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1989年に北太平洋の沖合水域において行なった日本のさけ・ます調査の概要

Outline of Japanese Salmon Investigations in the Offshore Waters of the North Pacific Ocean in 1989

伊藤外夫・石田行正
遠洋水産研究所
Sotoo Ito and Yukimasa Ishida
Far Seas Fisheries Research Laboratory

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伊藤外夫・石田行正．1989．1989年に北太平洋の沖合水域において行なった日本のさけ・ます調査の概要．24ページ．（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年に北太平洋の沖合水域において行なった日本のさけ・ます調査の概要

伊藤外夫・石田行正
(遠洋水産研究所)

要　約

1989年の母船式さけ・ます流し網漁業は，1母船，南公海 -2 a区- 32隻，北公海 -4区- 24隻，計56独航船によって，計33回の船団操業が実施された。この間，2隻の独航船上で計1,408尾の魚体測定が実施された。

さけ・ます調査船は，11隻が調査に参加し，流し網174回，はえなわ243回を実施し，計6,790尾のサケ類を標識放流した。

1989年のサケ類の豊度は，ベーリング海におけるカラフトマスが過去の平均値の約10倍であったことによって特徴づけられた。

はじめに

本報告は，1989年6月から8月に日本が北太平洋及びベーリング海の沖合水域において実施したさけ・ます調査の概要である。資料は現在分析中であり本報告は暫定的数値を含む。なお比較のために（ ）内に1988年の数値を示した。

Ⅰ．さけ・ます調査

1．母　船

1989年の母船式さけ・ます流し網漁業は，1母船（1），南公海 -2 a区- 32隻（43），北公海 -4区- 24隻（43），合計56独航船（43）によって実施された。母船は5月28日に函館を出港し，7月20日に函館へ帰港した。南公海において操業した独航船は5月28日に函館を出港し，6月30日に函館へ帰港した。北公海において操業した独航船は6月18日に函館を出港し，7月20日に函館へ帰港した。この間，南公海 -2 a区- において6月3日から6月25日に21回（休漁2回），北公海 -4区- において6月27日から7月11日に12回（休漁3回），合計33回（34）の船団操業が実施された（表1）。操業期間中の船団操業位置を図1に示した。なお，操業期間中，2隻の独航船上での魚体測定尾数は，ベニザケ578尾（2,749），シロザケ294尾（1,037），カラフトマス290尾（1,020），ギンザケ45尾（0），マスノスケ198尾（441），スチール・ヘッド1尾（0），オショロコマ2尾（0）計1,408尾（5,247）であった。測定尾数が減少した理由は，独航船上での魚体測定実施に伴い1日の測定尾数の上限をベニザケ20尾（90），シロザケ10尾（30），カラ

フトマス 10 尾 (30)，ギンザケ 20 尾 (60)，マスノスケ 20 尾 (60) としたためである。なお，この測定尾数の減少を補うために，調査船若竹丸が同海域で調査を実施した。

2．調査船

1989 年に沖合水域において活動したさけ・ます調査船は 11 隻である (表 2)。さけ・ます調査船が使用した漁具は流し網並びにはえなわである (図 2)。なお，米国 200 海里内における調査は，3 月の調査調整会議で合意したにもかかわらず，米国より調査許可が得られなかったため，実施されなかった。

流し網調査は 6 月 4 日に開始され，8 月 6 日に終了した。流し網調査回数は 6 月 100 回，7 月 69 回，8 月 5 回，計 174 回 (171) であった (図 3-5)。

はえなわ調査は 6 月 7 日に開始され，7 月 15 日に終了した。はえなわ調査回数は 6 月 155 回，7 月 88 回，計 243 回 (256) であった (図 6-7)。

標識放流尾数は，ベニザケ 142 尾 (274)，シロザケ 2,750 尾 (4,930)，カラフトマス 2,227 尾 (1,330)，ギンザケ 1,529 尾 (1,020)，マスノスケ 67 尾 (55)，スチール・ヘッド 75 尾 (99)，計 6,790 尾 (7,708) であった。

なお，スチール・ヘッド，ギンザケの脂鰭欠損魚から頭部標本を，またマスノスケ，ギンザケから寄生虫調査用の頭部標本を採集した。

3．共同調査による科学者の乗船

新りあす丸に米国科学者 N. Davis が乗船した。また日ソ共同調査として北光丸にソ連科学者 V. Kostarev，A. Polutov が乗船した。

II．北西太平洋及びベーリング海におけるサケ科魚類の分布状況

6 月及び 7 月における調査船による 10 種類目合構成の非選択的調査用流し網 (C 網) 100 反当り漁獲尾数を，魚種別，月別，1° x 5° 海区別に図 8-19 に示した。これらの資料と過去の長年平均 (1972-1988 年) とを比較した (表 3)。方法は高木 (1986) に準じた。ただし，比較は月別・1° x 5° 海区を基礎とした。

これによるとベニザケ及びシロザケは北太平洋において過去の平均値より豊度が高く，ベーリング海では過去の平均値より豊度が低かった。カラフトマスは北太平洋の 175° E 以西において過去の平均値より豊度が低く，175° E 以東において過去の平均値より豊度がやや高く，ベーリング海では過去の平均値の約 10 倍の豊度であった。ギンザケは北太平洋でやや豊度が低く，マスノスケはほぼ例年並みの豊度であった。

文　献

高木健治．1986．1986 年に北太平洋の沖合水域において行なった日本のさけ・ます調査の概要．36 頁．水産庁．遠洋水産研究所．

Table 1. Japanese salmon mothership activities in 1989.

Mothership	Gross tonnage	Number of catcher boats	Left Hakodate	First catch	Last catch	Returned Hakodate	Days on fishing grounds	Days of fishing operations	Fishing grounds
Zuiyo maru	2,459	32	May 28	June 3	June 25	June 30	23	21	2a
		24	June 18	June 27	July 11	July 20	15	12	4
Total		56						33	

Table 2. Japanese salmon research vessel activities in 1989.

Vessel	Cruise	Left Date	Left Port	Returned Date	Returned Port	Duration 1st fishing	Duration Last fishing	Number of set Gillnet	Number of set Longline	Number of set Tagging
Hokushin maru	1	June 1	Kushiro	June 29	Kushiro	June 5	June 25	17	0	0
Oshoro maru	1	June 3	Hakodate	Aug. 11	Hakodate	June 10	July 19	26	12	9
Hokusei maru	1	June 1	Hakodate	June 15	Hakodate	June 5	June 11	3	0	0
	2	June 20	Hakodate	July 4	Hakodate	June 23	June 28	5	0	0
	3	July 11	Hakodate	Aug. 10	Hakodate	July 18	Aug. 6	16	0	0
Hokko maru	1	June 21	Kushiro	July 14	Kushiro	June 25	July 10	13	2	1
Iwaki maru	1	June 1	Onahama	July 10	Kushiro	June 7	July 4	18	0	0
Hokuho maru	1	June 7	Hakodate	July 26	Kushiro	June 12	July 20	7	52	45
Wakatake maru	1	June 2	Kushiro	July 20	Hakodate	June 7	July 13	31	30	30
Kaiun maru	1	June 1	Kushiro	July 10	Kushiro	June 4	July 5	32	0	0
Shin-Riasu maru	1	June 1	Miyako	July 20	Kushiro	June 7	July 14	6	25	25
Etsuzan maru	1	May 31	Misaki	July 20	Kushiro	June 9	July 15	0	62	61
Riasu maru No.1	1	June 5	Miyako	July 18	Kushiro	June 9	July 13	0	60	60
Total								174	243	238

Table 3. Comparison of relative abundance of salmon between 1989 and averages in the past.

Area	Year	Species				
		Sockeye	Chum	Pink	Coho	Chinook
North Pacific West of 175°E	1989	36	41	170	14	1
	1972-1988	23	39	473*	16	1
North Pacific East of 175°E	1989	84	64	48	19	2
	1972-1988	26	48	43*	23	1
Bering Sea	1989	47	121	867	0	9
	1972-1988	71	246	89*	0	10
Total	1989	54	57	193	14	2
	1972-1988	29	62	281*	17	2

* Data in odd years were used for pink salmon.

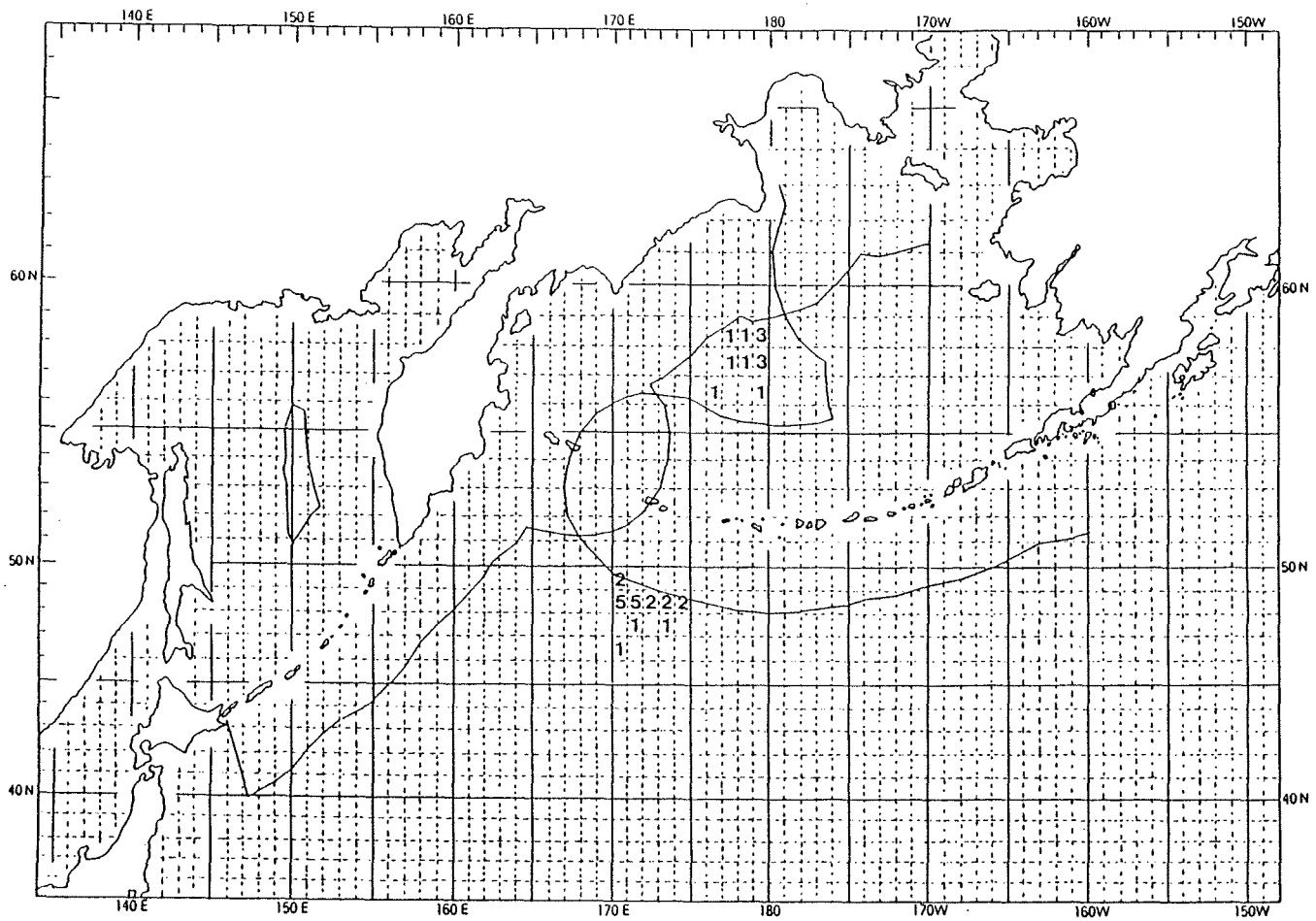

Figure 1. Positions of the fleet opreration in 1989.

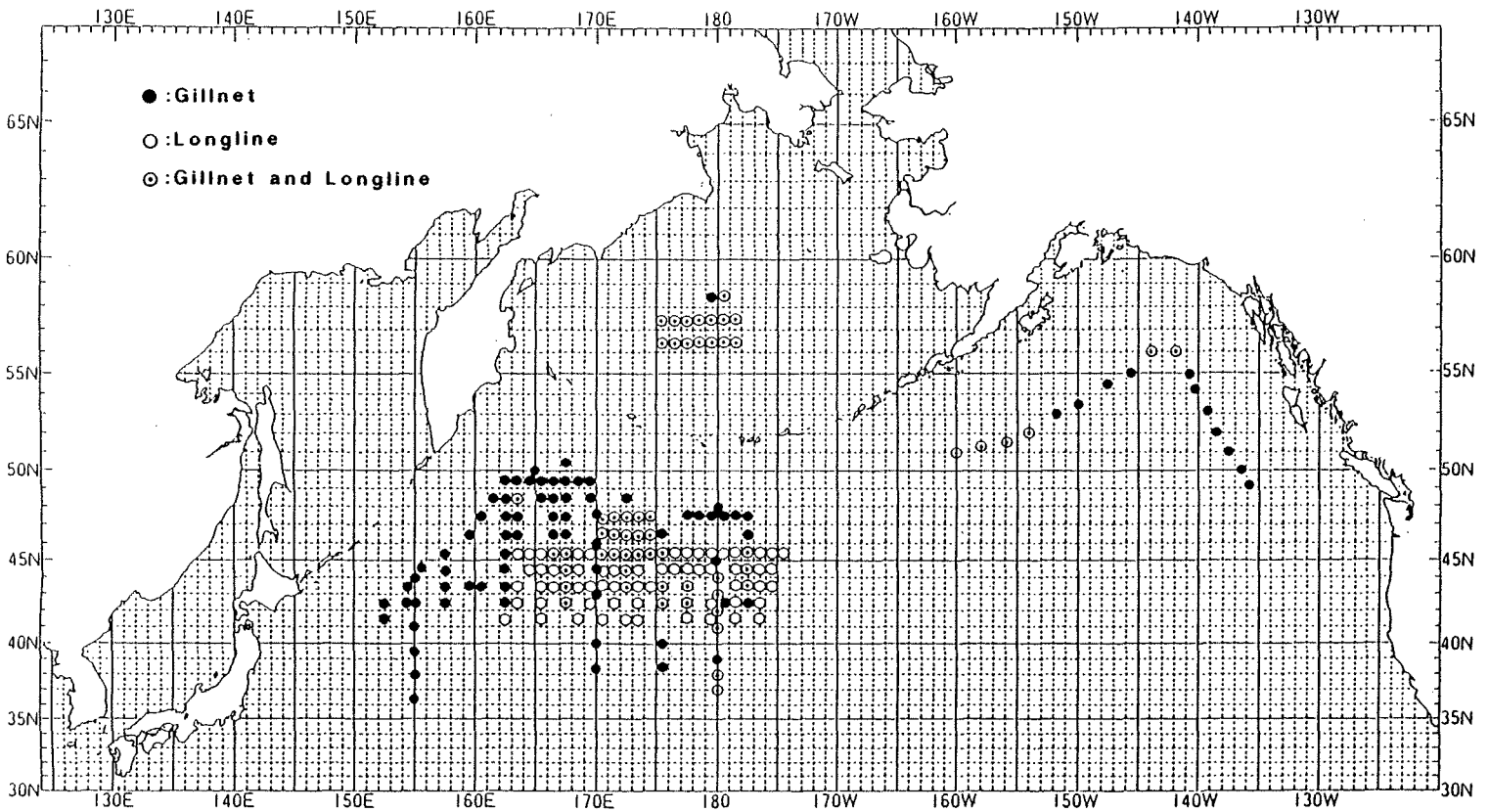

Figure 2. Fishing locations of Japanese salmon research vessels by gillnets and longlines, 1989.

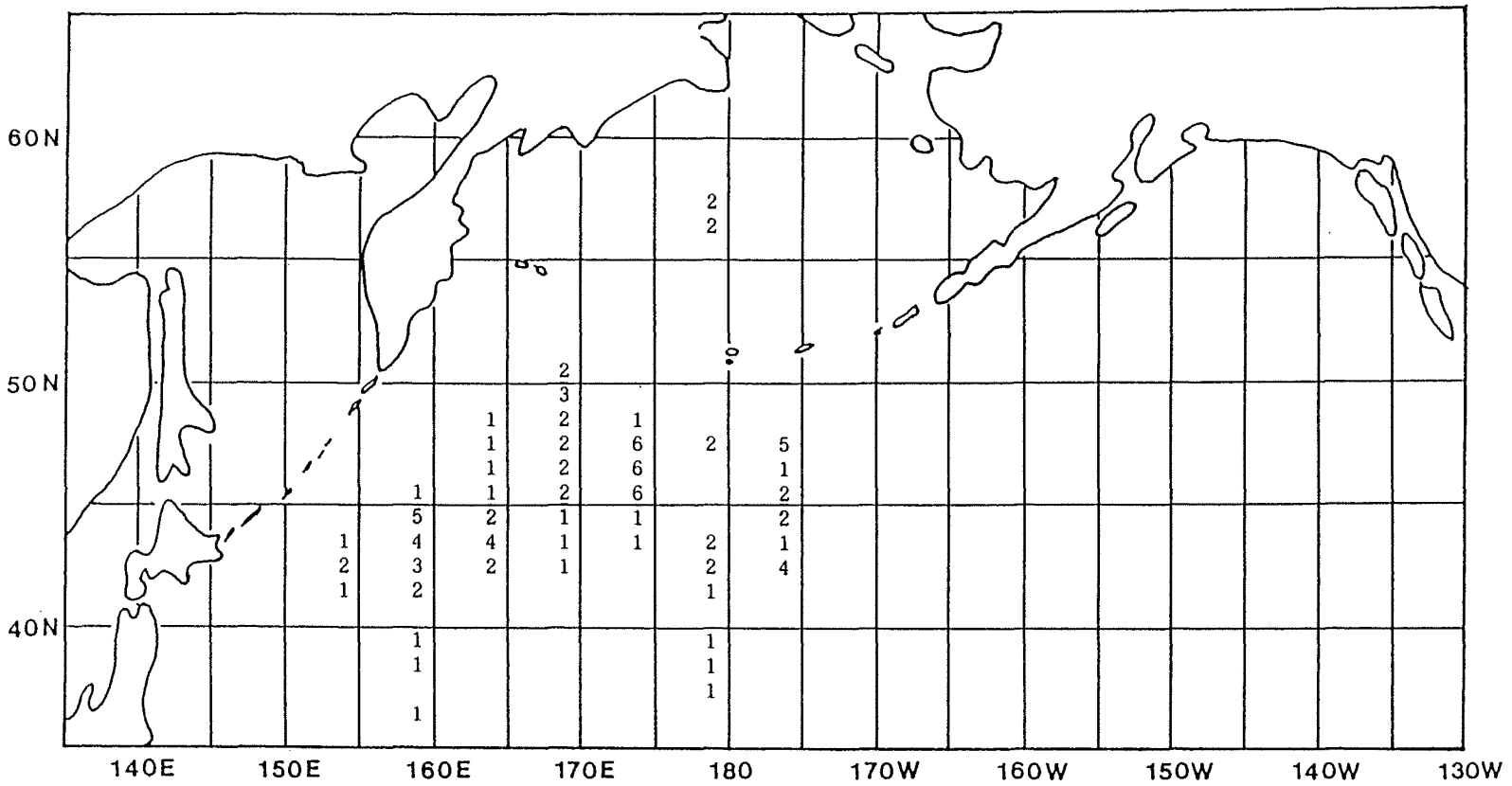

Figure 3. Gillnetting locations of Japanese research vessels in June, 1989.

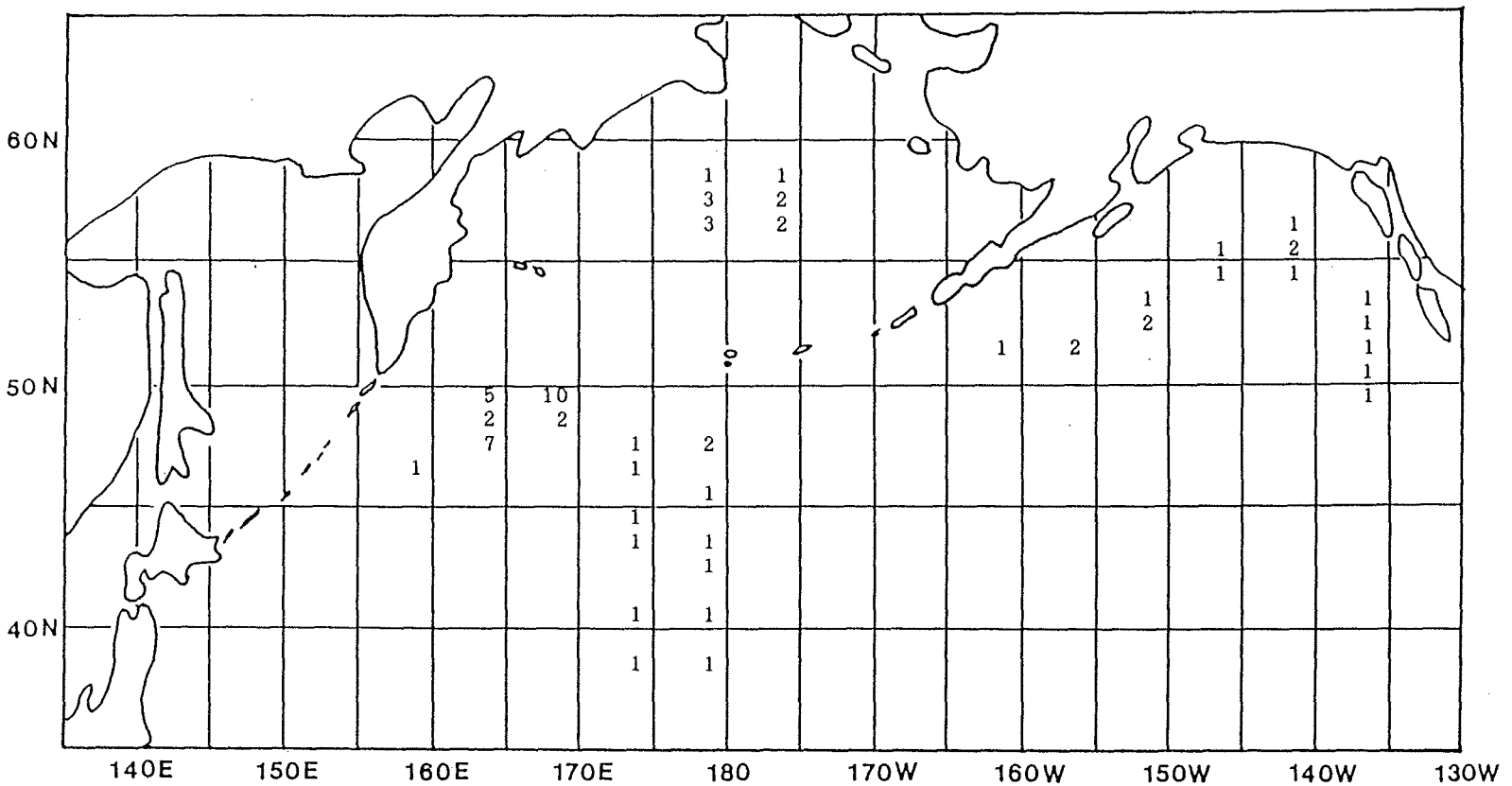

Figure 4. Gillnetting locations of Japanese research vessels in July, 1989.

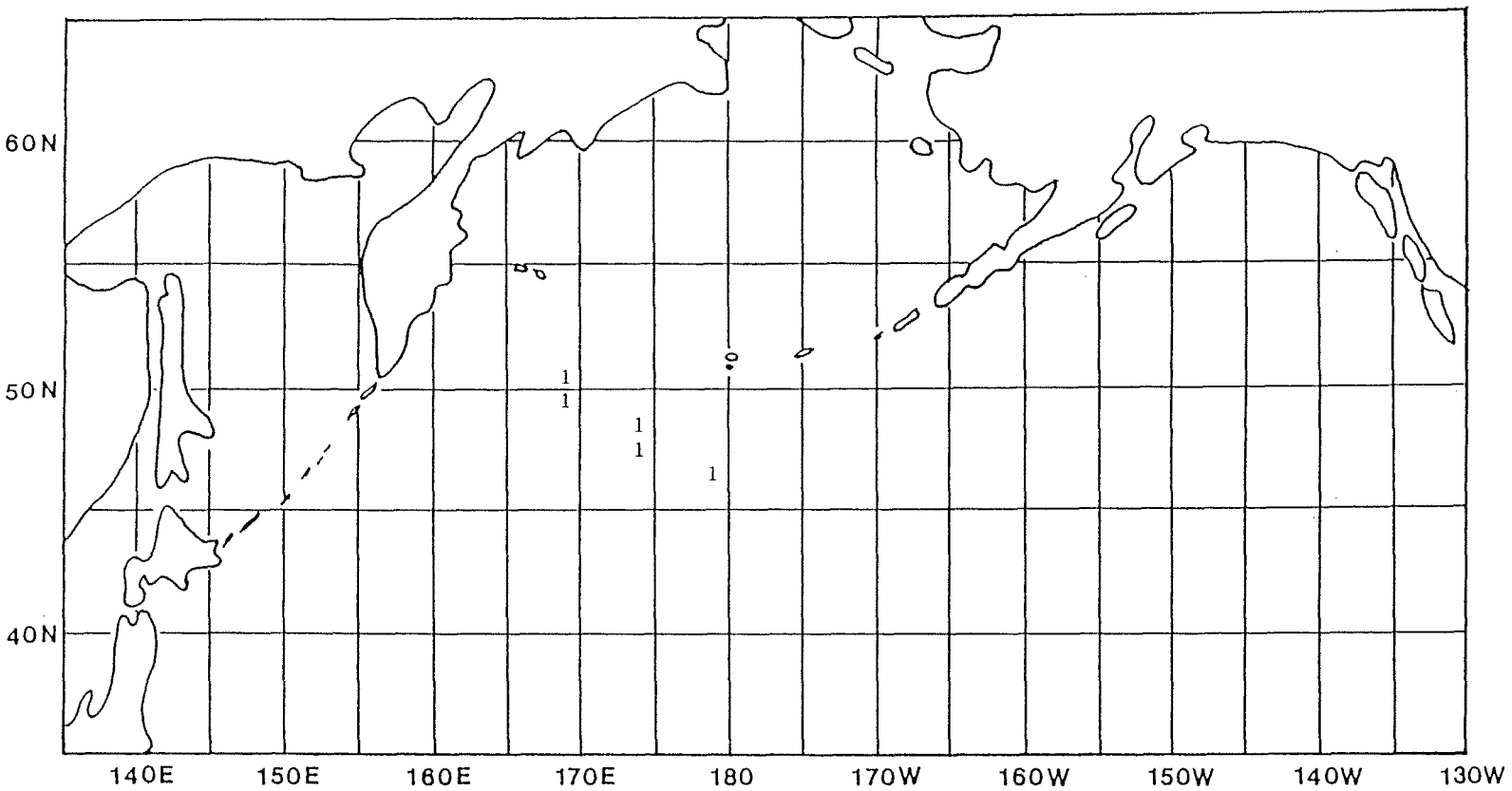

Figure 5. Gillnetting locations of Japanese research vessels in August, 1989.

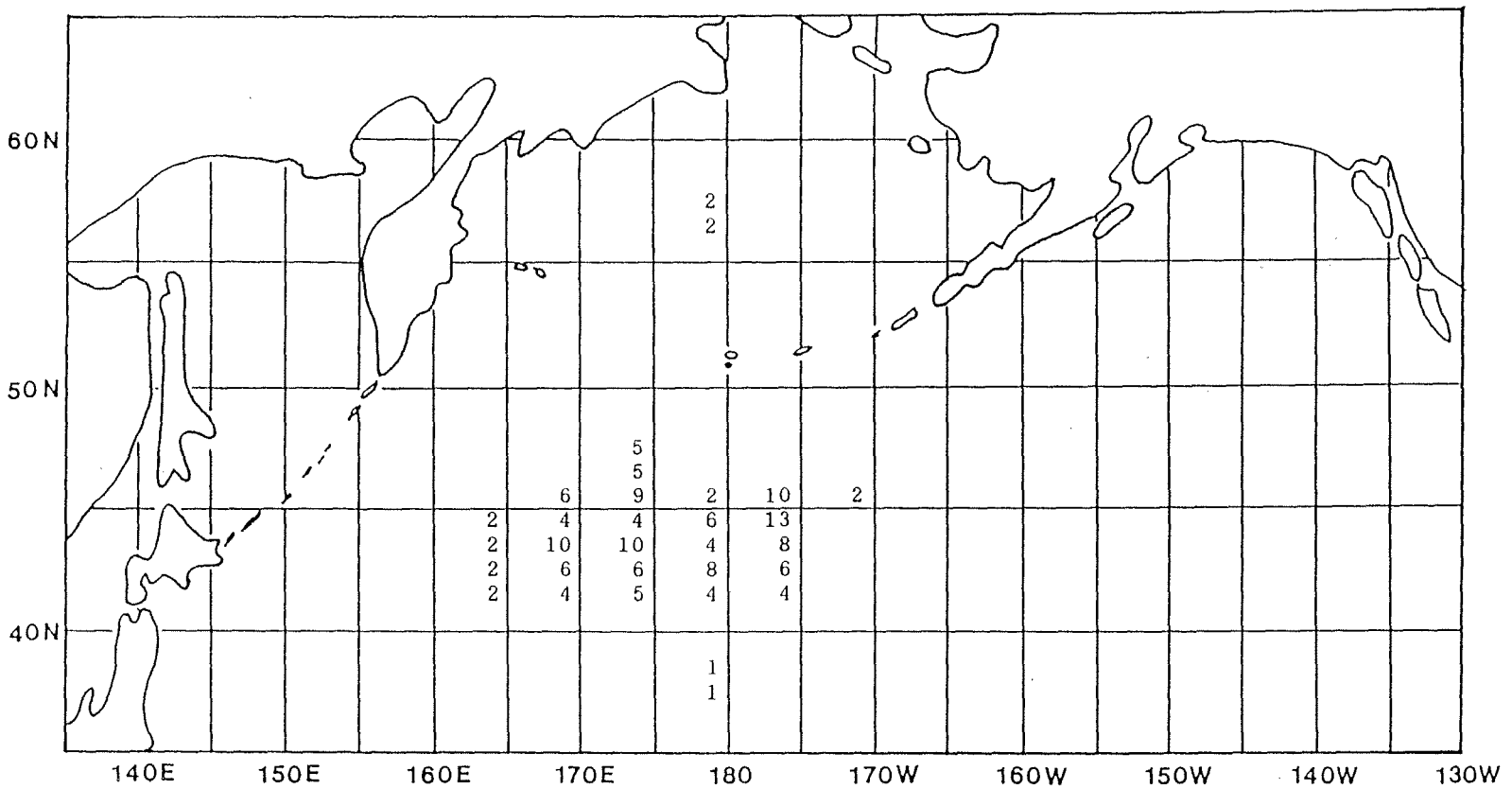

Figure 6. Longlining locations of Japanese research vessels in June, 1989.

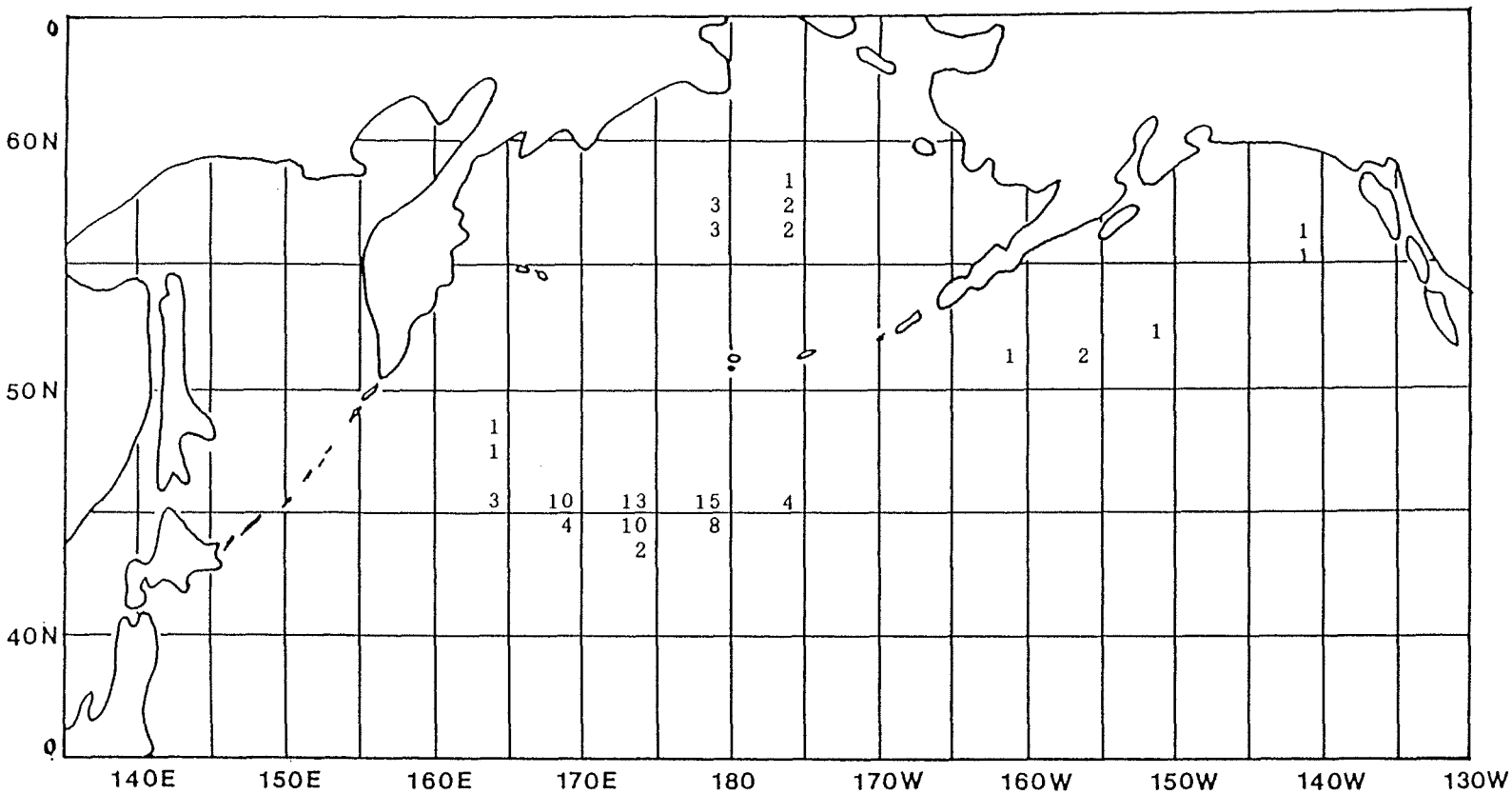

Figure 7. Longlining locations of Japanese research vessels in July, 1989.

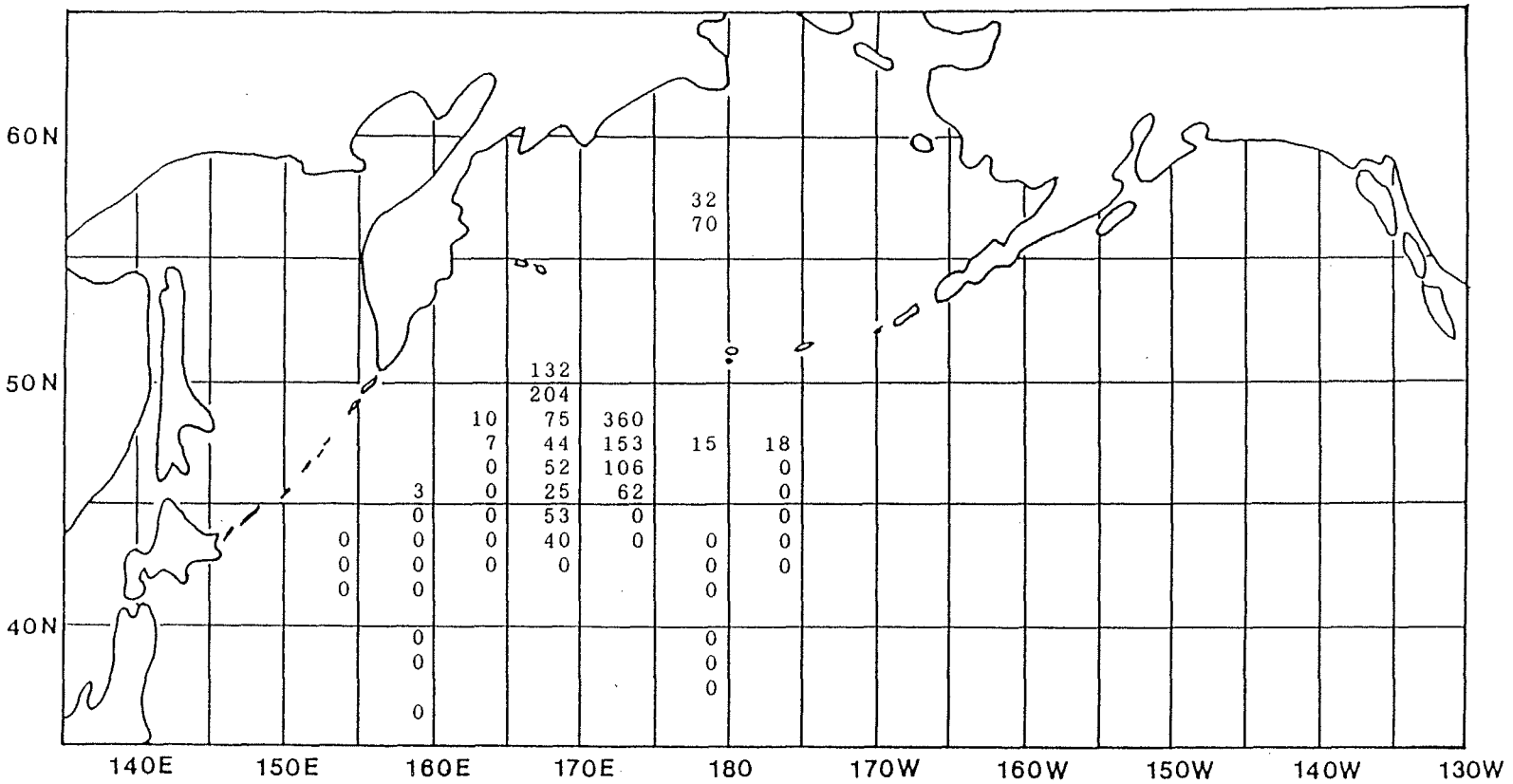

Figure 8. CPUE distribution of sockeye salmon caught by the 100 tans of research gillnets in June, 1989.

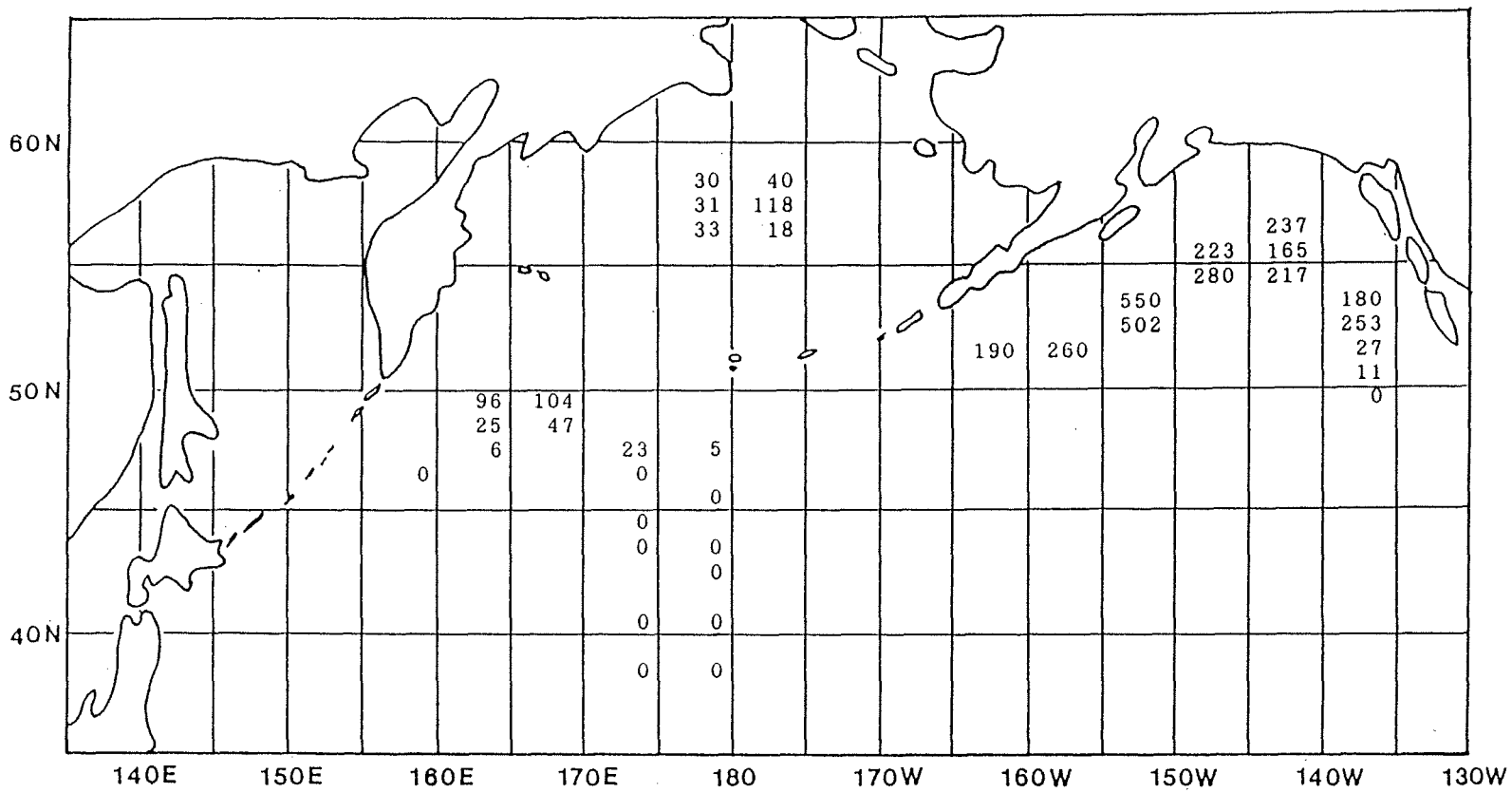

Figure 9. CPUE distribution of sockeye salmon caught by the 100 tans of research gillnets in July, 1989.

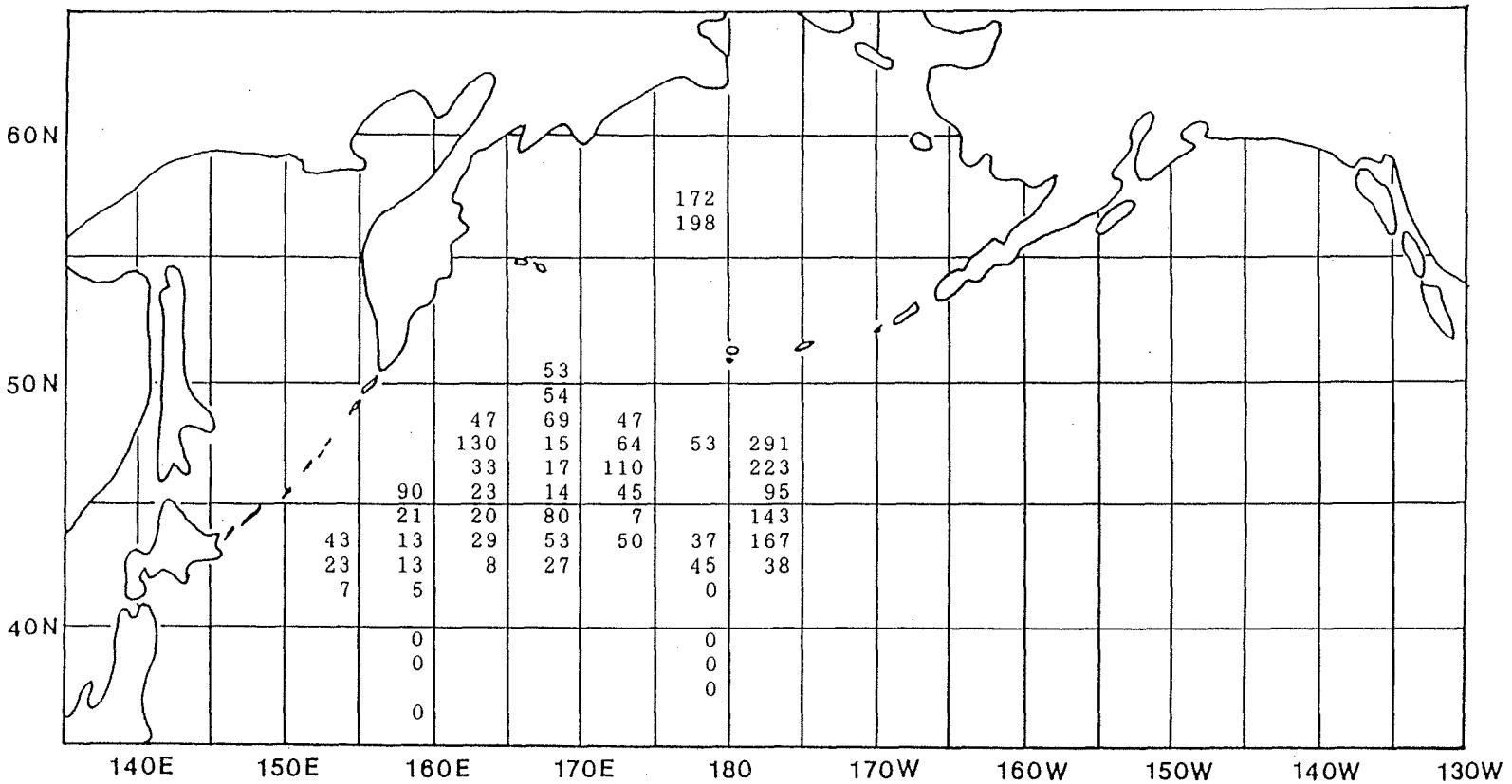

Figure 10. CPUE distribution of chum salmon caught by the 100 tans of research gillnets in June, 1989.

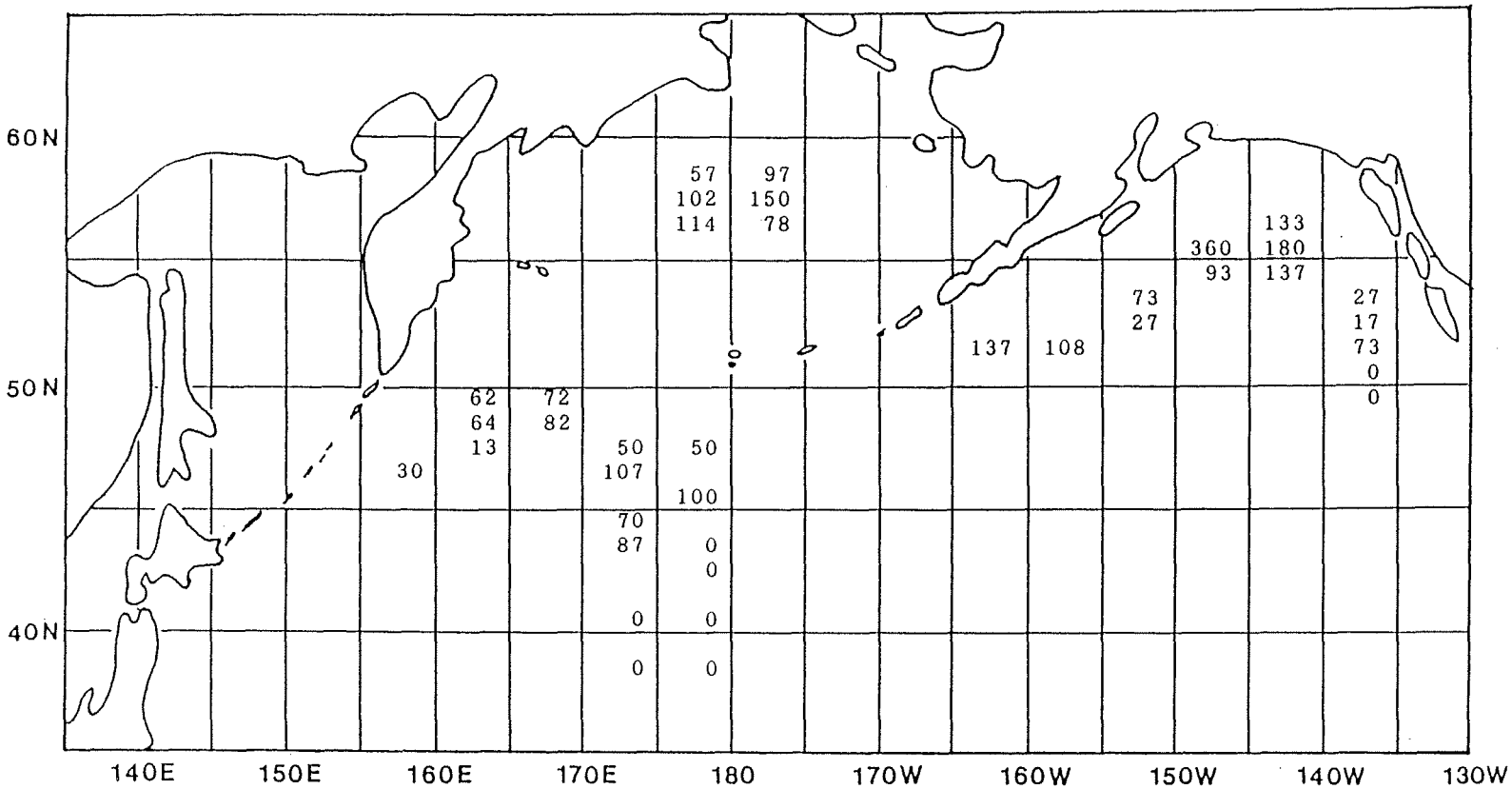

Figure 11. CPUE distribution of chum salmon caught by the 100 tans of research gillnets in July, 1989.

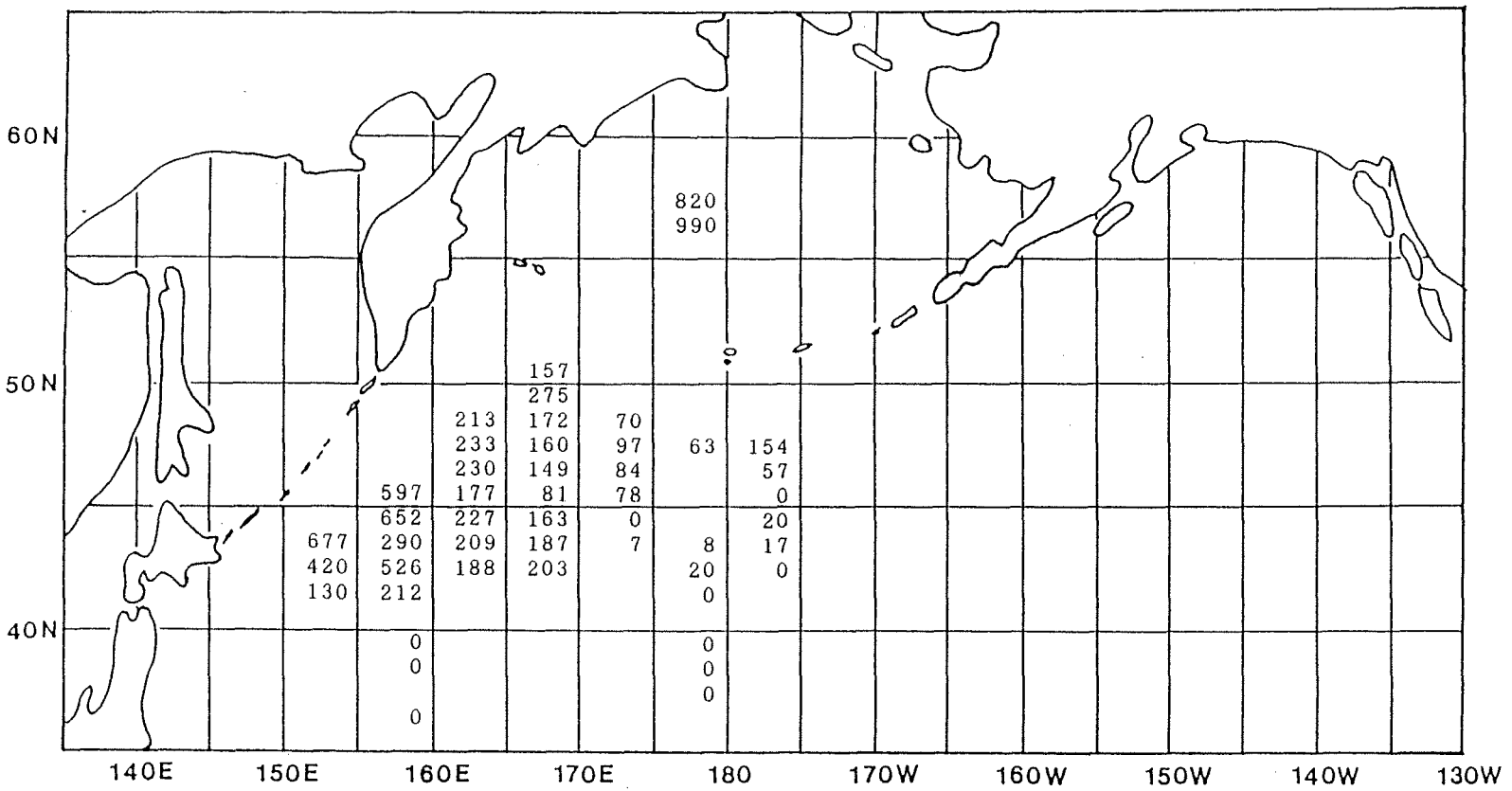

Figure 12. CPUE distribution of pink salmon caught by the 100 tans of research gillnets in June, 1989.

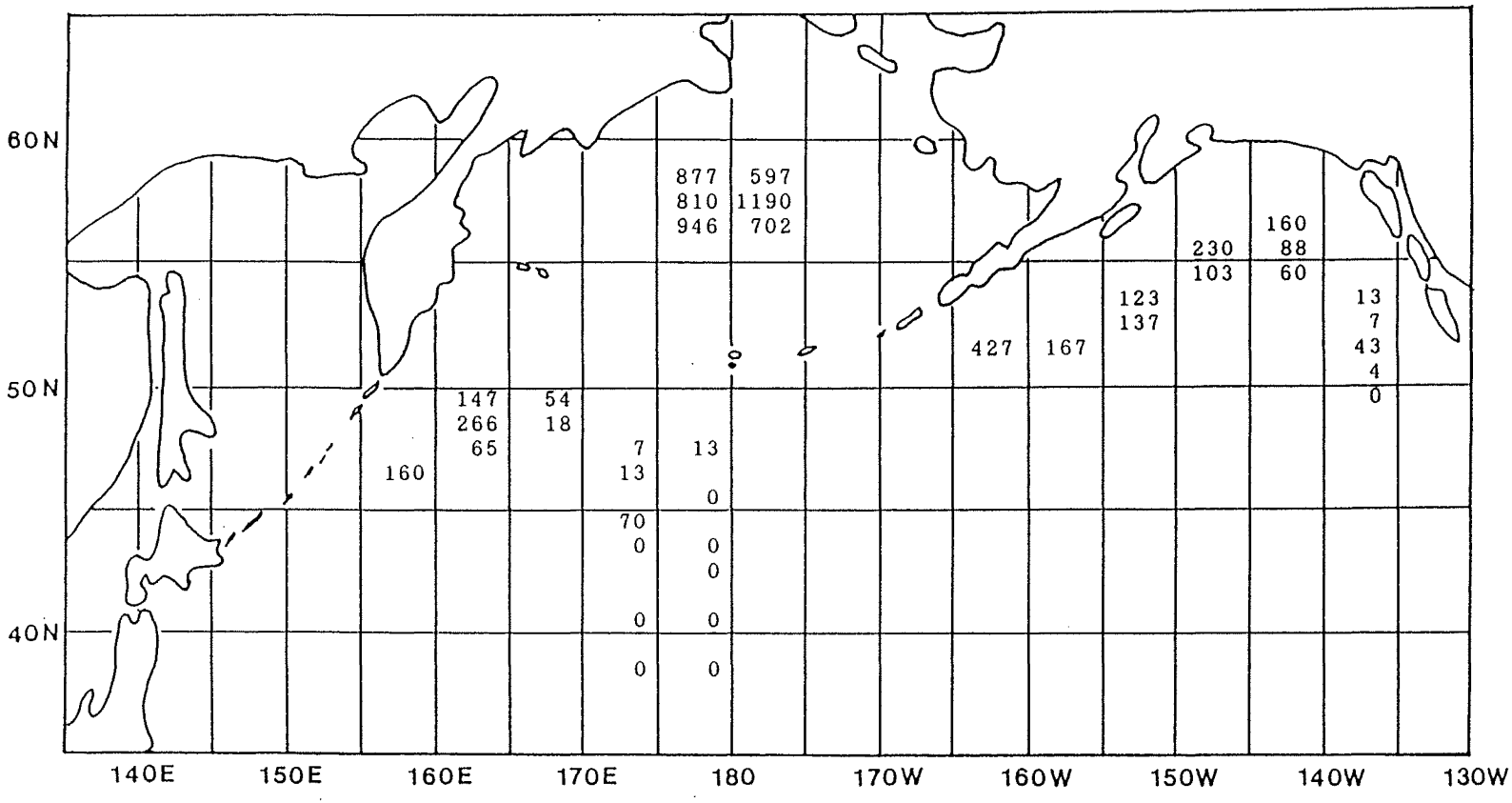

Figure 13. CPUE distribution of pink salmon caught by the 100 tans of research gillnets in July, 1989.

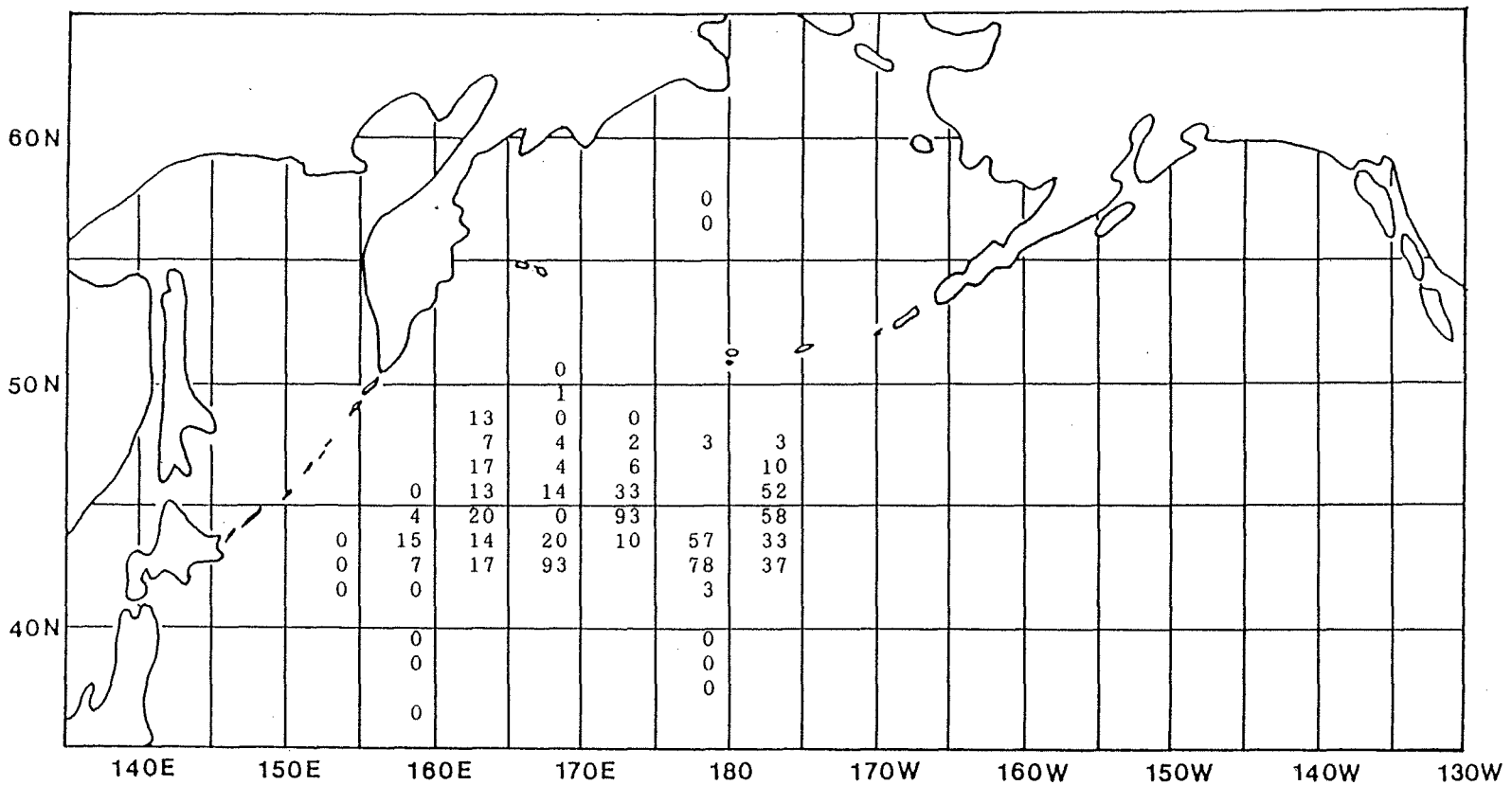

Figure 14. CPUE distribution of coho salmon caught by the 100 tans of research gillnets in June, 1989.

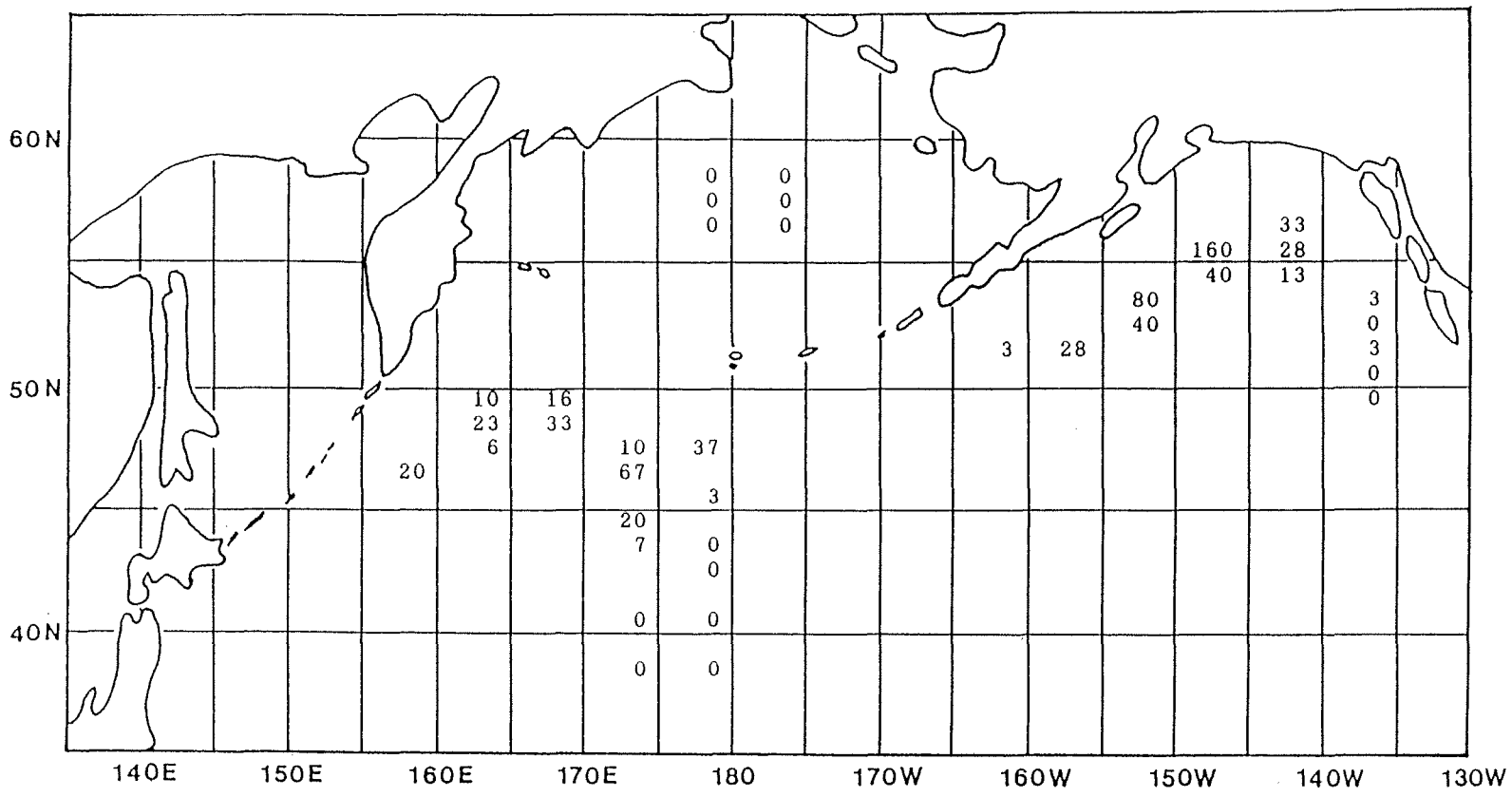

Figure 15. CPUE distribution of coho salmon caught by the 100 tans of research gillnets in July, 1989.

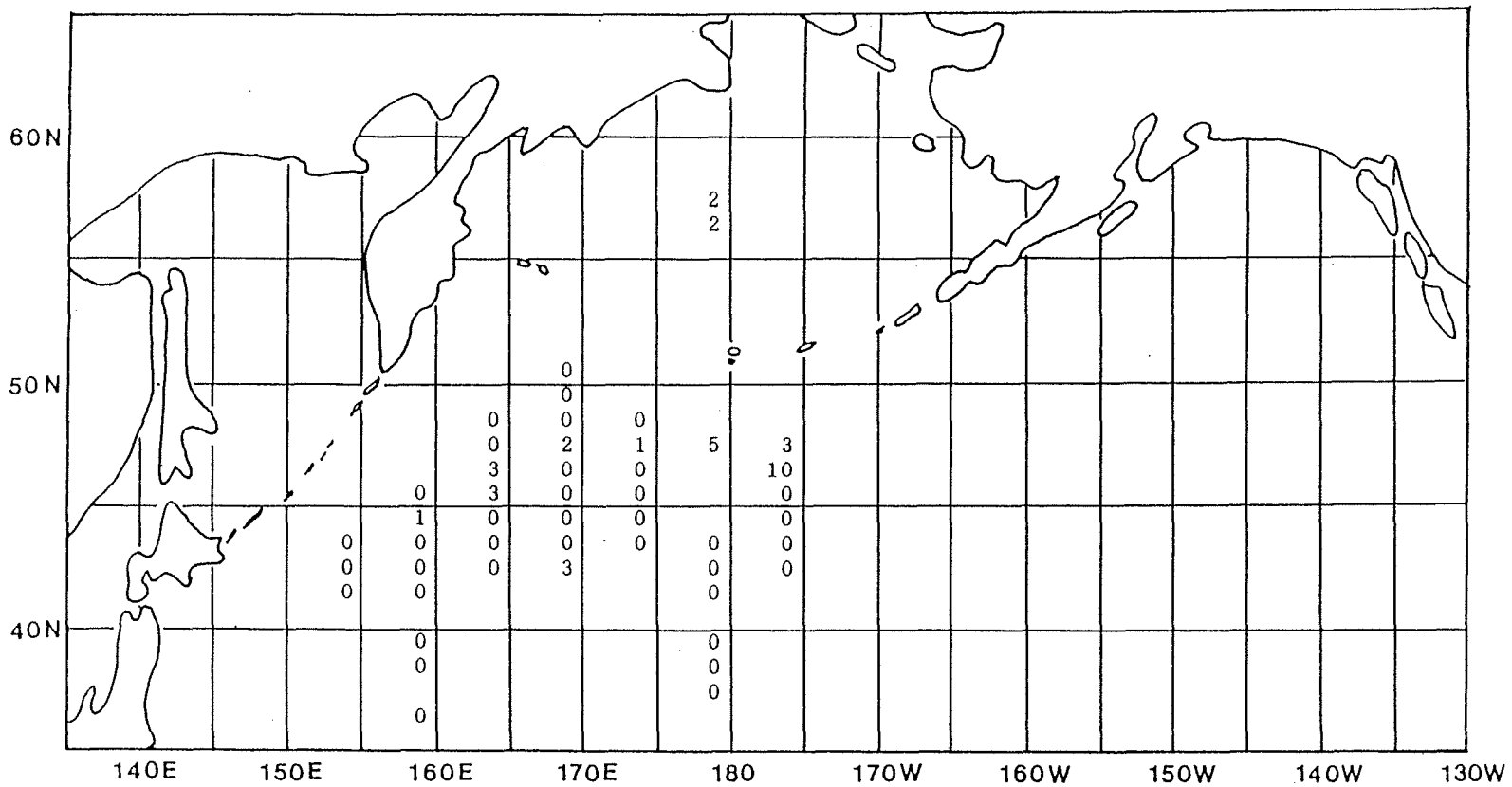

Figure 16. CPUE distribution of chinook salmon caught by the 100 tans of research gillnets in June, 1989.

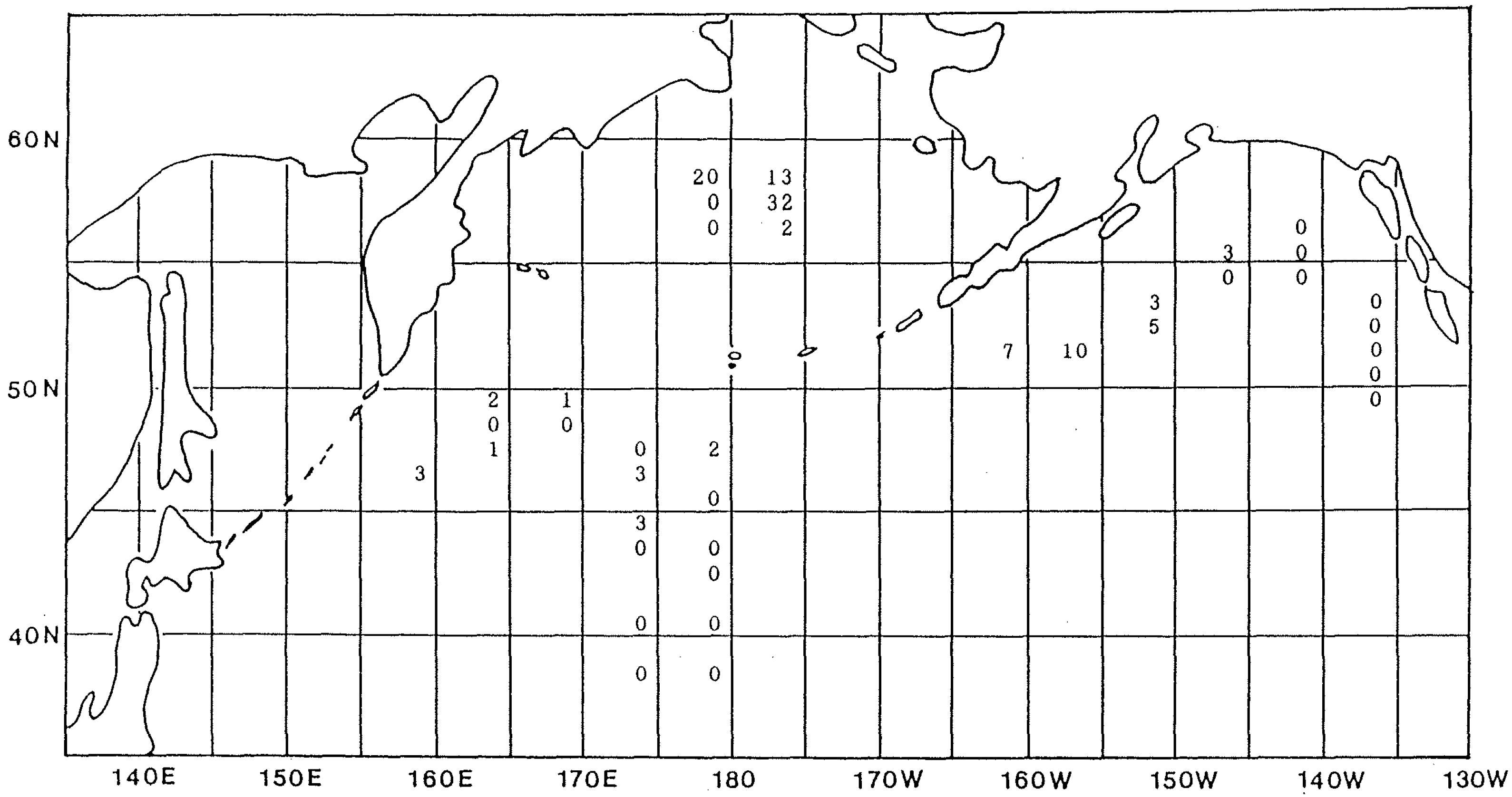

Figure 17. CPUE distribution of chinook salmon caught by the 100 tans of research gillnets in July, 1989.

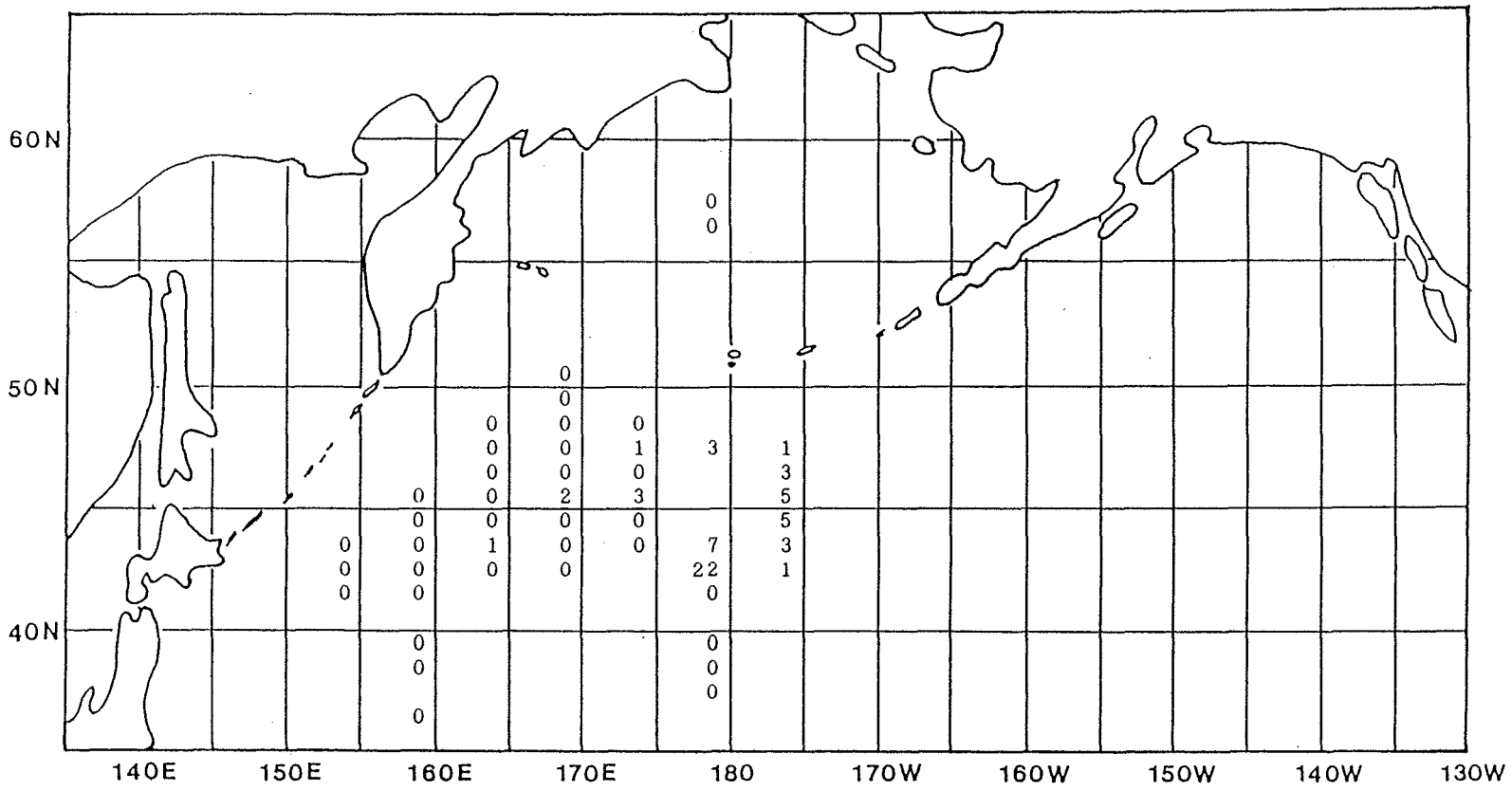

Figure 18. CPUE distribution of steelhead trout caught by the 100 tans of research gillnets in June, 1989.

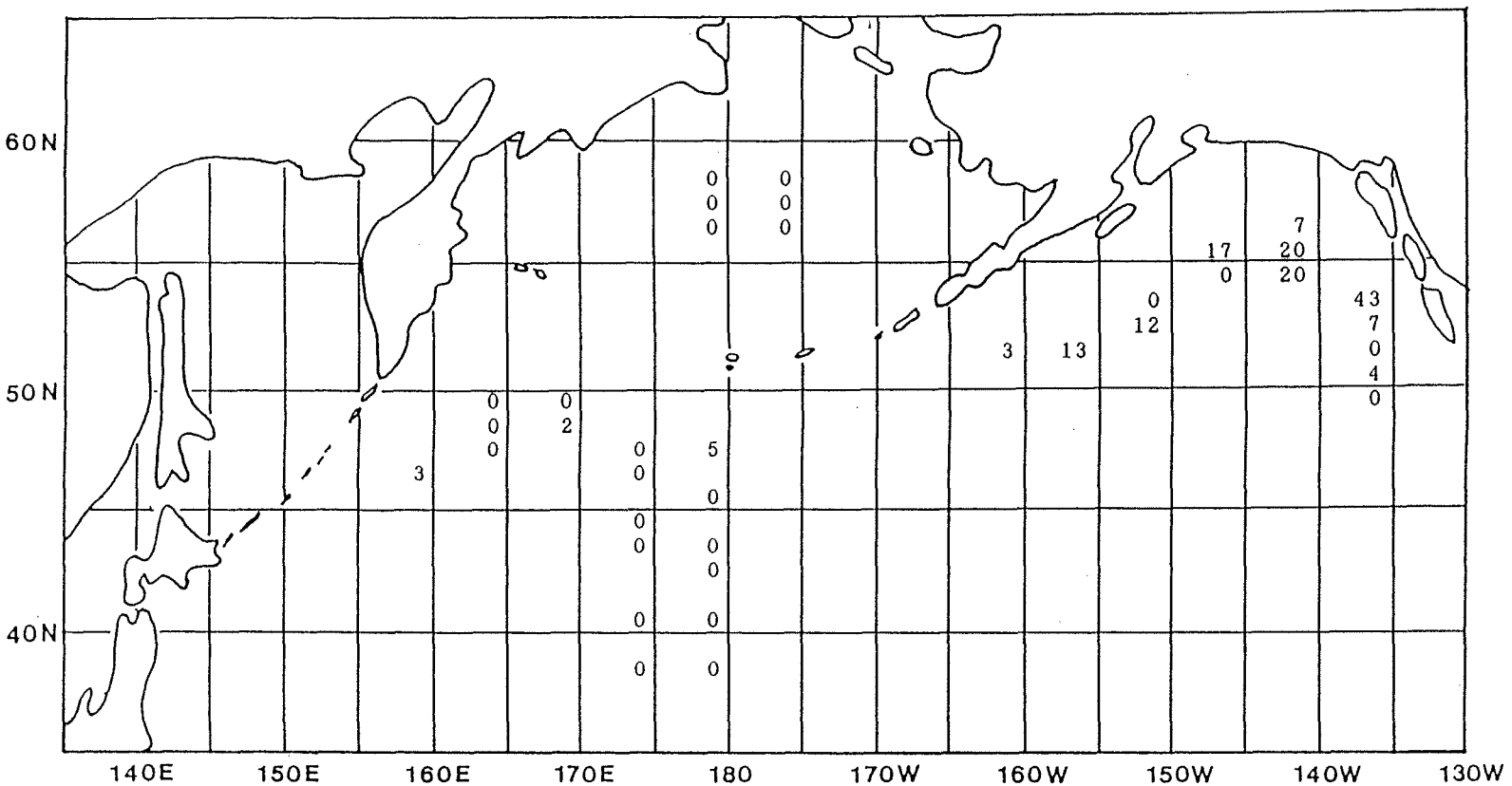

Figure 19. CPUE distribution of steelhead trout caught by the 100 tans of research gillnets in July, 1989.

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Sotoo Ito and Yukimasa Ishida
Far Seas Fisheries Research Laboratory

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OUTLINE OF JAPANESE SALMON INVESTIGATIONS IN THE OFFSHORE WATERS OF THE NORTH PACIFIC OCEAN IN 1989

Sotoo Ito and Yukimasa Ishida
Far Seas Fisheries Research Laboratory

ABSTRACT

The mothership salmon gillnet fishery in 1989 was conducted by one mothership accompanied by a total of 56 catcher boats; 32 catcher boats in the southern international waters - Area 2a - and 24 catcher boats in the northern international waters - Area 4. A total of 33 fleet operations was conducted. During the operations, the body measurements of 1,408 fish were made on board two catcher boats.

Eleven salmon research vessels participated in the surveys, and conducted 174 gillnet operations and 243 longline operations, and tagged and released a total of 6,790 salmonids.

The abundance of salmonids in 1989 was characterized by pink salmon in the Bering Sea which were about 10 times more abundant than the mean value in past years.

Introduction

This report summarizes salmon investigations conducted by Japan in offshore waters of the North Pacific Ocean and Bering Sea during the period 1989 June to August. The data obtained from these investigations are still being analyzed and figures in this report are preliminary. In the following text, comparative figures for 1988 are shown in parentheses ( ).

I. Research on salmon

1. Mothership

The mothership gillnet fishery in 1989 was conducted by one (1) mothership accompanied by 32 (43) catcher boats in the southern international waters - Area 2a - and 24 (43) catcher boats in the northern international waters - Area 4, 56 (43) catcher boats in total. The mothership fleet left Hakodate on May 28 and returned to Hakodate on July 20. The catcher boats engaged in the operations in the southern international waters left Hakodate on May 28 and returned to Hakodate on June 30. The catcher boats engaged in the operations in the northern international waters left Hakodate on June 18 and returned to Hakodate on July 20. During those periods, a total of 33 (34) fleet operations ; 21 operations (no operations for two days) in the southern international waters - Area 2a - from June 3 to 25, and 12 operations (no operations for three days) in the northern international waters - Area 4 - from June 27 to July 11, were conducted (Table 1). The positions of the fleet operations were shown in Fig. 1. A total of 1,408 (5,247) salmonids were measured on board two catcher boats during the period; sockeye 578 (2,749), chum 294 (1,037), pink 290 (1,020), coho 45 (0), chinook 198 (441), steelhead 1 (0), and Dolly Varden 2 (0). The reason for the decrease in number of measurements was due to the maximum number of measurements per day was established to be 20 (90) for sockeye, 10 (30) for chum, 10 (30) for pink, 20 (60) for coho, and 20 (60) for chinook salmon, because the measurements were carried out on the catcher boats. In addition, the research vessel Wakatake maru conducted investigations in this area in order to compensate for the decrease in the number of measurements.

2. Research vessels

The 1989 Japanese research activities on salmon in offshore waters were carried out by 11 research vessels (Table 2). The fishing gear used by the research vessels were gillnets and longlines (Fig. 2). The research activities within the U.S. 200-mile zone were not conducted, because no permission for the investigations was obtained from the U.S., even though the investigations were agreed upon at the research coordinating group's meeting which was held in March.

Research activities with gillnets commenced on June 4 and terminated on August 6. The number of research operations with gillnets totalled 174 (171); 100 in June, 69 in July and 5 in August (Figs. 3 to 5).

Research activities with longlines commenced on June 7 and terminated on July 15. The number of research operations with longlines totalled 243 (256); 155 in June, 88 in July (Figs. 6 to 7).

A total of 6,790 (7,708) salmonids was tagged and released; sockeye 142 (274), chum 2,750 (4,930), pink 2,227 (1,330), coho 1,529 (1,020), chinook 67 (55) and steelhead 75 (99).

In addition, head samples were collected from steelhead trout and coho salmon that did not have an adipose fin, and head samples were collected from chinook and coho salmon for research on parasites.

3. Boarding of scientists in joint researches

An U.S. scientist, N. Davis, was placed on board the Shin riasu maru. U.S.S.R. scientists, V. Kostarev and A. Polutov, were placed on board the Hokko maru for the Japan-U.S.S.R. joint research.

II. Distribution of salmonids in the northwestern Pacific and Bering Sea

The number caught per 100 tans with non-selective research gillnets with 10 different mesh sizes ("C" nets) by the research vessels during the periods of June and July are shown in Figs. 8 to 19 by species, by month, and by 1°x5° area. These data were compared with the long-period averages (1972-88) obtained in the past (Table 3). The method followed that of Takagi (1986), but comparisons were based on month and area of 1°x5°.

According to the results, the abundance of sockeye and chum salmon in the North Pacific Ocean were higher than the average values obtained in the past, but those in the Bering Sea were lower than the average values obtained in the past. The abundance of pink salmon was lower than the average values obtained in the past in waters west of 175°E of the North Pacific Ocean, and were somewhat higher than the average values obtained in the past in waters east of 175°E of the North Pacific Ocean, whereas the abundance of pink salmon in the Bering Sea was about 10 times higher than the average values obtained in the past. Abundance of coho salmon was somewhat lower than the average values obtained in the past in the North Pacific Ocean, and abundance of chinook salmon was almost the same as in other years.

Reference

Takagi, Kenji. 1986. Outline of Japanese salmon investigations in offshore waters of the North Pacific Ocean in 1986. 36 p. Fisheries Agency of Japan, Far Seas Fisheries Research Laboratory.

Tables 1 to 3 and Figs. 1 to 7 are in English in the Japanese document.