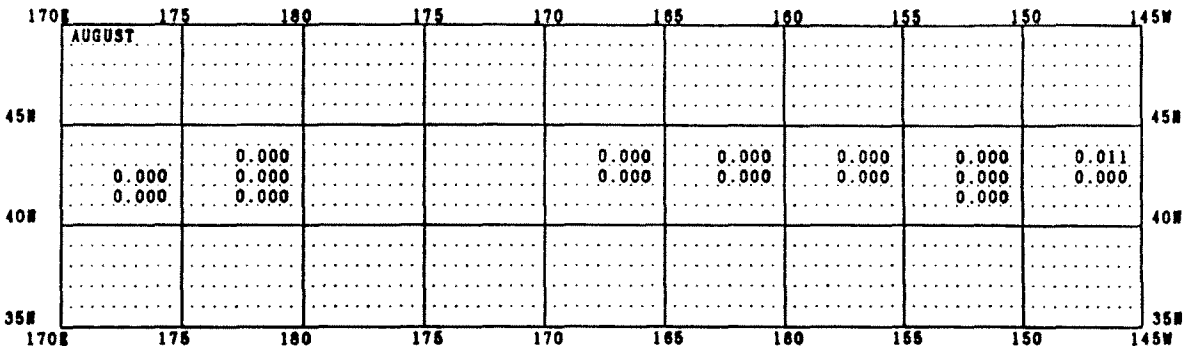
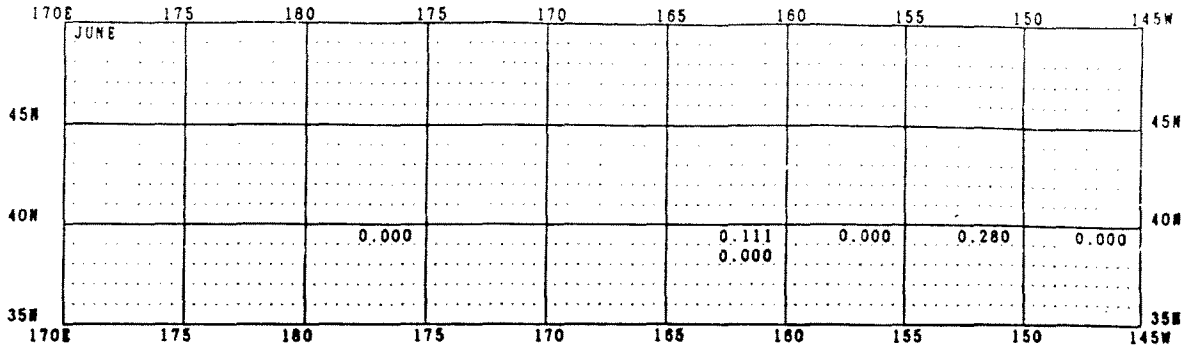


Fig. 12. CPUE (number per 100 tows) of total salmonids.

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TRANSLATION

**SUMMARY OF OBSERVATION FOR JAPANESE SQUID  
DRIFTNET FISHERY IN THE NORTH PACIFIC IN 1988**

September 1989  
Fisheries Agency of Japan

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SUMMARY OF OBSERVATION FOR JAPANESE SQUID  
DRIFTNET FISHERY IN THE NORTH PACIFIC IN 1988

Fisheries Agency of Japan

ABSTRACT

Eleven observers were placed on board 10 squid driftnet fishing vessels to observe and record the fishing conditions of 464 driftnet operations (date, position, surface water temperature, weather conditions, fishing gear, number of tans used, and numbers caught by species, etc.). The number of operations, number of tans used and CPUE values of the following major species by month and by 1°x5° area were reported: flying squid, Dall's porpoise, Pacific white-sided dolphin, northern right whale dolphin, northern fur seal, total shearwaters, tufted puffin, horned puffin, chum salmon, coho salmon and total salmonids.

## 1. Introduction

Since 1981, the United States has required the Japanese mothership salmon fishery to hold a permit of incidental take of marine mammals to operate in the U.S. 200 miles zone. In this connection, in 1987 the U.S. Government asked the Japanese Government to allow monitoring of the Japanese squid driftnet fishery by U.S. observers, because this fishery incidentally takes Dall's porpoise which is allowed under the General Permit. The Japanese Government responded to this request and had several bilateral meetings with the U.S. Government. The meetings were concluded in April 1988 and it was agreed that 4 U.S. and 10 Japanese scientific observers would be placed on board the 10 Japanese squid driftnet fishing vessels in the 1988 fishing season. The condition of accepting U.S. observers was to ensure the fishing operations of the Japanese mothership salmon fishing fleets inside the U.S. 200 miles zone in the 1988 fishing season. However, this condition was not satisfied because of U.S. domestic problems and the U.S. observers did not board the fishing vessels. Therefore, the observer program was conducted only by the Japanese observers. This report summarizes the outline of the result of the observations.

## 2. Method

A total of ten vessels were selected by type from the major fishing vessels which were engaged in the squid driftnet fishery, and 11 observers were placed on board the commercial fishing vessels. The specifications of respective fishing vessels and outline of the cruise are shown in Table 1. Only one data-set was obtained from the Houfuu maru No. 18, because there was an emergency on board of the transport ship which transported the observer, and boarding of the observer was delayed. All operations (533,618 tans) were observed and the catch by species was recorded. The catch recorded on board the vessels was the number of fish caught excluding flying squid and pomfret, which was recorded by weight. The "catch" used in this report means the amount entangled in nets and retrieved on deck (however, marine mammals and seabirds were counted by condition of entanglement--alive or dead--and the total number of them used as the number caught). The weight of flying squid and pomfret were converted to the number of fish in this report. The number of tans used in this report is the standardized value as the 50 m length of a tan. Porpoises and seabirds were identified by Dr. Shiro Wada (Far Seas Fisheries Research Laboratory) and Dr. Haruo Ogi (Associate Professor, Faculty of Fisheries, Hokkaido University) respectively based on photos taken or samples brought back.

## 3. Results

### 1) Numbers of operational observation

The number of operational observations are shown in Fig. 1 by month and by 1° latitude x 5° longitude.

2) Catch (in numbers) by species

The catch, in number, by month and by species and CPUE (number of catch by 100 tans) is shown in Tables 2 and 3, respectively. Identification was assumed to be accurate, except for short tailed shearwater. 1 samples which were recorded by the observers as short tailed shearwater were recorded by the observers as short tailed shearwater sooty shearwaters (Associate Professor Haruo Ogi, Hokkaido University of Fishery). Because of that, we estimated a corrected value based on the proportion of the two species in a sample and used this value in this table. The numbers of marine mammals caught alive/dead are as follows: Dall's porpoise: 2 alive, 55 dead; Pacific white-sided dolphin: 4 alive, 73 dead; northern right whale dolphin: 3 alive, 111 dead; common dolphin: 0 alive, 4 dead; northern fur seal: 91 alive, 43 dead.

3) CPUEs of major species by month and by 1° latitude x 5° longitude

CPUEs (number of catch by 100 tans) of the following species by month and by 1° latitude x 5° longitude are shown in Fig. 2-12: flying squid, Dall's porpoise, Pacific white-sided dolphin, northern right whale dolphin, northern fur seal, total shearwaters, tufted puffin, horned puffin, chum salmon, coho salmon and total salmonids. Months which had no catch are excluded in these Figures.

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Tables 1 to 3 and Figs. 1 to 12 are in English in the Japanese document.