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Background Information for Southeastern Bering Sea Incidental Catch Studies

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BACKGROUND INFORMATION FOR SOUTHEASTERN BERING SEA INCIDENTAL CATCH STUDIES

by

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INTRODUCTION

This report contains information on the foreign groundfish fisheries and the domestic crab and halibut fisheries which operated in the southeastern Bering Sea from 1979-1982. The data presented is intended to provide part of the background information necessary to address the issue of incidental catch of prohibited species in trawl fisheries in the Bering Sea. The report consists of three parts: information on incidental catches, catch statistics from the target fisheries, and biomass estimates for the species in question.

INCIDENTAL CATCHES AND CATCH RATES

The first section of the report contains data on incidental catches and catch rates of prohibited species in the foreign trawl fisheries which operated in the Bering Sea from 1978 to 1982. All of this information has been extracted from the annual reports summarizing observations of the foreign fleet (French et al. 1979, 1980, and 1981; Nelson et al. 1982 and 1983). Tables of annual incidental catches and charts showing incidental catch rates by gear type and quarter of year are presented for red and blue king crab (Paralithodes spp. and Lithodes aequispina), Tanner crab (Chionoecetes spp.) and Pacific halibut (Hippoglossus stenolepis). More detailed information identifying the catches to species by nations and month are available in the original reports cited above.

CATCH STATISTICS OF THE TARGET FISHERIES

The second section of the report contains catch statistics of the foreign groundfish fisheries and the domestic crab and halibut fisheries in the Bering Sea from 1979 to 1982. The annual foreign groundfish catch statistics shown in the tables are taken from French et al. 1980 and 1981; Nelson et al. 1982

and 1983. They represent total annual catches from the entire U.S. Fisheries Conservation Zone (FCZ) in the eastern Bering Sea.

The annual domestic crab catches shown in the tables are taken from Eaton 1983. Domestic halibut catches in these tables were provided by the International Pacific Halibut Commission (IPHC). The tabled king crab catches represent red and blue king crab from Alaska Department of Fish and Game (ADFG) statistical areas Q and T. The tabled Tanner crab catches are also those from statistical area Q.

Annual catches for 1° latitude by 1° longitude blocks selected foreign and domestic fisheries are shown in charts. The symbols used on the charts are:

G: total foreign trawl catch in the 1° x 1° block

P: total foreign pollock catch in the 1° x 1° block

Y: total foreign yellowfin sole catch in the 1° x 1° block

C: total foreign Pacific cod catch in the 1° x 1° block

K: total domestic king crab catch in the 1° x 1° block

T: total domestic Tanner crab catch in the 1° x 1° block

H: total domestic halibut catch in the 1° x 1° block

The number by the symbol is the annual catch in metric tons for that block. The area shown in the charts is that area of most concern with reference to the incidental catches of prohibited species and does not represent the entire fishing area of the eastern Bering Sea. The foreign catch statistics in the charts are those reported to the National Marine Fisheries Service (NMFS) annually by foreign nations as required by the Magnuson Fisheries Conservation and Management Act of 1976 (MFCMA). The domestic crab catches in the charts were compiled by the Commercial Fisheries Entry Commission (CFEC) of the ADFG. The domestic halibut catches were provided by IPHC.

BIOMASS ESTIMATES

The final section of this report contains tables giving biomass estimates for groundfish species of interest and population estimates for crab in the eastern Bering Sea. Generally, biomass and population estimates are not available by areas smaller than the areas by which each species is managed. Consequently, the biomass estimates and population numbers shown are not related specifically to the areas and catches shown in other tables and charts in this report. Biomass estimates for the groundfish species are from Bakkala et al. 1984a, Bakkala et al. 1984b, and inhouse reports of bilateral meetings (Anon. 1980, 1981, 1982, 1983). Crab population estimates are from Otto et al. 1983. Biomass estimates for Pacific halibut are from Quinn et al. 1984.

June (1984) has provided charts of catch rates for major species observed on each haul in research trawl surveys in the eastern Bering Sea from 1979 to 1983. These charted catch rates represent the distribution of each species during the survey, and the reader who requires more detail on biomass or population distribution should refer to that report.

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Table 1.--The estimated incidental catch (Nos. and mt) of king crab (Lithodes and Paralithodes spp.) in the foreign and joint-venture groundfish fishery in the Bering Sea/Aleutian Islands region, 1977-82.[1/]

Year	Total		Foreign		Joint-Venture	
	(Nos.)	(t)	(Nos.)	(t)	(Nos.)	(t)
1977	599,623	641	599,623	641	NF	NF
1978	1,277,931	1,097	1,277,931	1,097	NF	NF
1979	1,007,796	1,008	1,007,796	1,008	NF	NF
1980	1,147,671	1,022	858,129	781	289,542	241
1981	1,817,152	1,308	733,026	666	1,084,126	642
1982	573,919	433	380,004	343	193,915	90

1/ Estimates for years 1977-78 from Nelson et al., 1981a; 1979 from French et al., 1981; 1980 from Nelson et al., 1981b; and 1981 from Nelson et al., 1982 .

NF = no fishing.

Table 2 .--Estimated incidental catches (Nos. and t) of Tanner crab (Chionoecetes spp.) in the foreign and joint-venture groundfish fishery in the Bering Sea/Aleutian Island region, 1977-82.[1/]

Year	Total (Millions of crab)	Total (t)	Foreign (Millions of crab)	Foreign (t)	Joint-venture (Millions of crab)	Joint-venture (t)
1977	17.6	3,728	17.6	3,728	NF	NF
1978	17.3	4,267	17.3	4,267	NF	NF
1979	18.0	3,654	18.0	3,654	NF	NF
1980	11.4	2,114	11.1	2,058	0.3	56
1981	6.3	1,472	5.6	1,196	0.7	276
1982	2.4	448	2.3	425	0.1	24

1/ Estimated catches for years 1977-78 from Nelson et al., 1981a; 1979 from French et al., 1981; 1980 from Nelson et al., 1981b; and 1981 from Nelson et al., 1982.

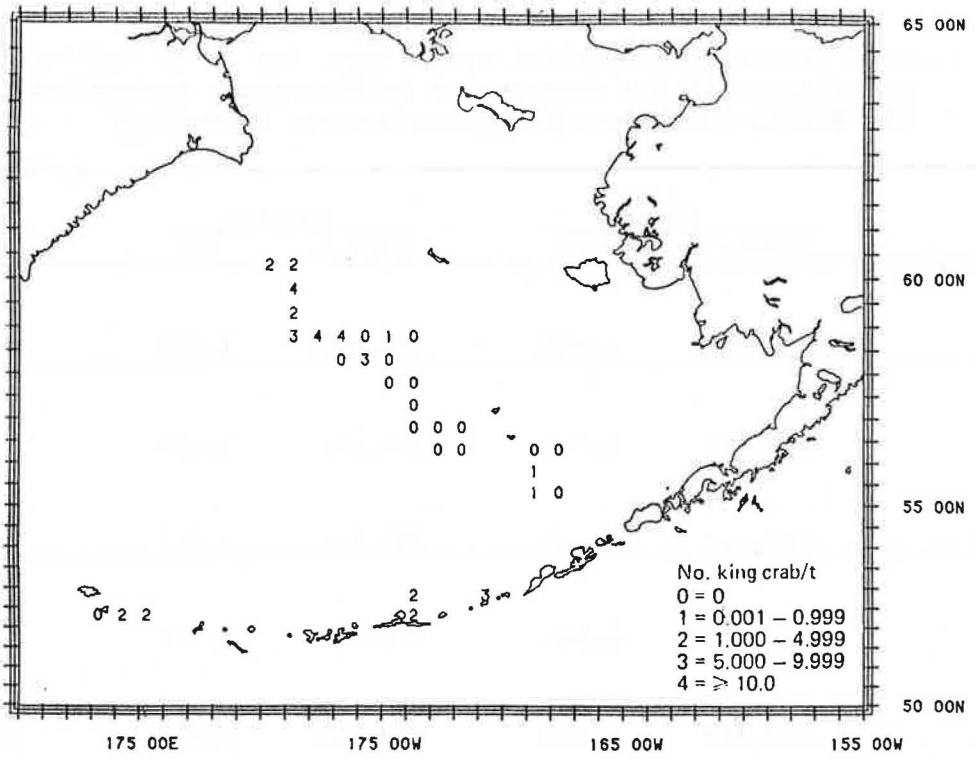
NF = no fishing.

Table 3.--The estimated incidental catch (Nos. and t) of halibut (*Hippoglossus stenolepis*) in the foreign and joint-venture groundfish fishery in the Bering Sea/Aleutian Islands region, 1977-82.[1/]

Year	Total		Foreign		Joint-Venture	
	(Nos.)	(t)	(Nos.)	(t)	(Nos.)	(t)
1977	344,973	1,453	344,973	1,453	NF	NF
1978	599,852	2,853	599,852	2,853	NF	NF
1979	583,811	2,863	583,811	2,863	NF	NF
1980	1,164,514	4,597	959,566	4,311	204,948	286
1981	1,092,347	2,936	988,731	2,704	103,616	232
1982	835,455	2,172	423,340	1,609	412,115	563

1/ Estimates for years 1977-78 from Nelson et al., 1981a; 1979 estimates from French et al., 1981; 1980 from Nelson et al., 1981b; and 1981 from Nelson et al., 1982.

NF = no fishing.



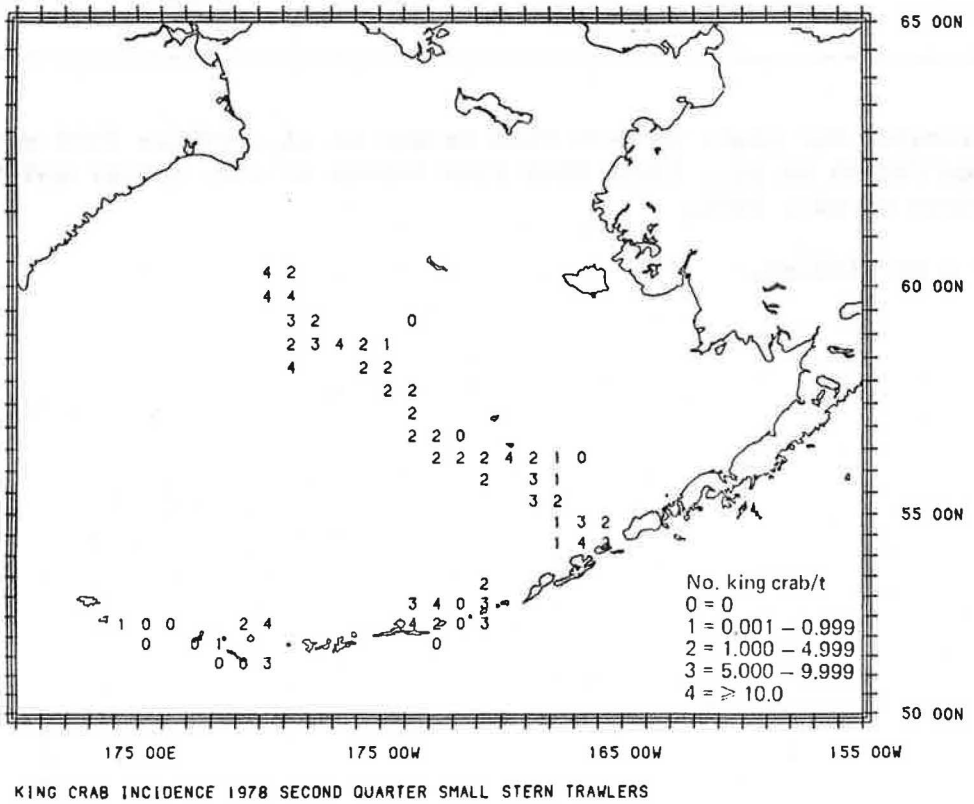
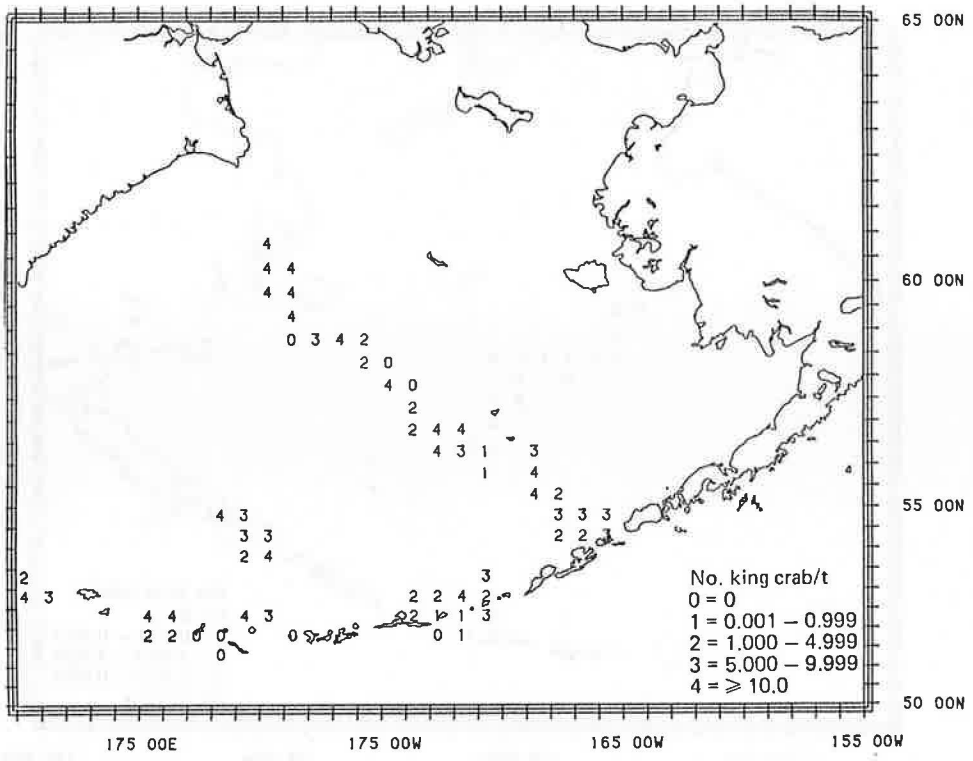
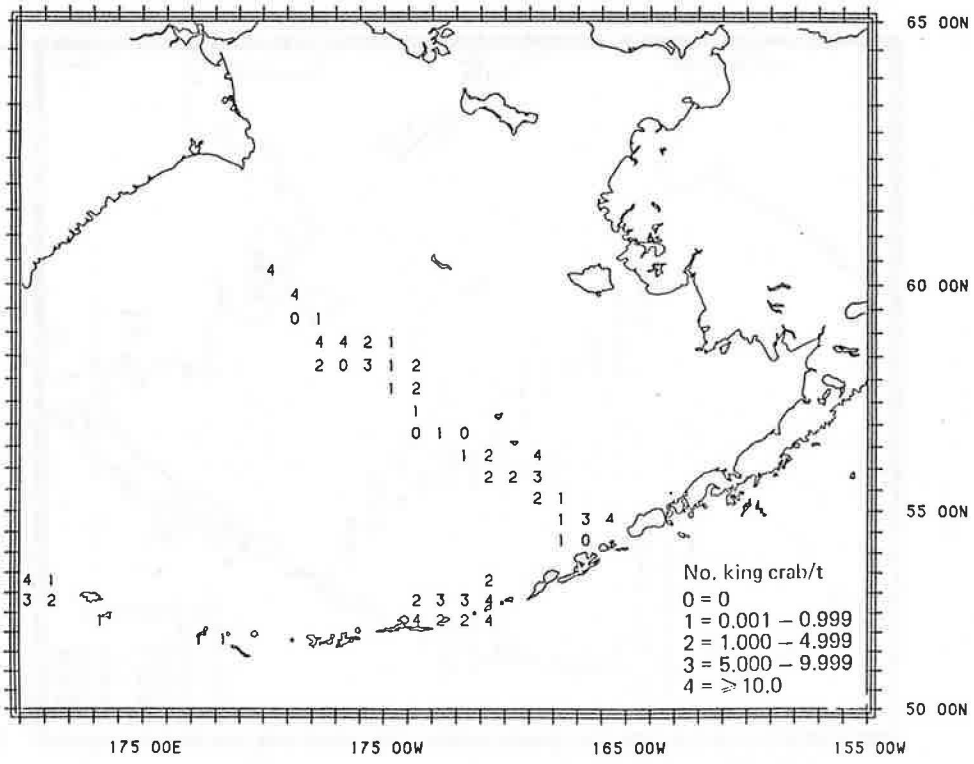


Figure 1.--Average incidence (No./ t) of king crab (Paralithodes and Lithodes spp.) on Japanese small stern trawlers by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1978.



KING CRAB INCIDENCE 1978 THIRD QUARTER SMALL STERN TRAWLERS



KING CRAB INCIDENCE 1978 FOURTH QUARTER SMALL STERN TRAWLERS

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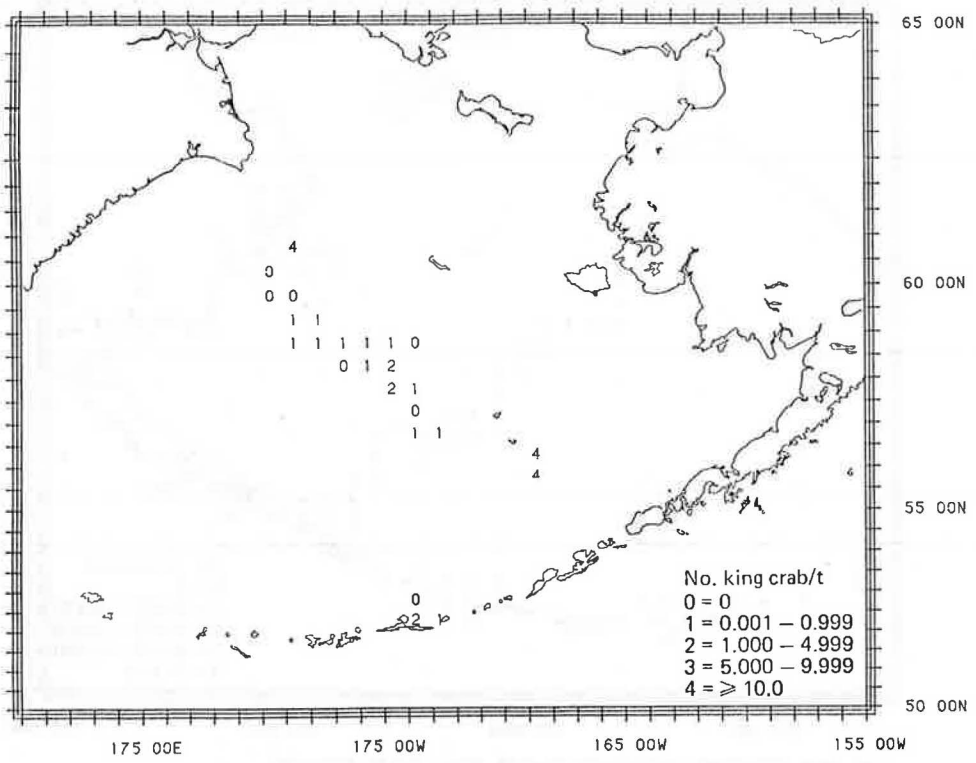
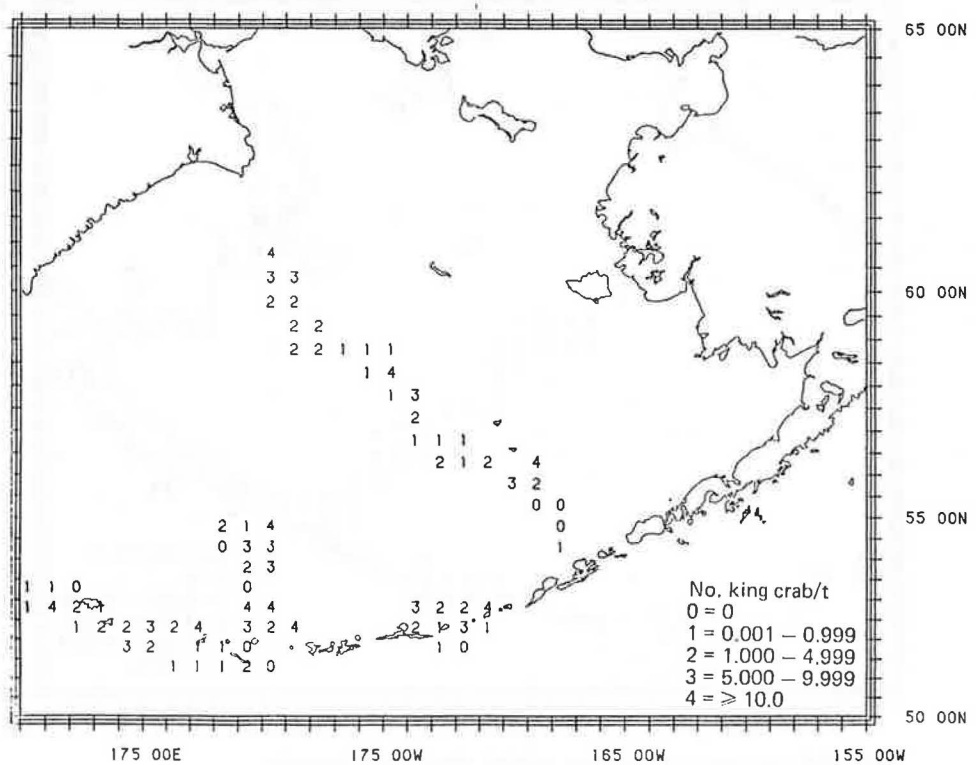
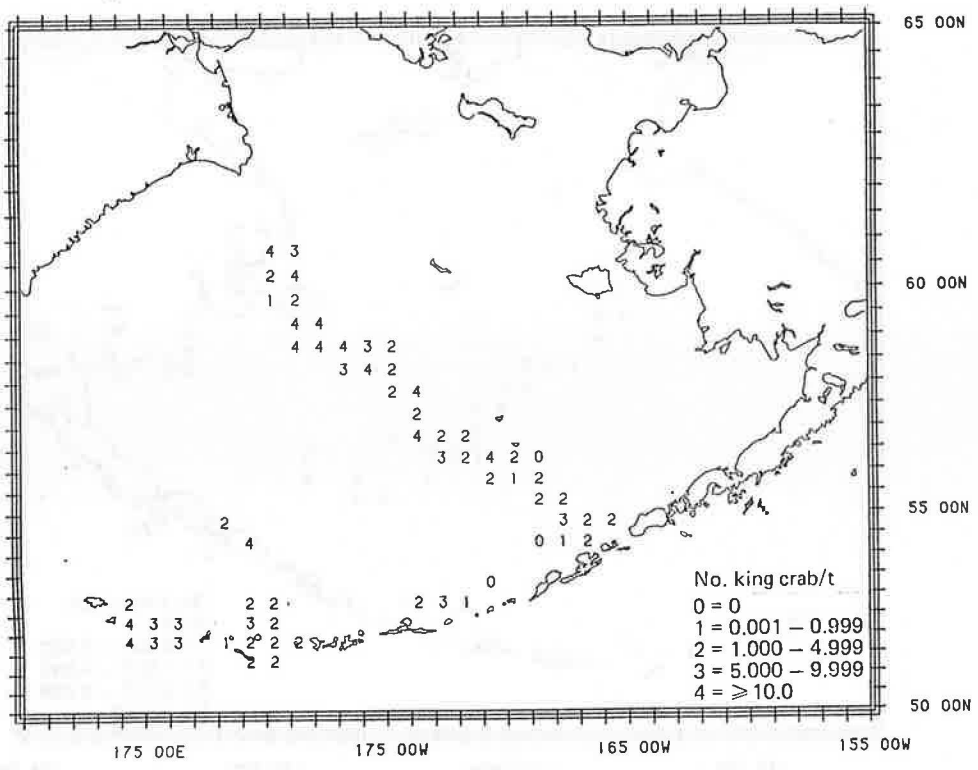


KING CRAB INCIDENCE 1979 FIRST QUARTER SMALL STERN TRAWLERS

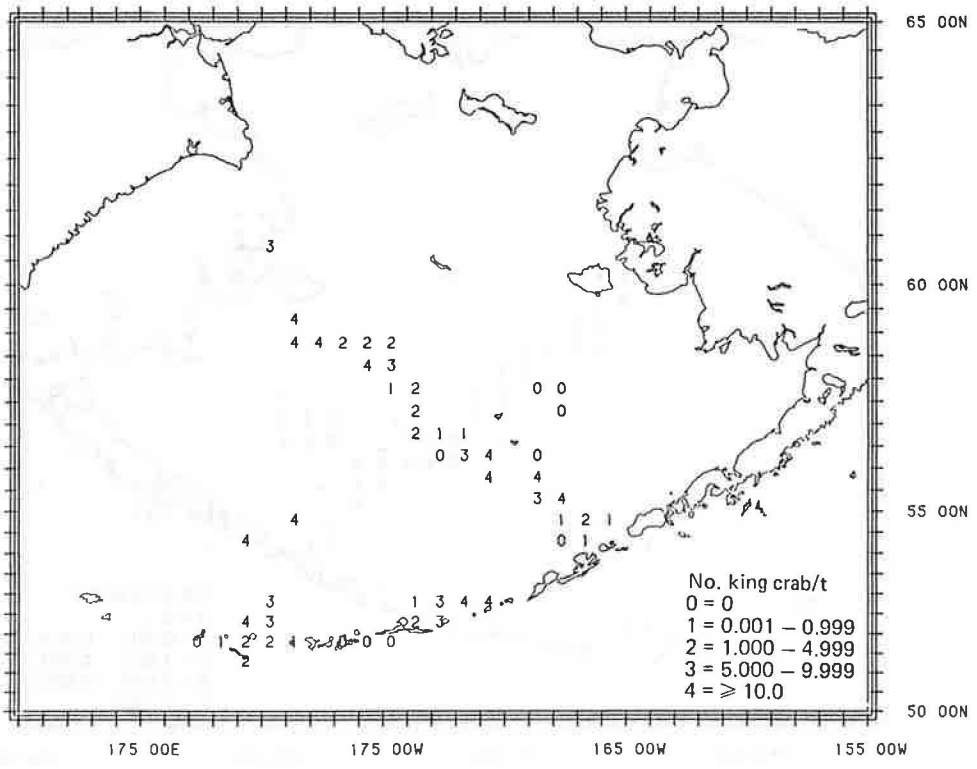


KING CRAB INCIDENCE 1979 SECOND QUARTER SMALL STERN TRAWLERS

Figure 2.--Average incidence (No./ t) of king crab (Paralithodes and Lithodes spp.) on Japanese small stern trawlers by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1979.



KING CRAB INCIDENCE 1979 THIRD QUARTER SMALL STERN TRAWLERS



KING CRAB INCIDENCE 1979 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 2.--Continued.

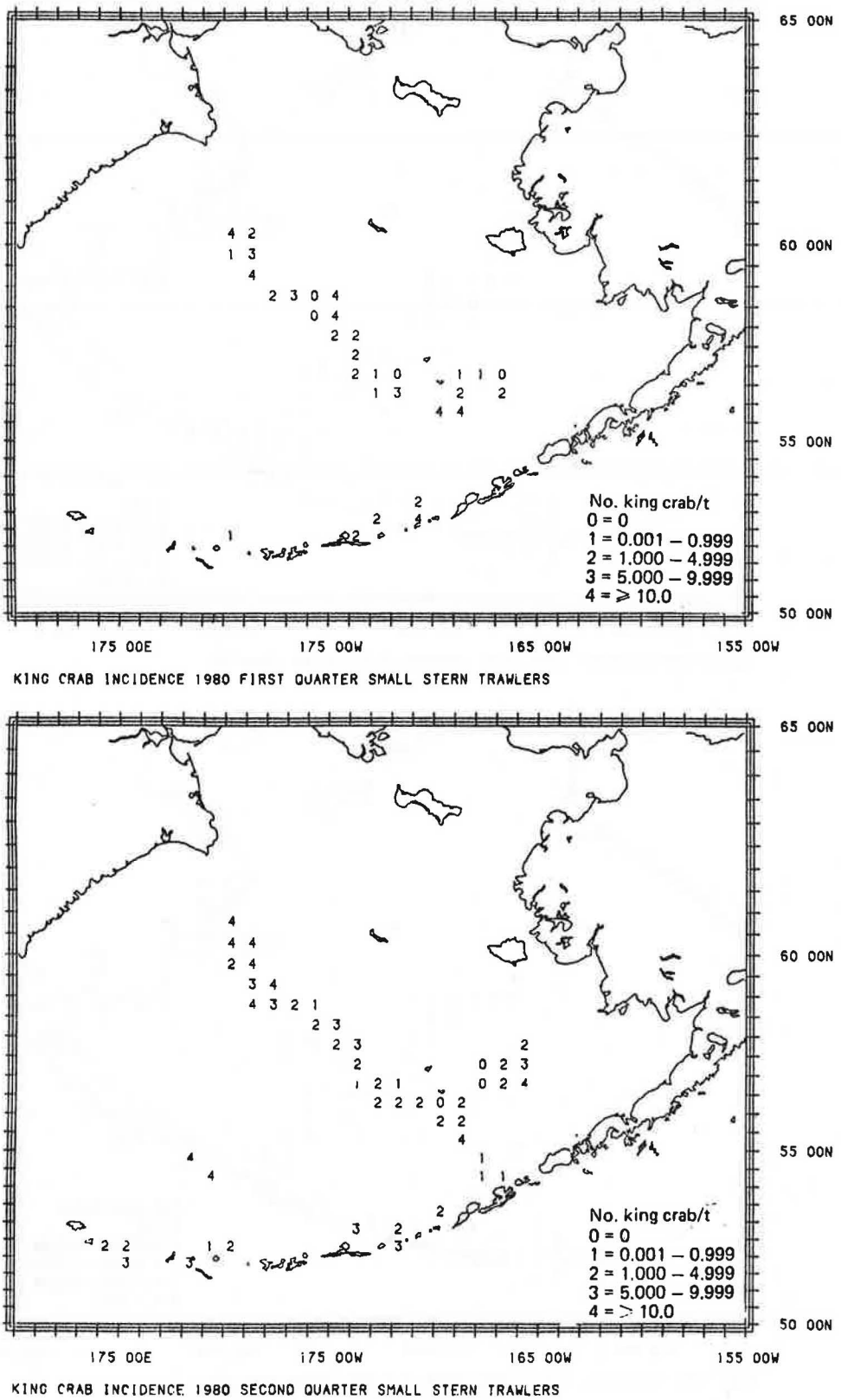
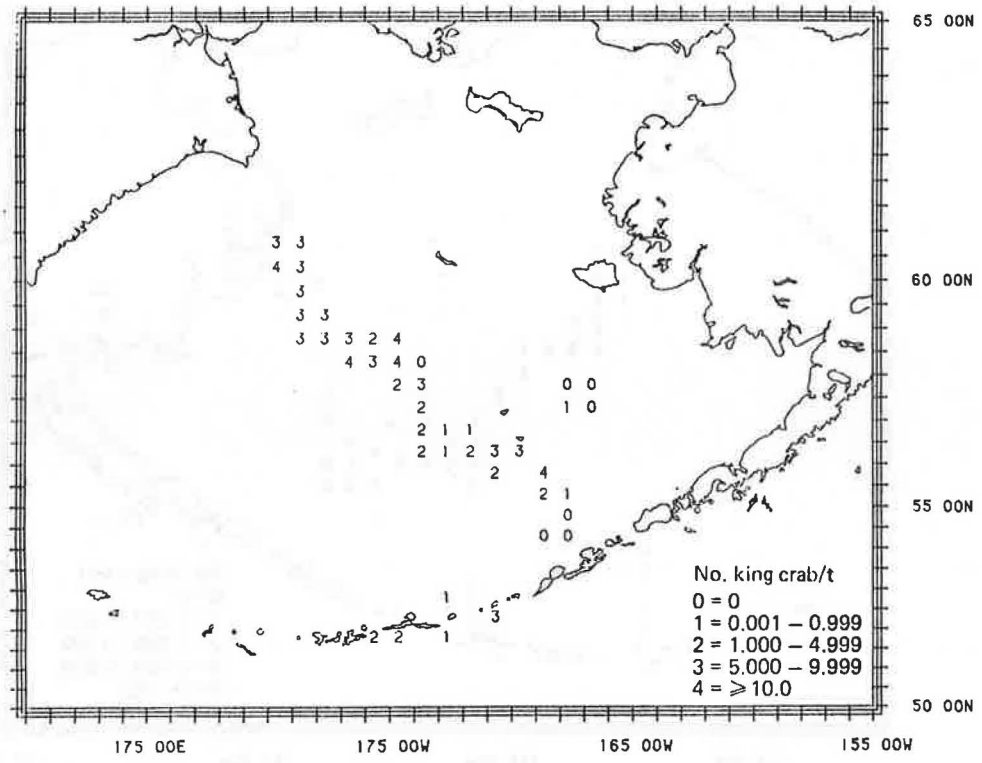
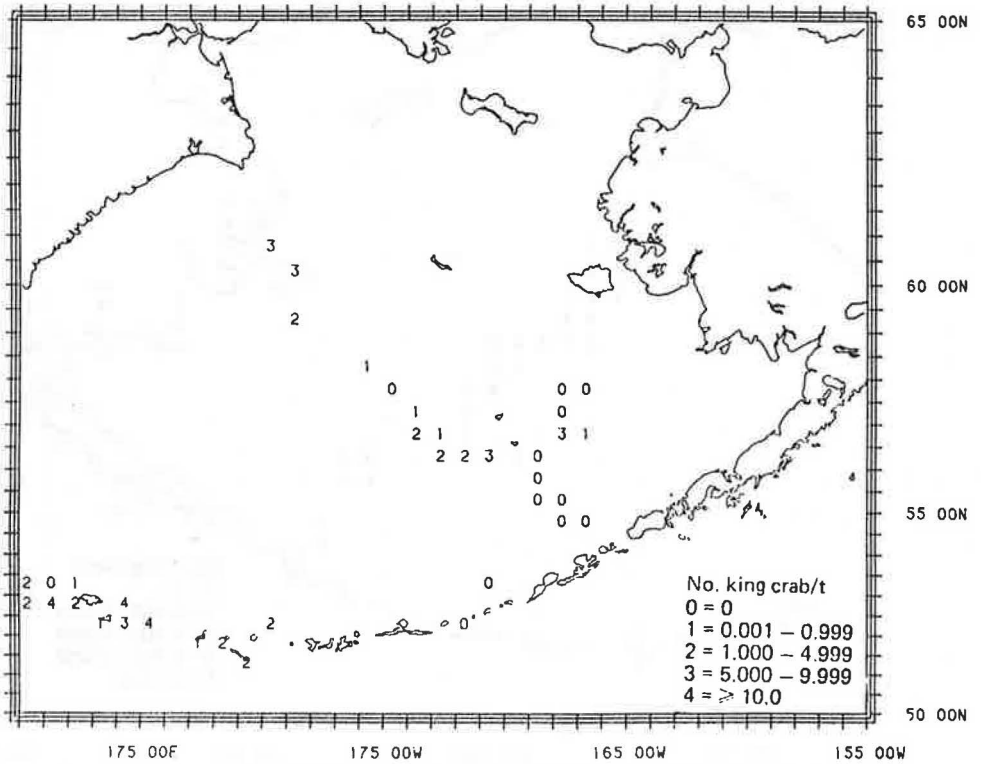


Figure 3.--Average incidence (No./ t) of king crab (Paralithodes and Lithodes spp.) on Japanese small stern trawlers by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1980.



KING CRAB INCIDENCE 1980 THIRD QUARTER SMALL STERN TRAWLERS



KING CRAB INCIDENCE 1980 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 3.--Continued.

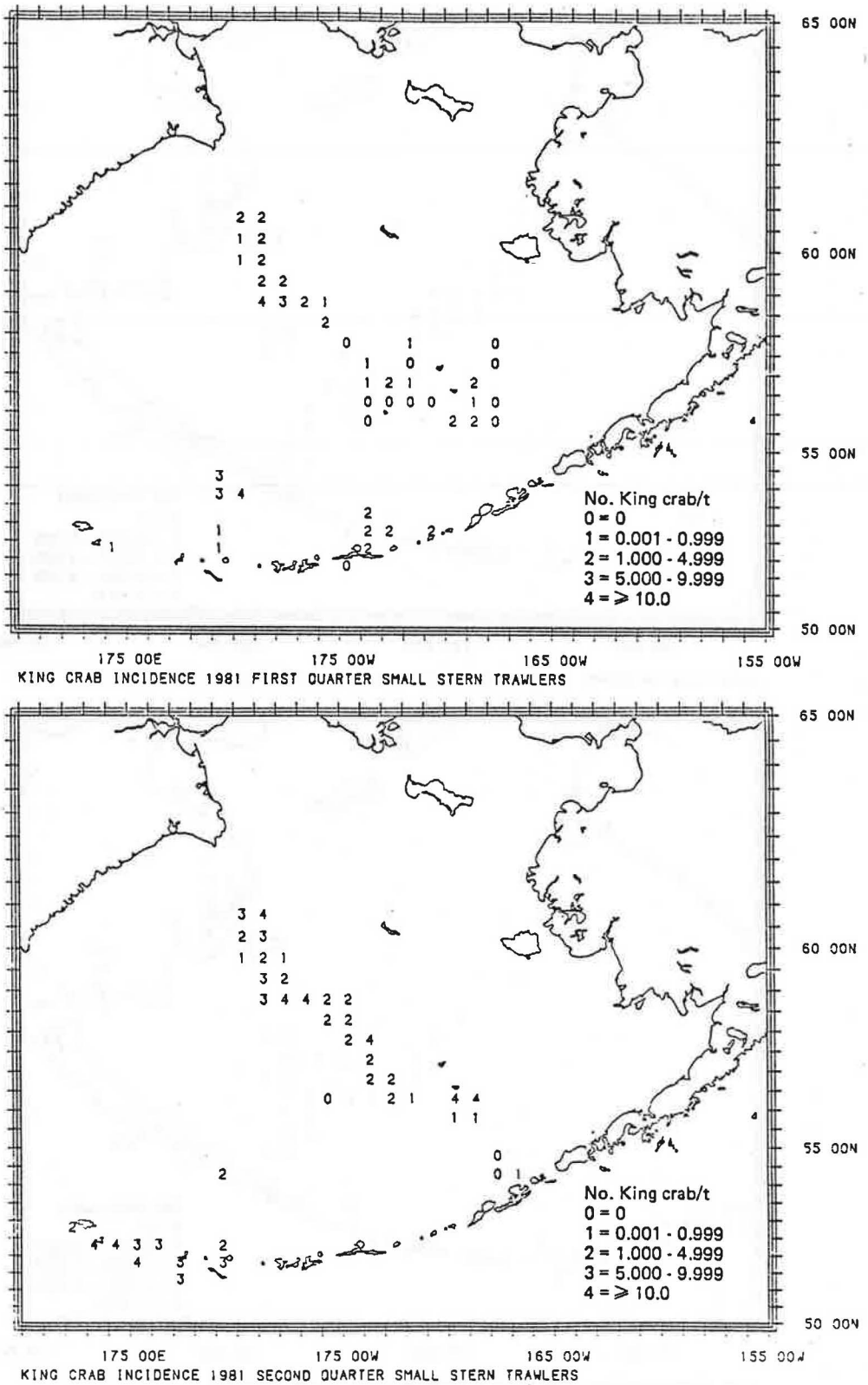
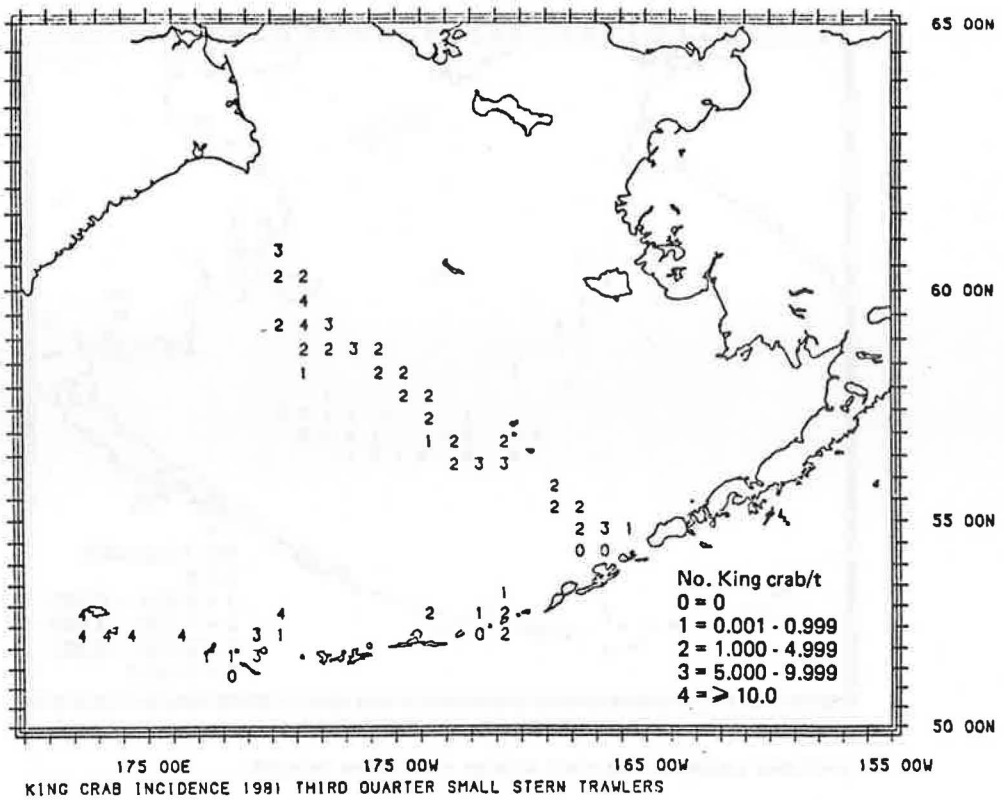
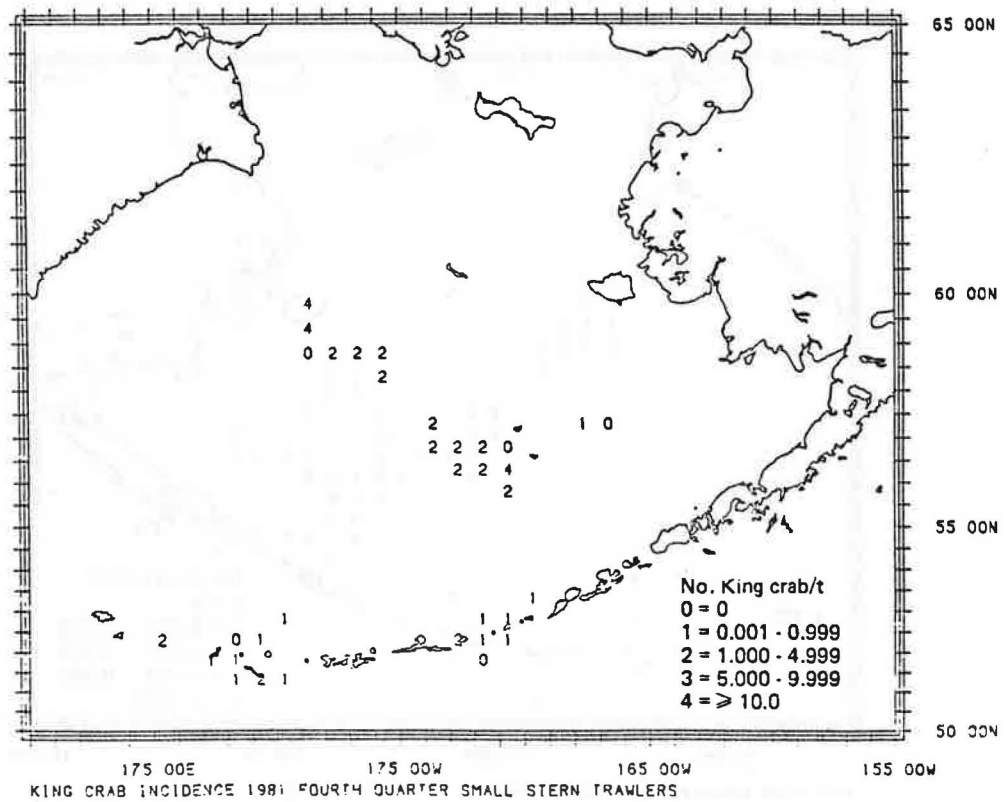


Figure 4.--Average incidence (No./ t) of king crab (Paralithodes and Lithodes spp.) on Japanese small stern trawlers by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1981.

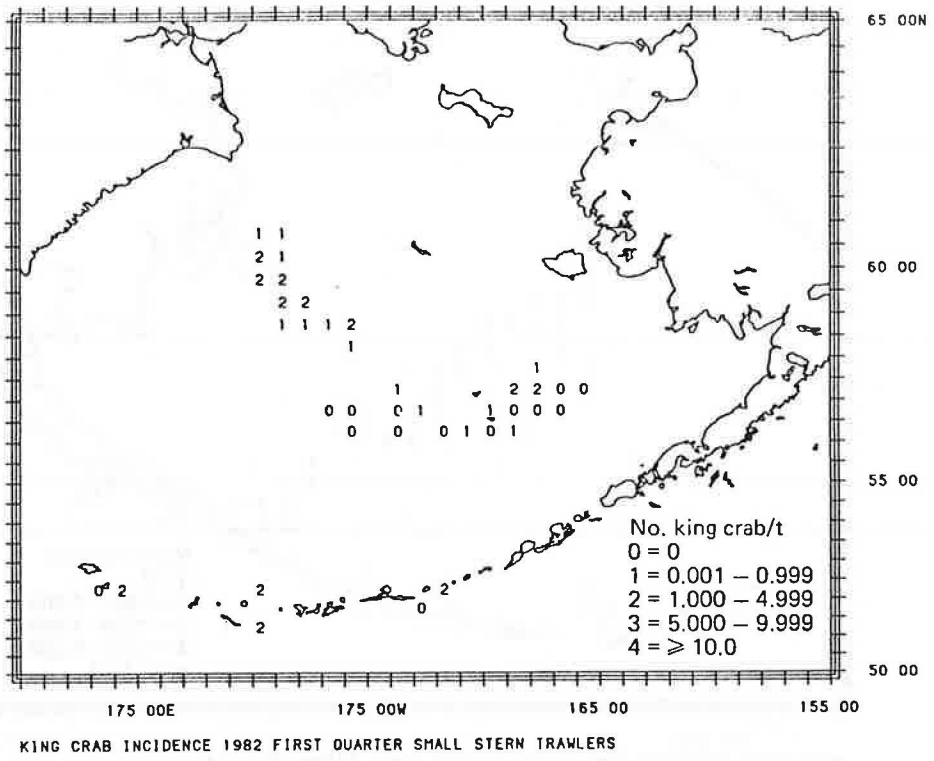


KING CRAB INCIDENCE 1981 THIRD QUARTER SMALL STERN TRAWLERS



KING CRAB INCIDENCE 1981 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 4 .--Continued.



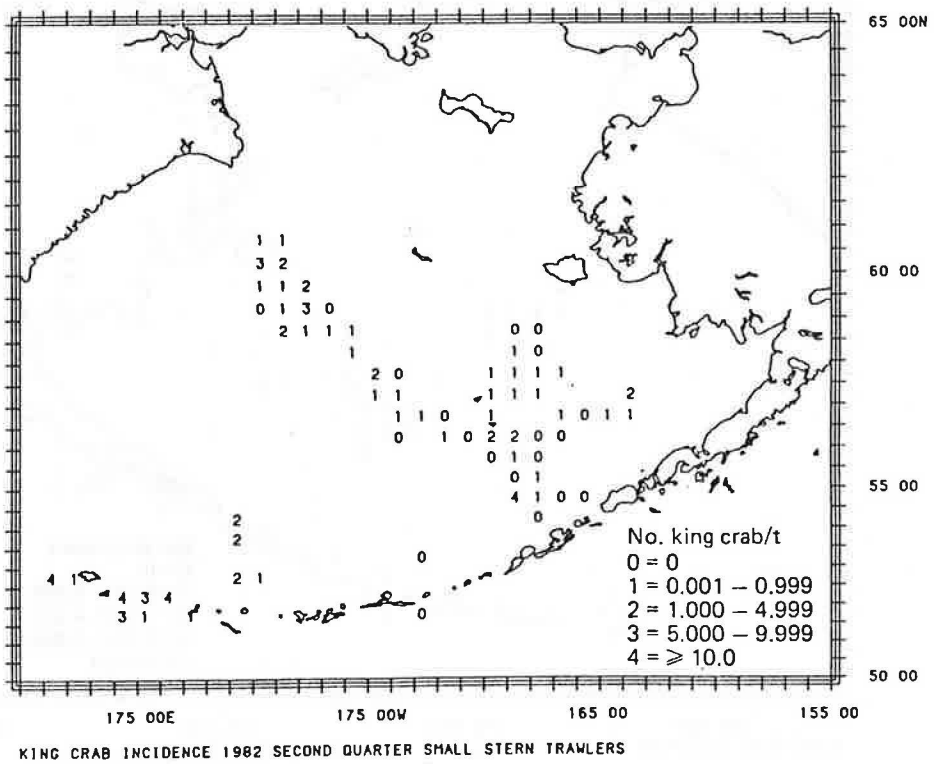
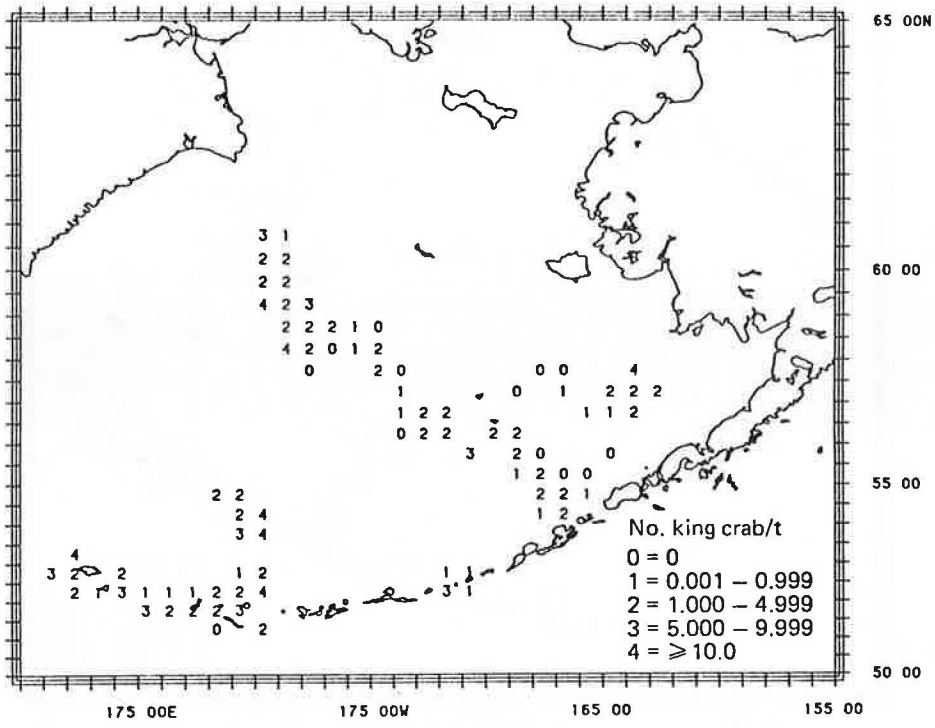
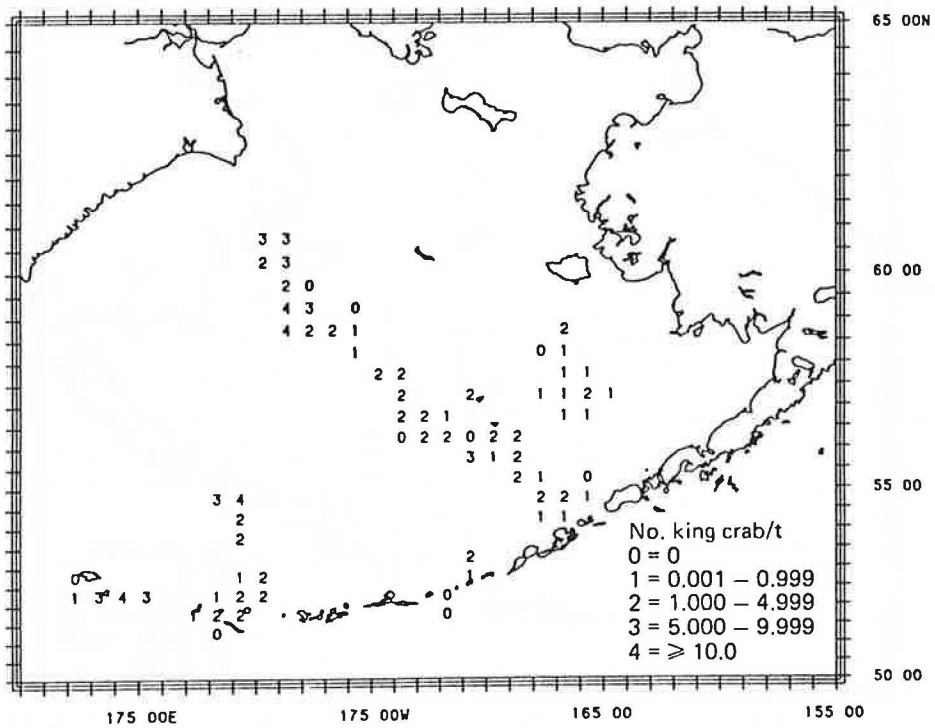


Figure 5.--Average incidence (No./ t) of king crab (Paralithodes and Lithodes spp.) on small stern trawlers (all nations) by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/ Aleutian Islands region, 1982.

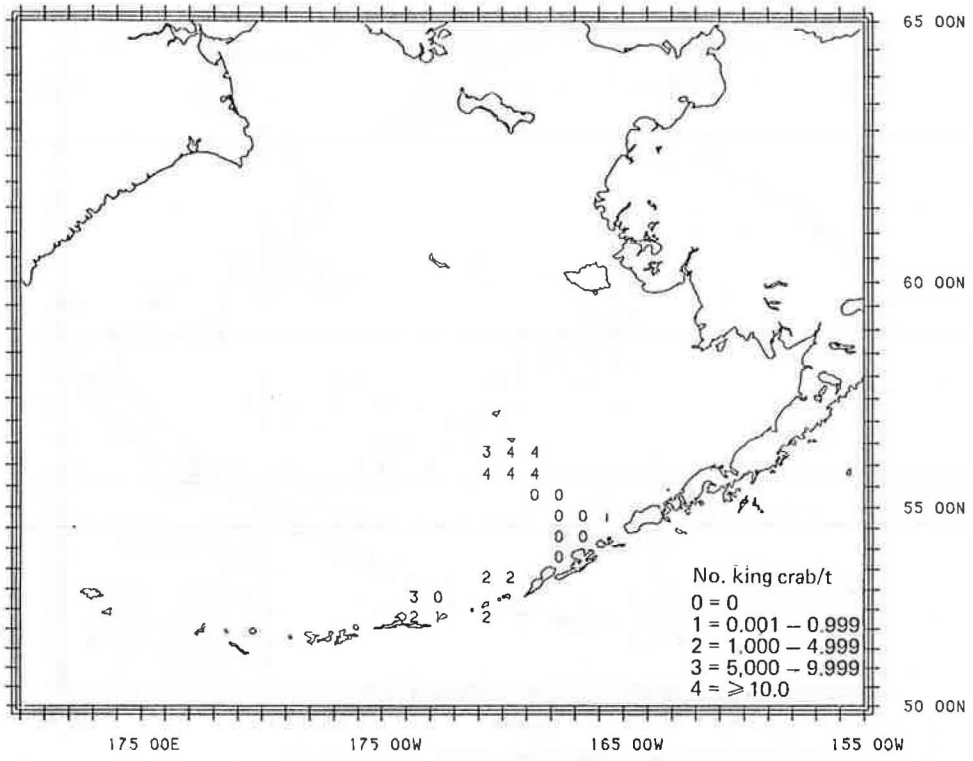


KING CRAB INCIDENCE 1982 THIRD QUARTER SMALL STERN TRAWLERS



KING CRAB INCIDENCE 1982 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 5.--continued.



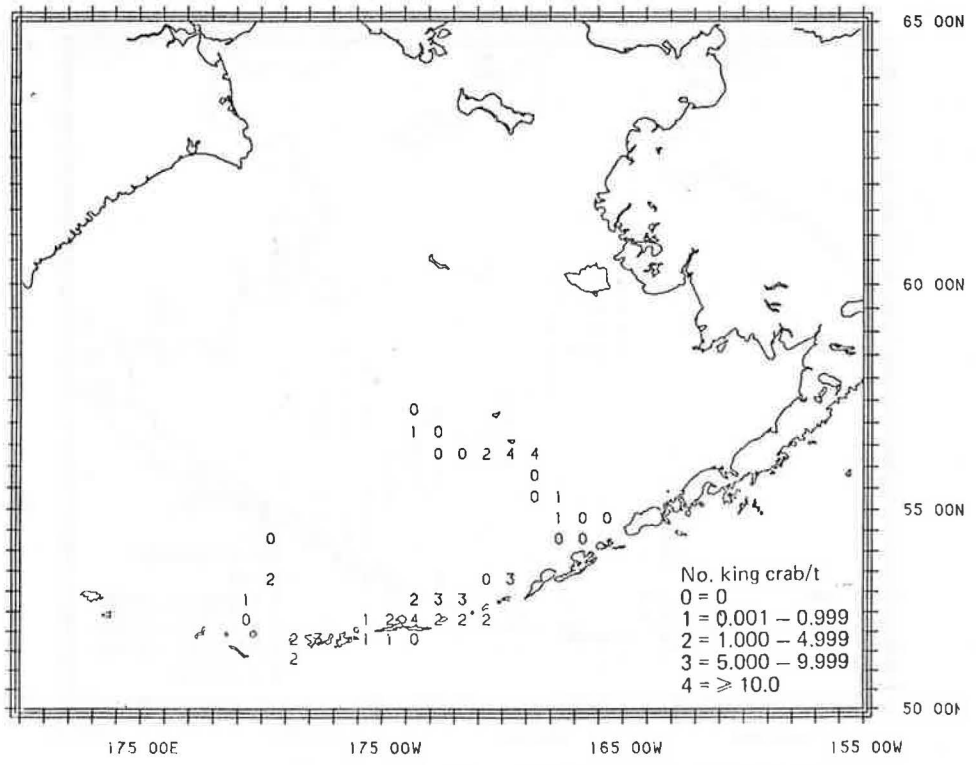
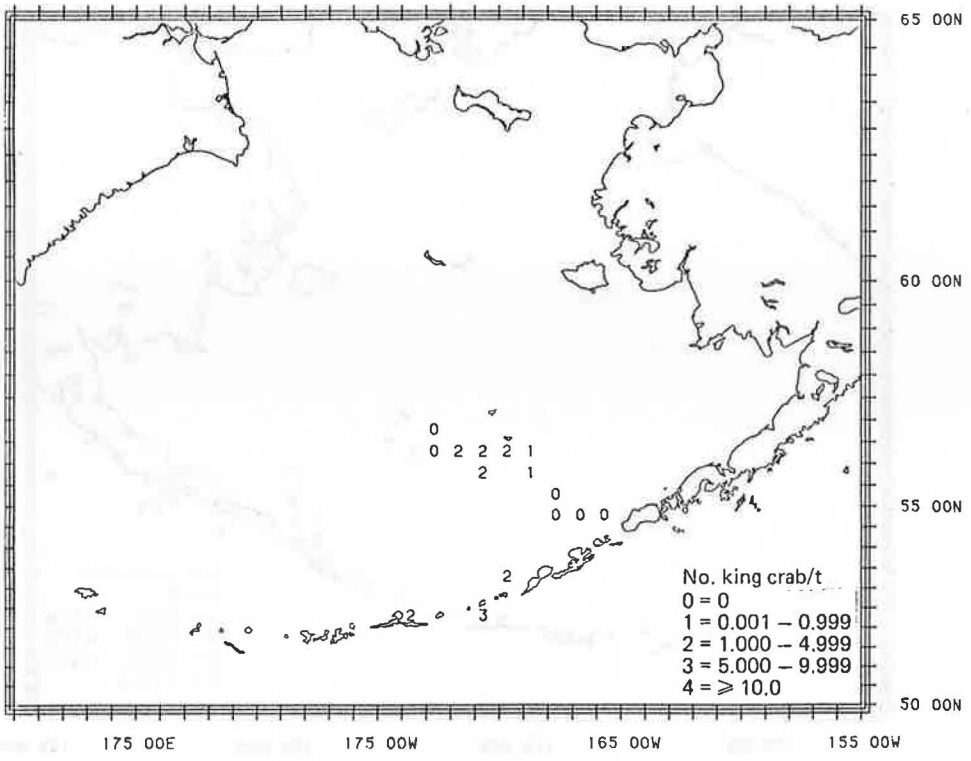
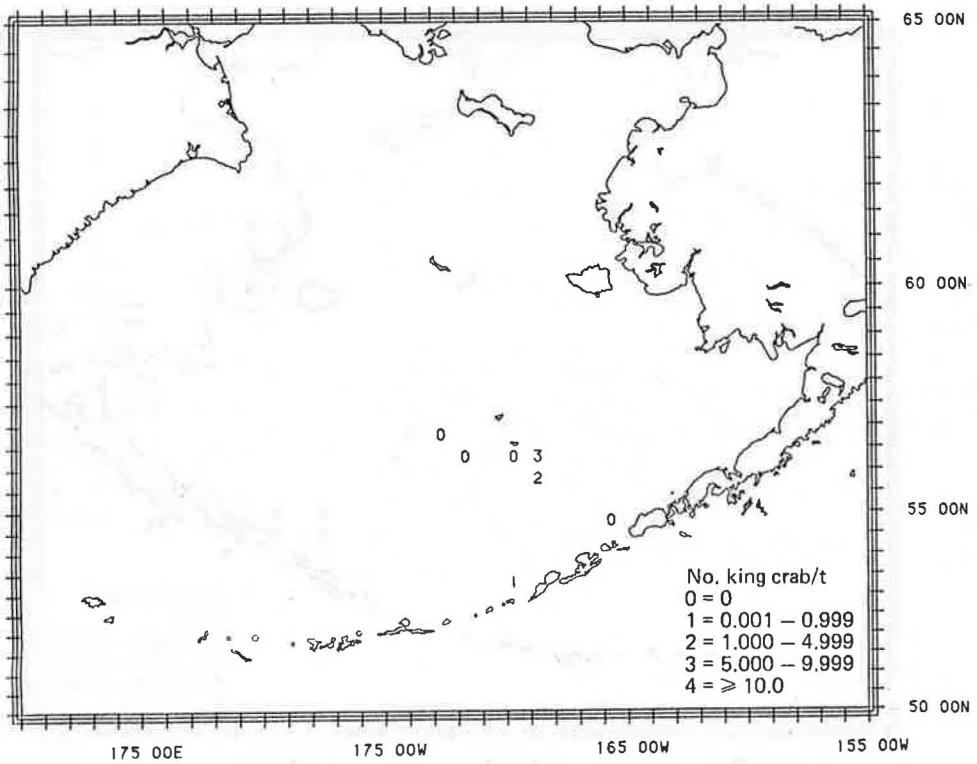


Figure 6 .--Average incidence (No./ t) of king crab (Paralithodes and Lithodes spp.) on Japanese longliners by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1979.

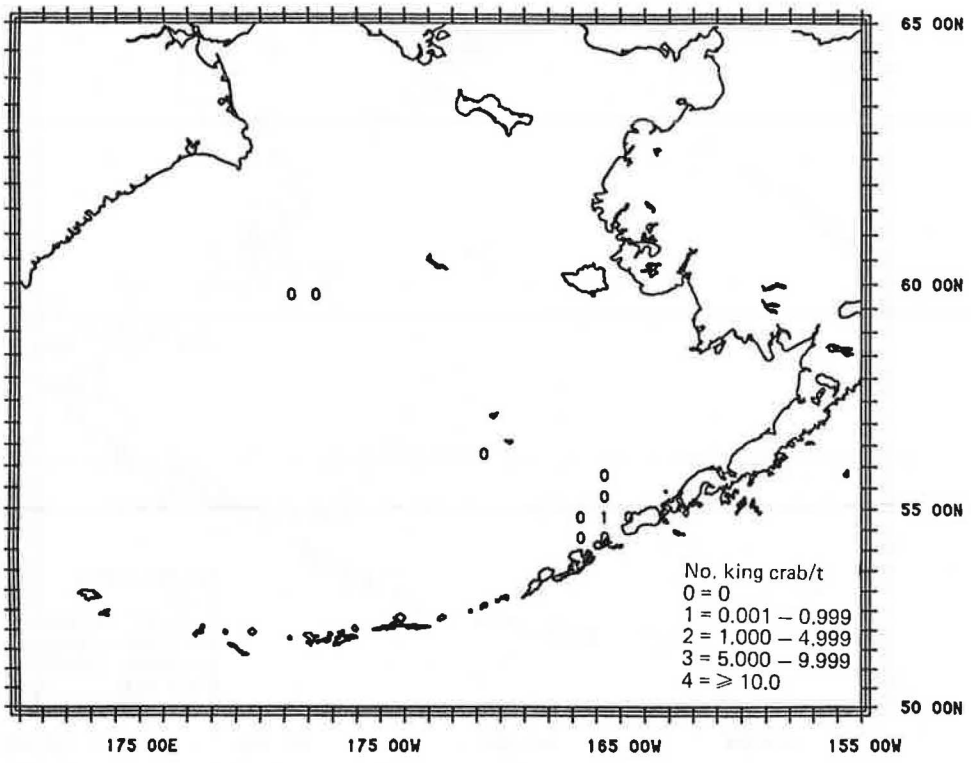


KING CRAB INCIDENCE 1979 THIRD QUARTER LONGLINERS



KING CRAB INCIDENCE 1979 FOURTH QUARTER LONGLINERS

Figure 6 .--Continued.



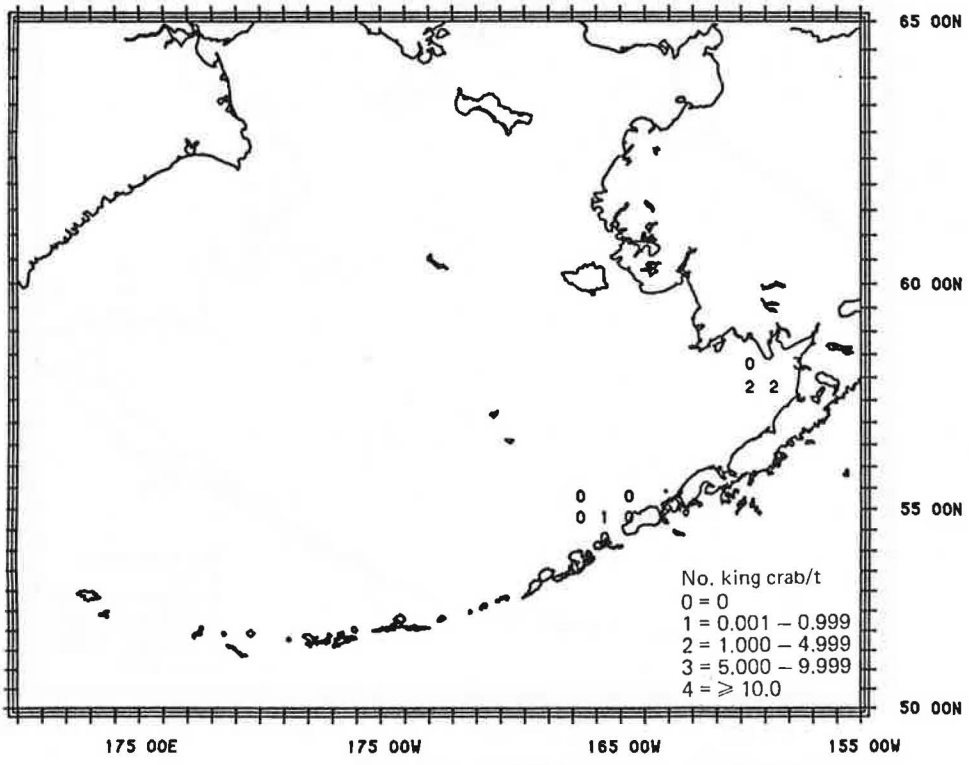


Figure 7.--Average incidence (No./ t) of king crab (Paralithodes and Lithodes spp.) in the joint venture fishery by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1980.

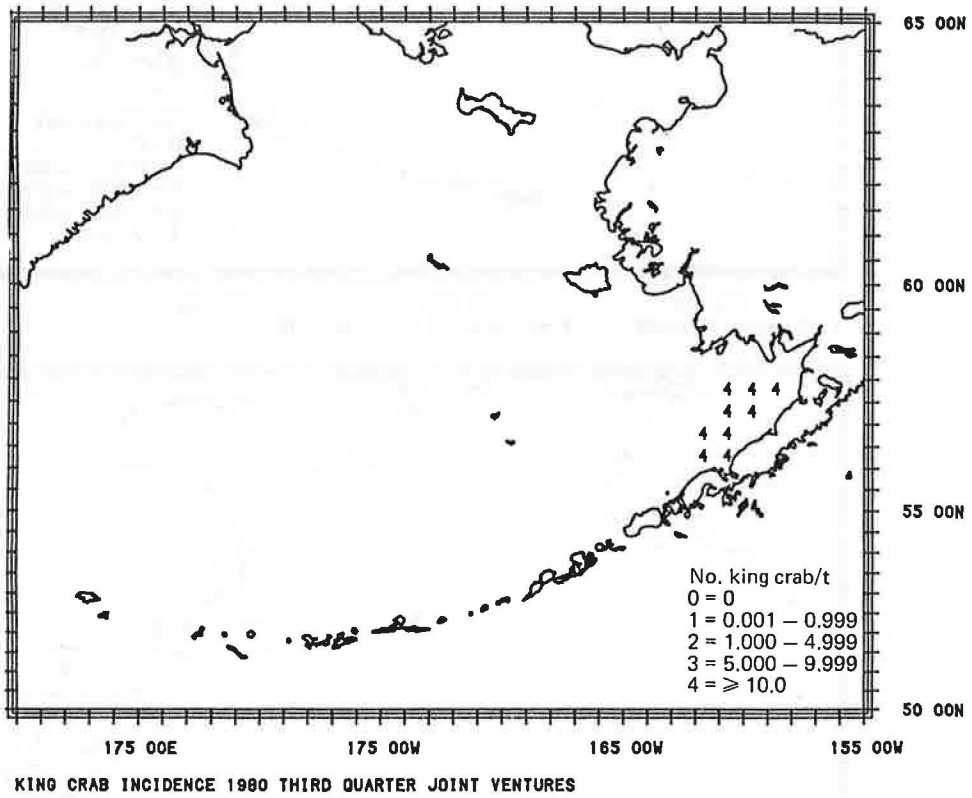


Figure 7 .--Continued.

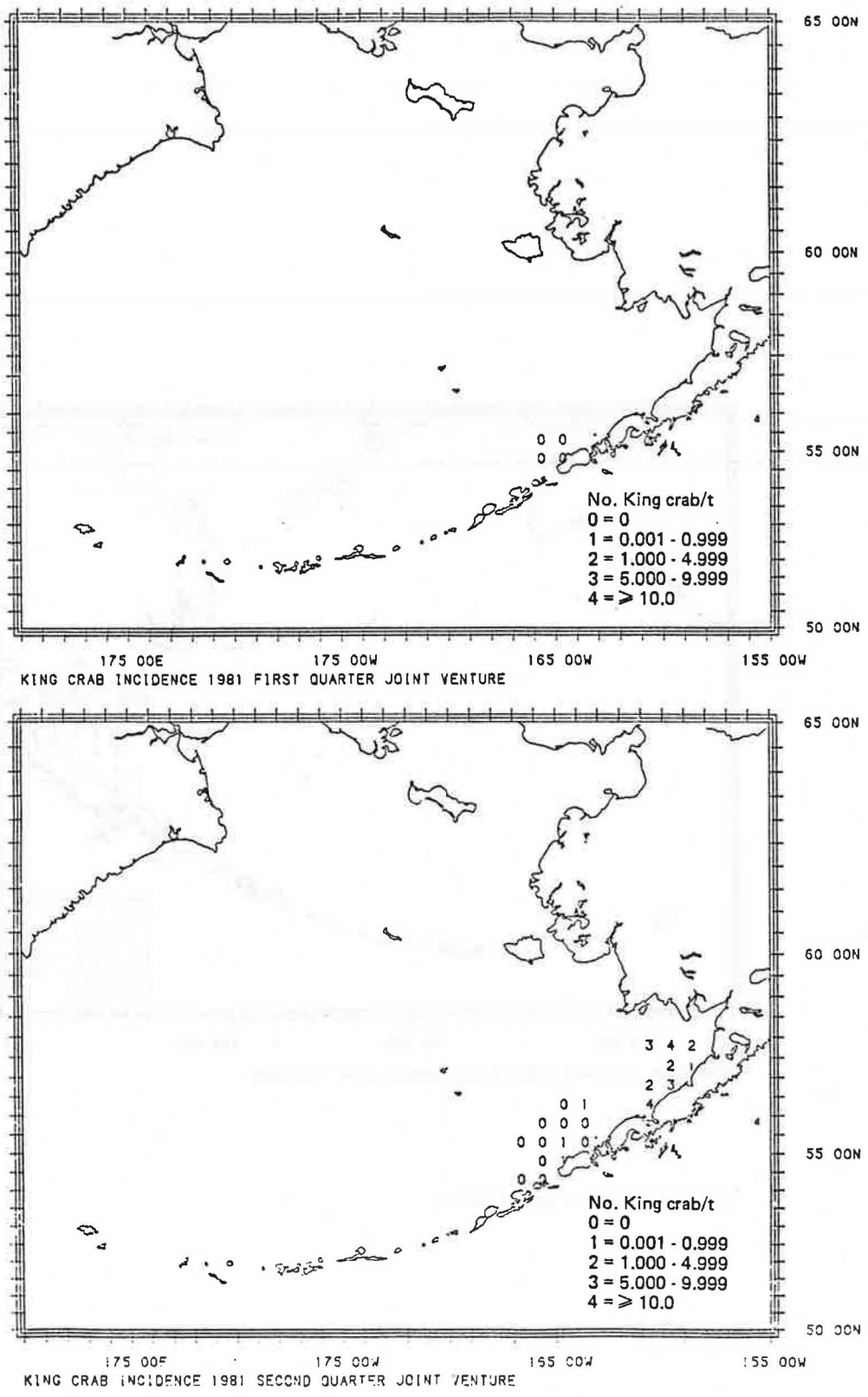
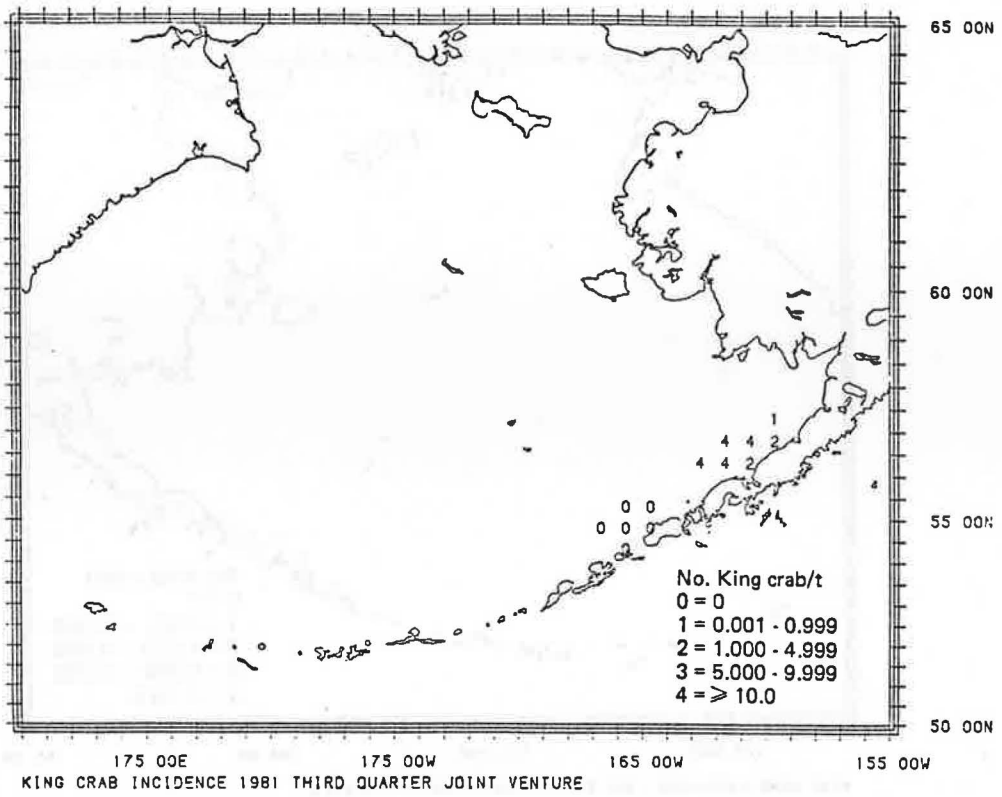
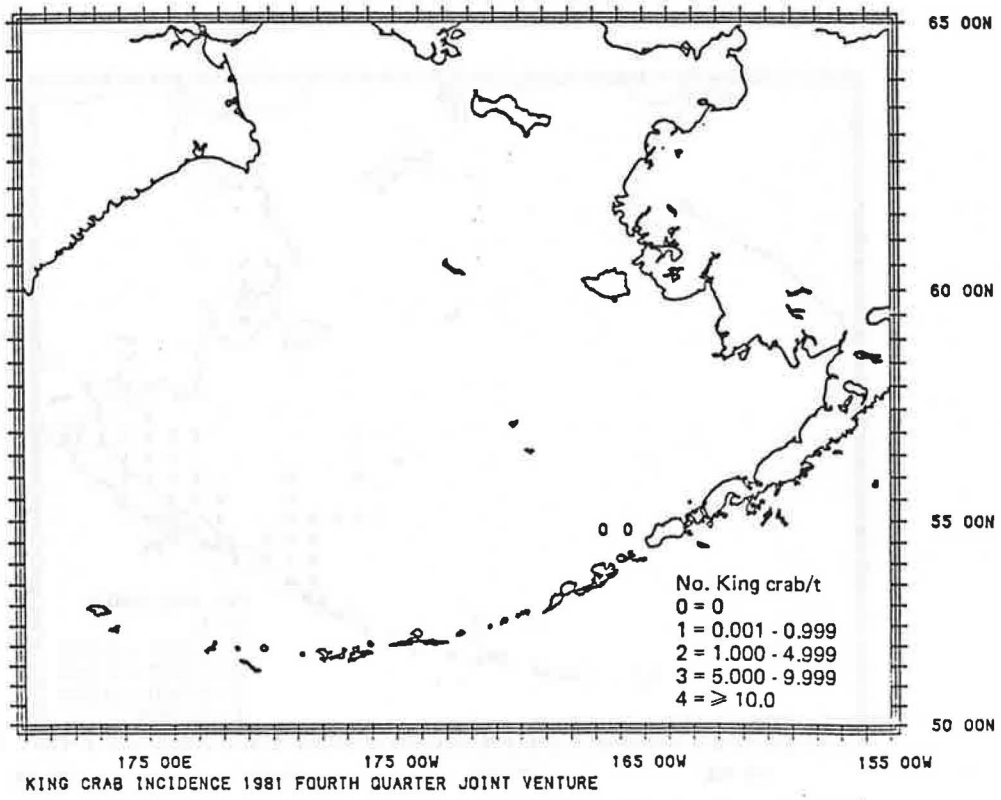


Figure 8 .--Average incidence (No./ t) of king crab (Paralithodes and Lithodes spp.) in the joint venture fishery by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1981.

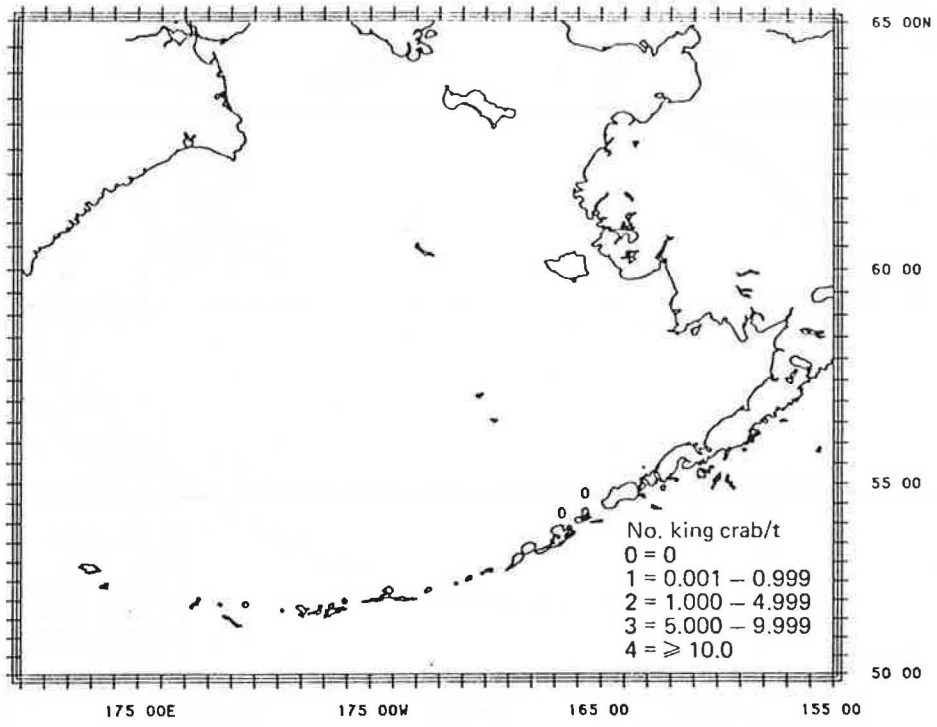


KING CRAB INCIDENCE 1981 THIRD QUARTER JOINT VENTURE



KING CRAB INCIDENCE 1981 FOURTH QUARTER JOINT VENTURE

Figure 8.--Continued.



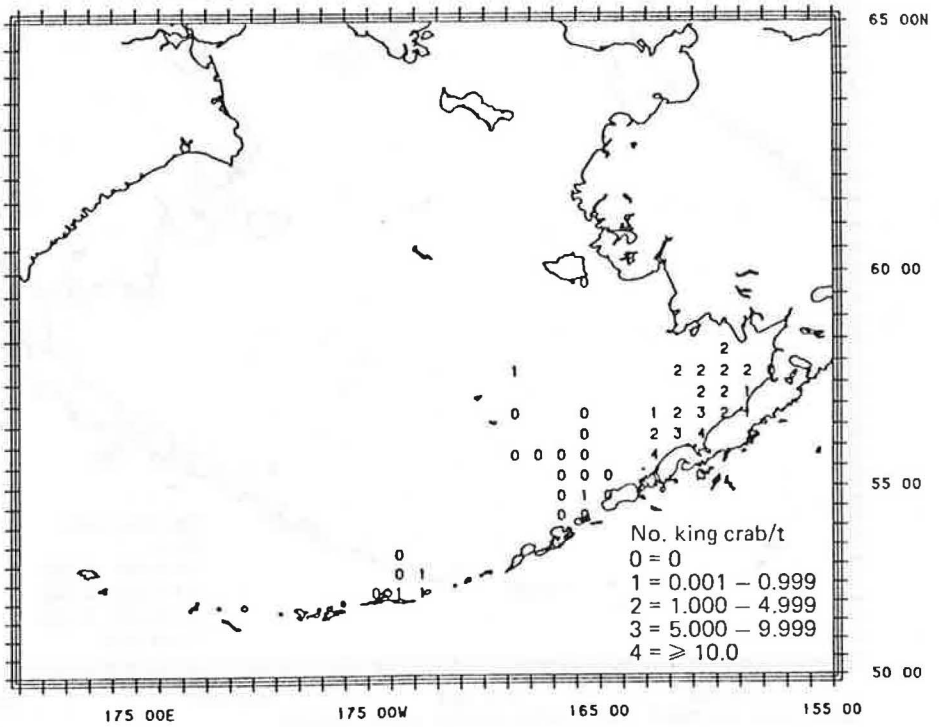
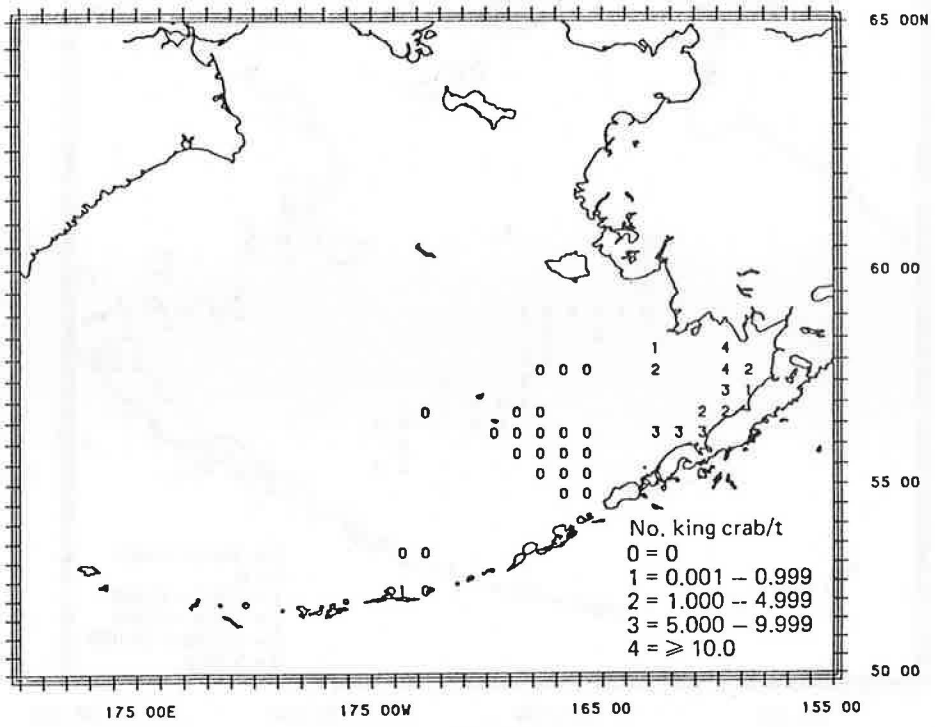
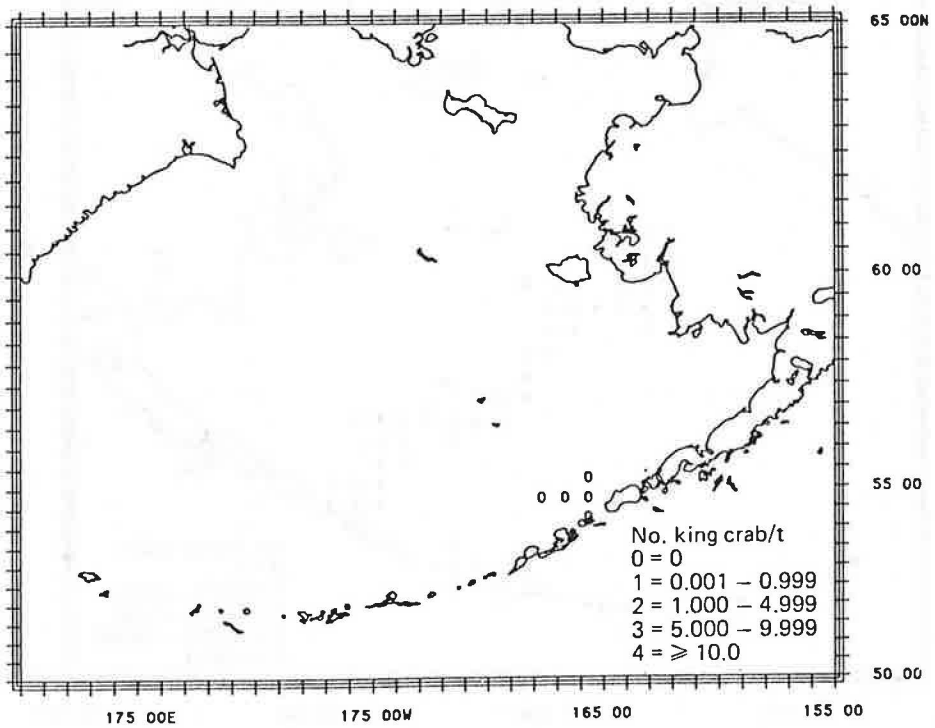


Figure 9.--Average incidence (No./ t) of king crab (Paralithodes and Lithodes spp.) in the joint venture fishery by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1982.



KING CRAB INCIDENCE 1982 THIRD QUARTER JOINT VENTURES



KING CRAB INCIDENCE 1982 FOURTH QUARTER JOINT VENTURES

Figure 9.--continued.

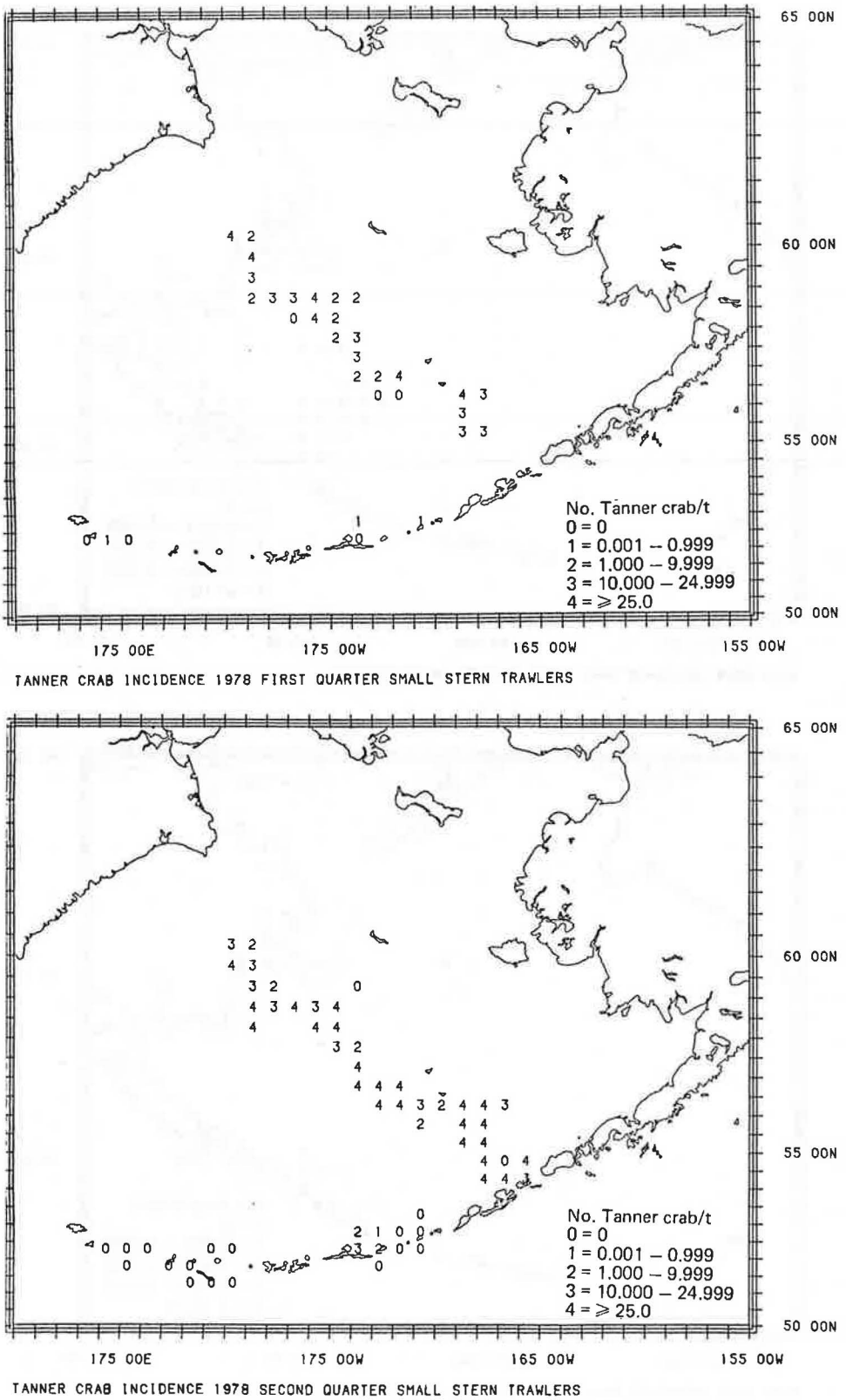
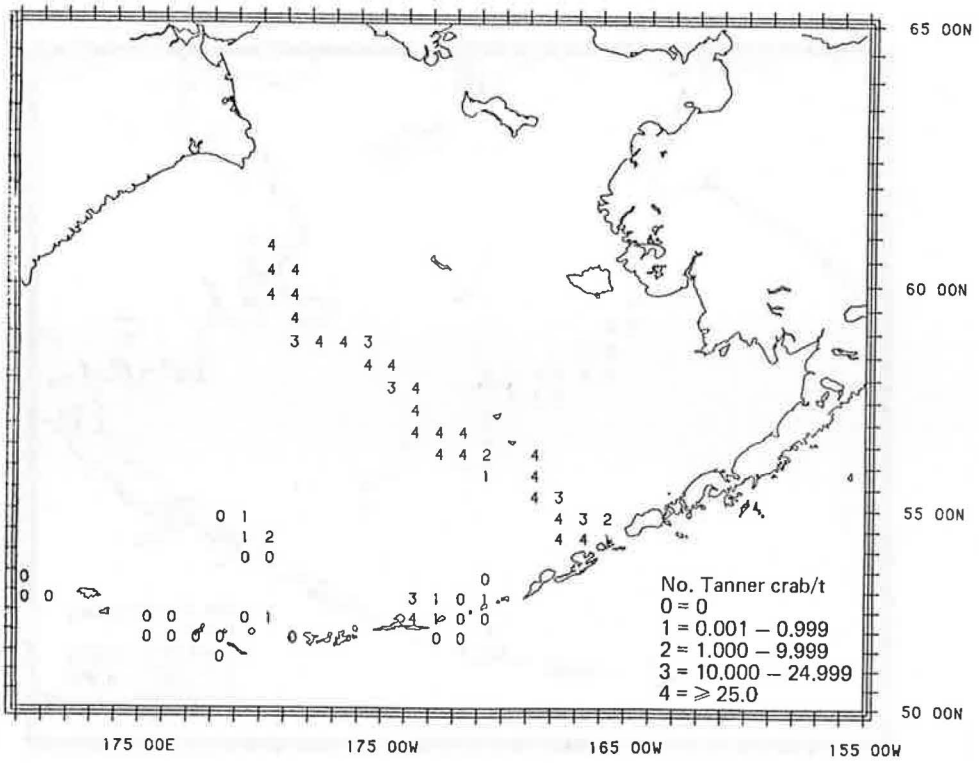
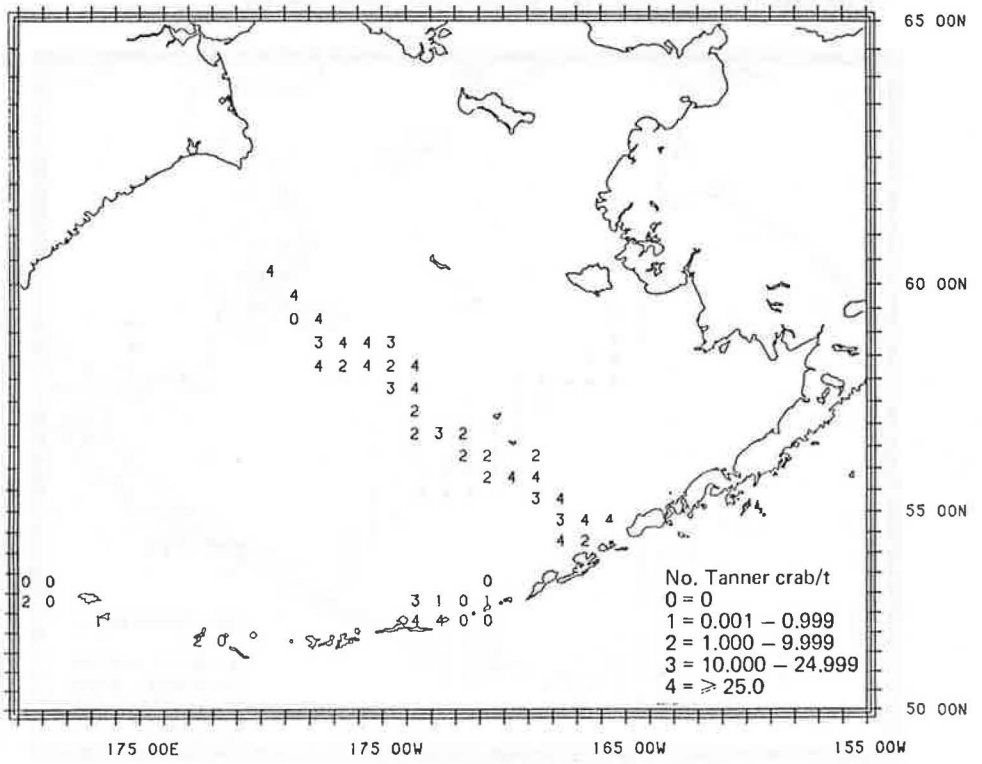


Figure 10.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on Japanese small stern trawlers by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1978.

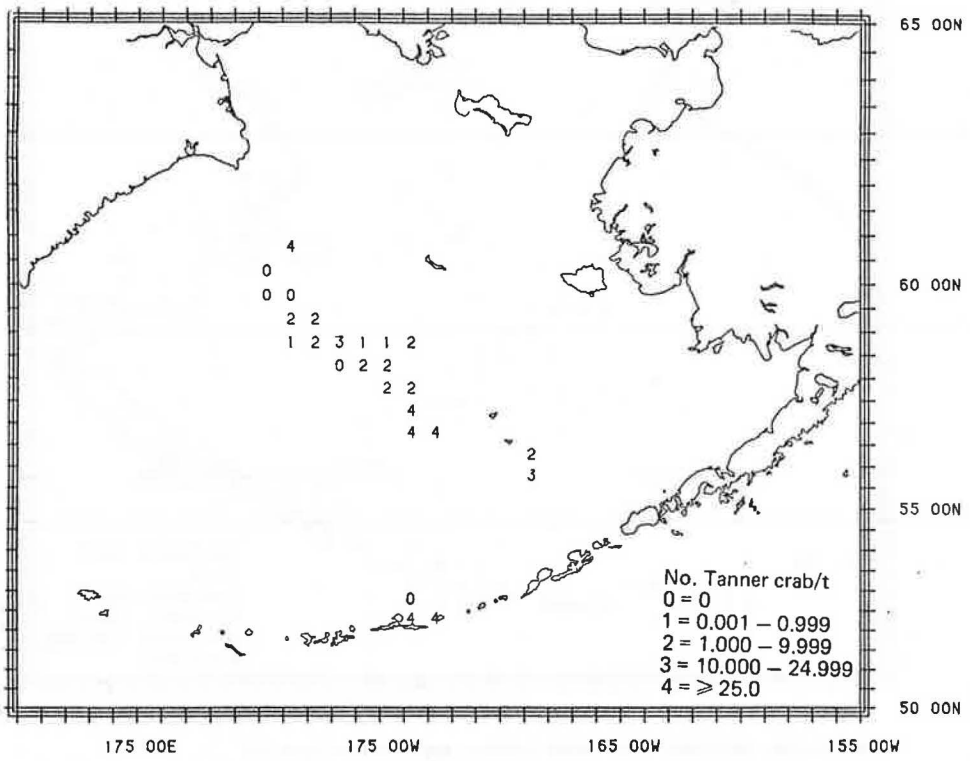


TANNER CRAB INCIDENCE 1978 THIRD QUARTER SMALL STERN TRAWLERS



TANNER CRAB INCIDENCE 1978 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 10.--Continued.



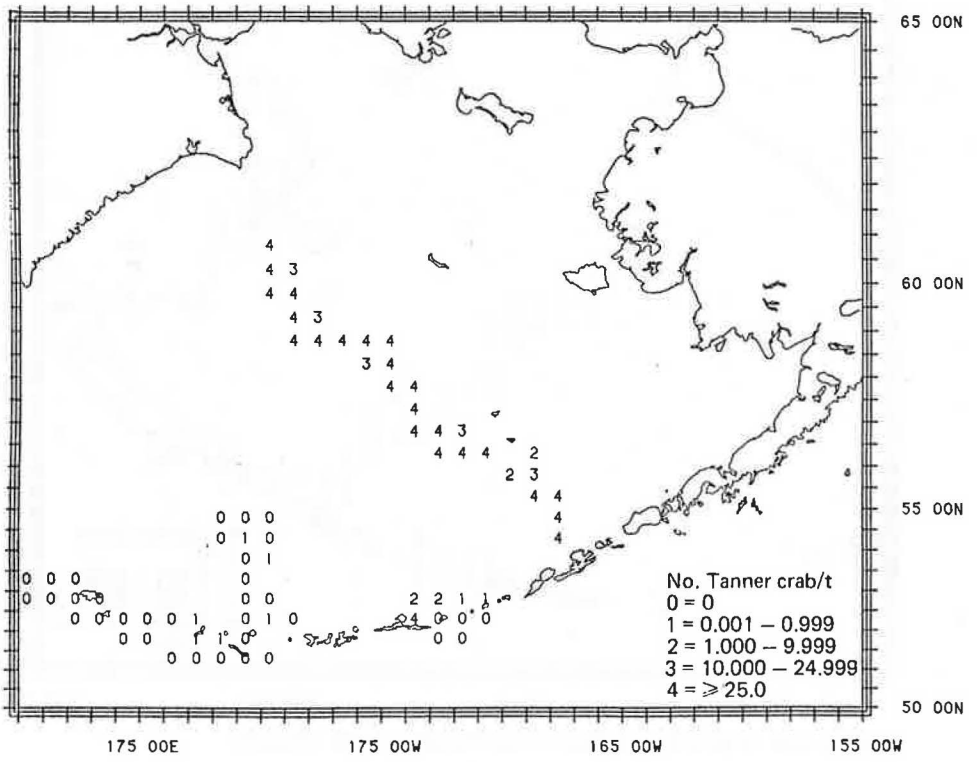
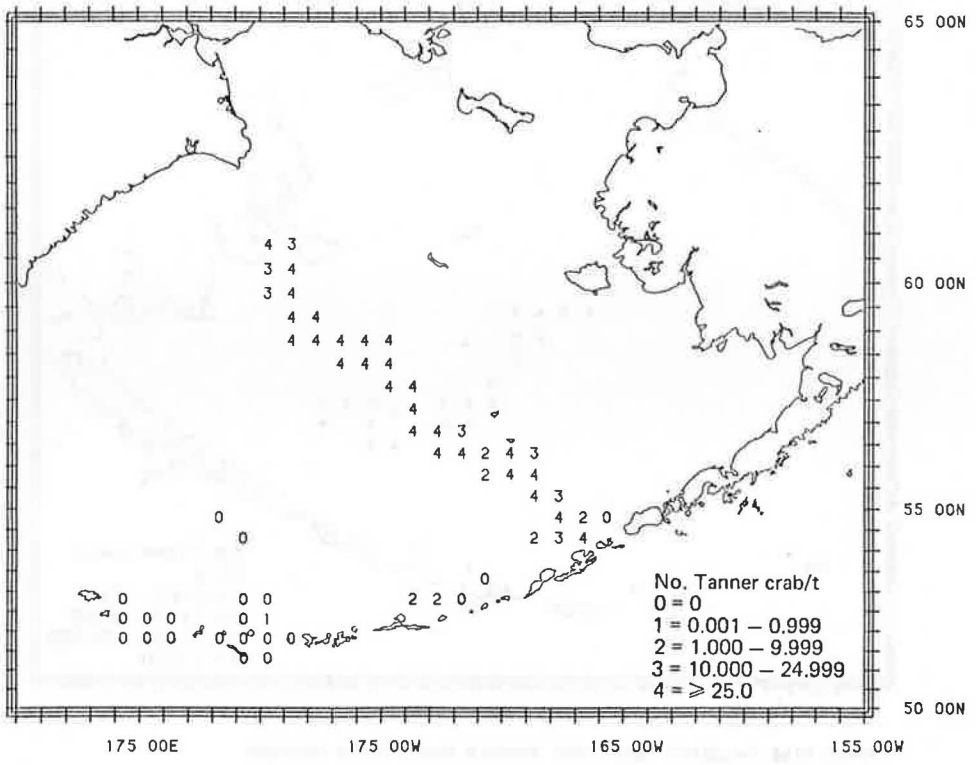
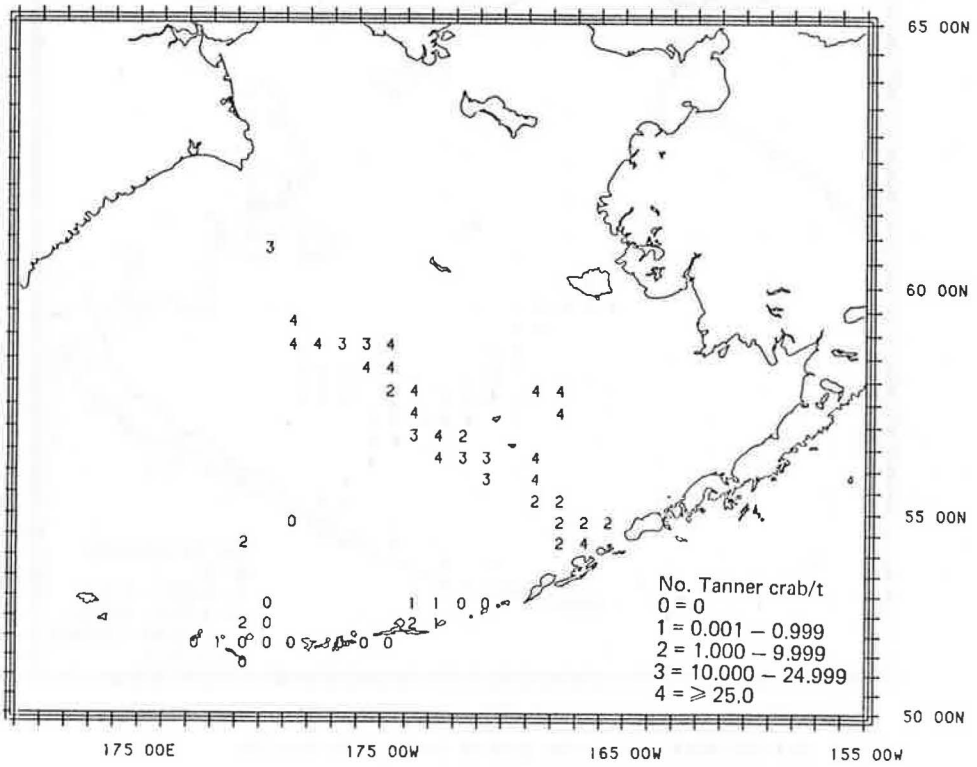


Figure 11.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on Japanese small stern trawlers by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1979.



TANNER CRAB INCIDENCE 1979 THIRD QUARTER SMALL STERN TRAWLERS



TANNER CRAB INCIDENCE 1979 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 11.--Continued.

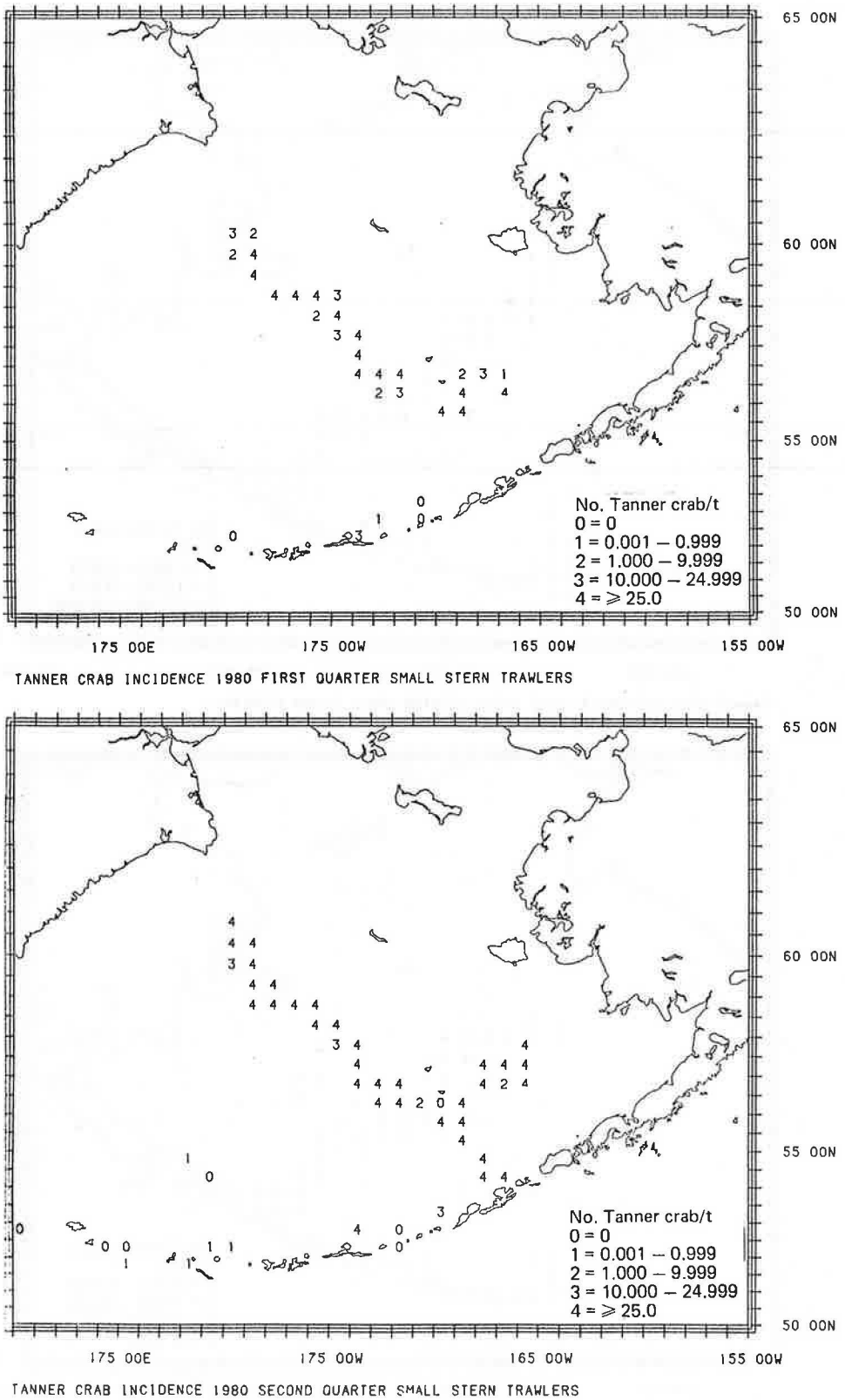
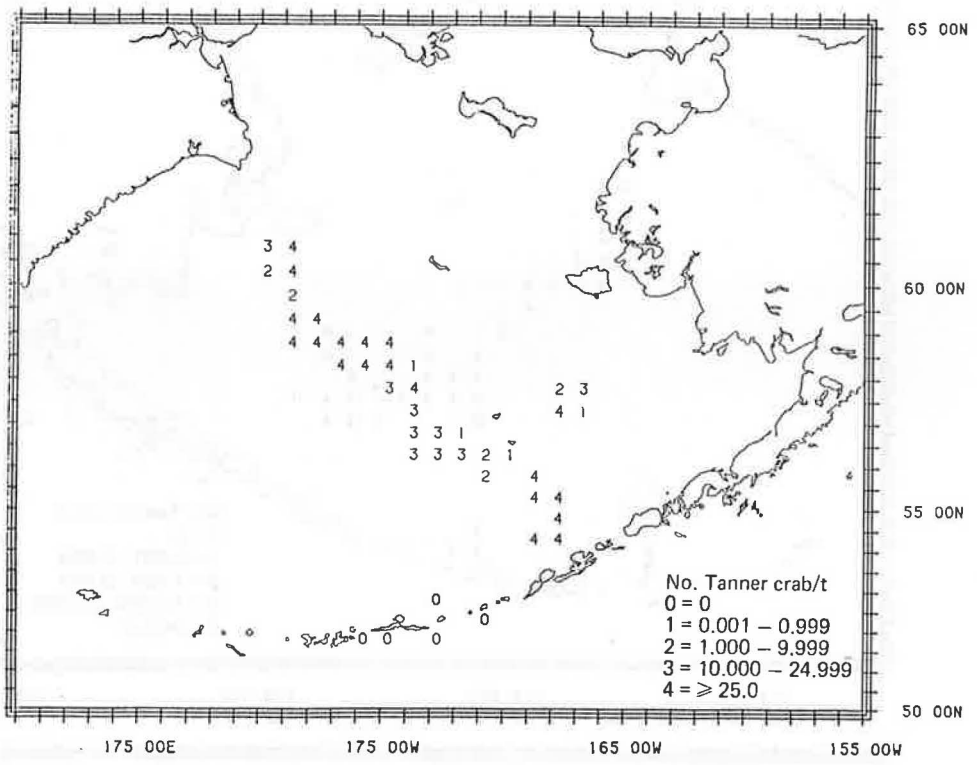
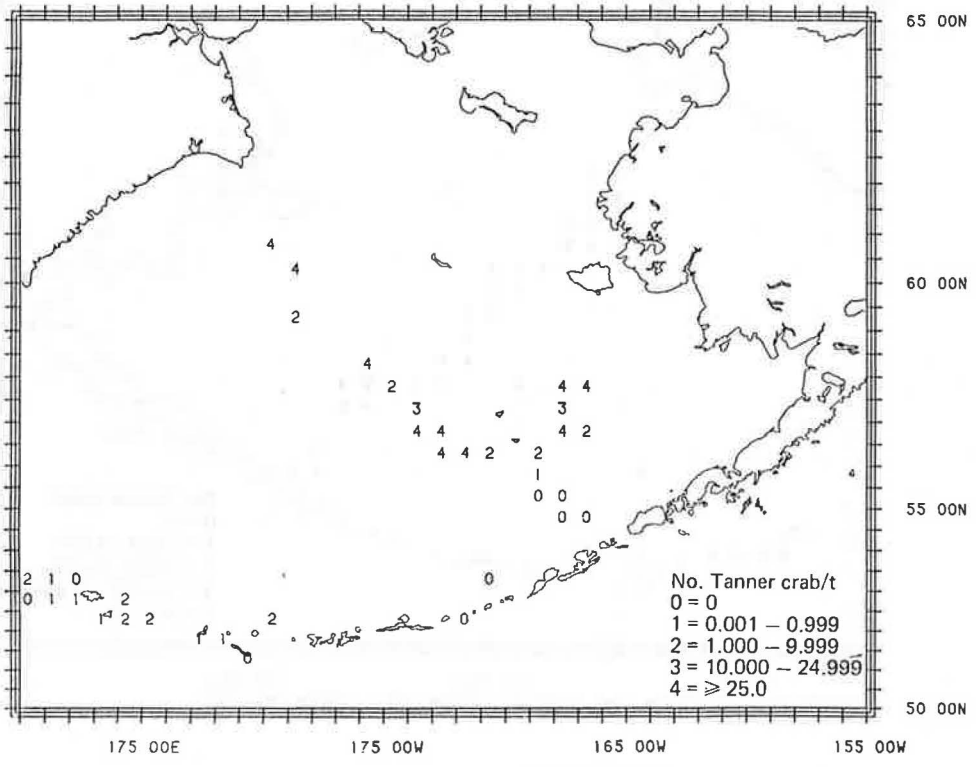


Figure 12.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on Japanese small stern trawlers by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1980.

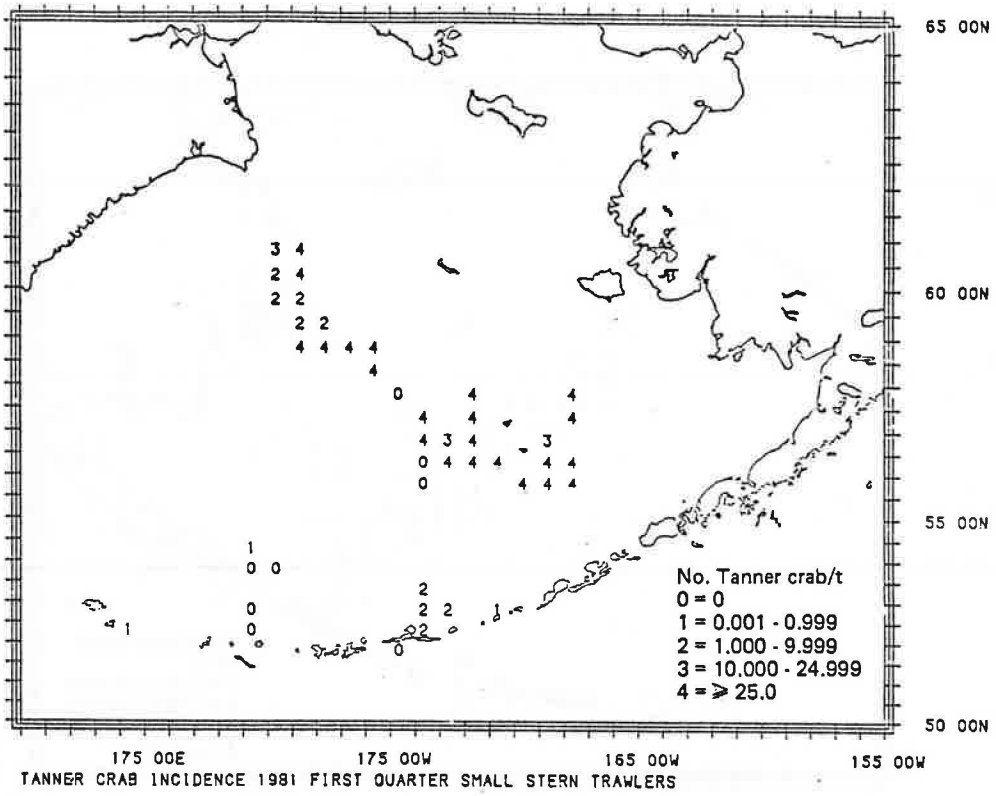


TANNER CRAB INCIDENCE 1980 THIRD QUARTER SMALL STERN TRAWLERS



TANNER CRAB INCIDENCE 1980 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 12.--Continued.



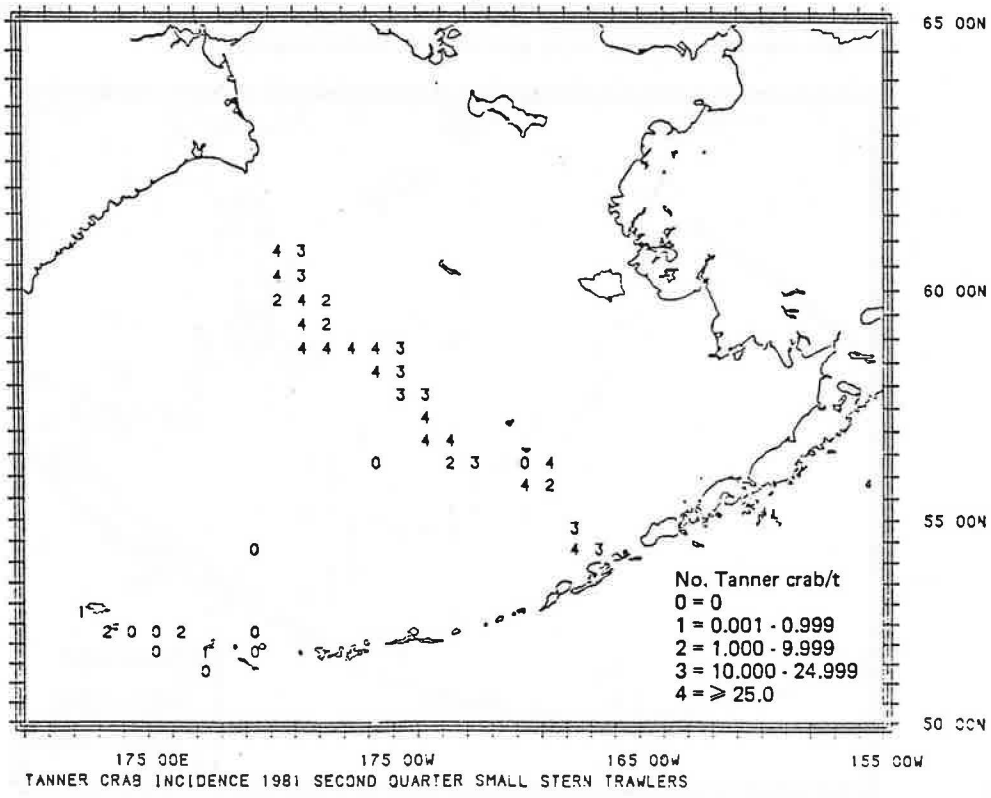
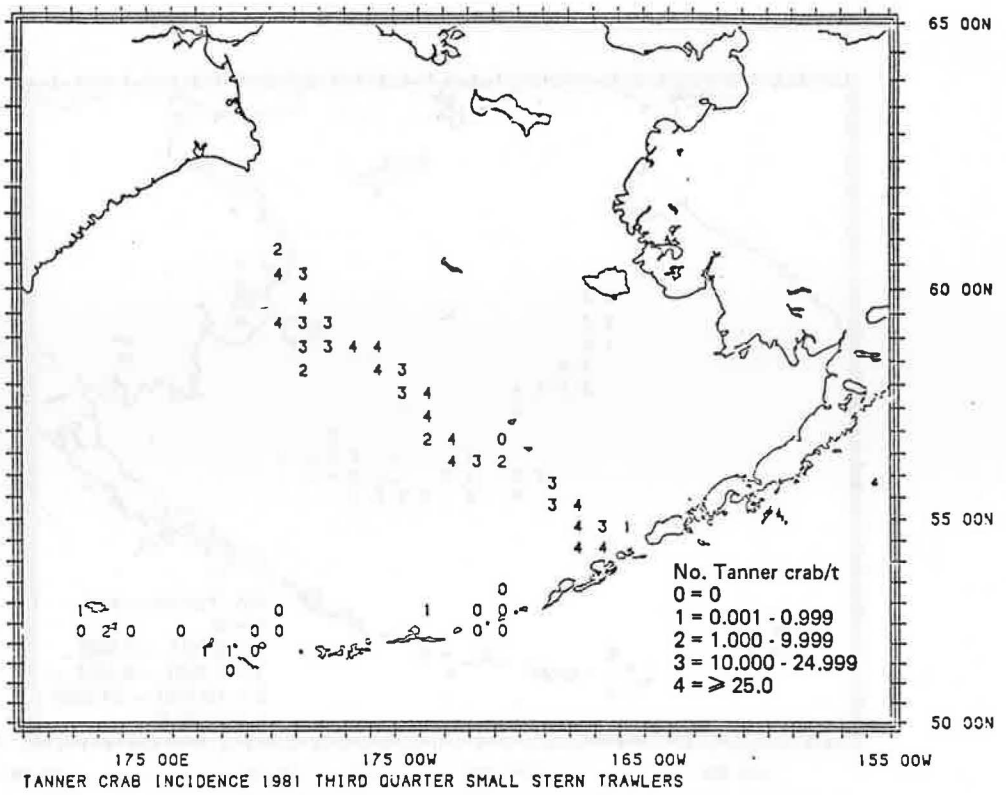
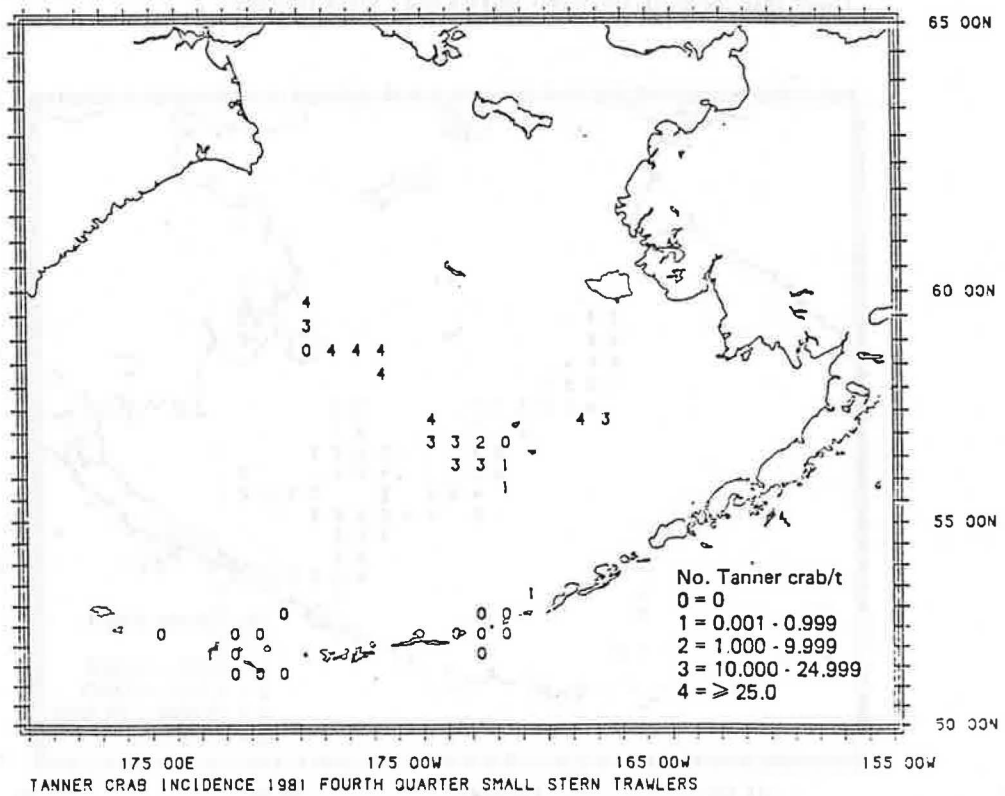


Figure 13.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on Japanese small stern trawlers by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1981.

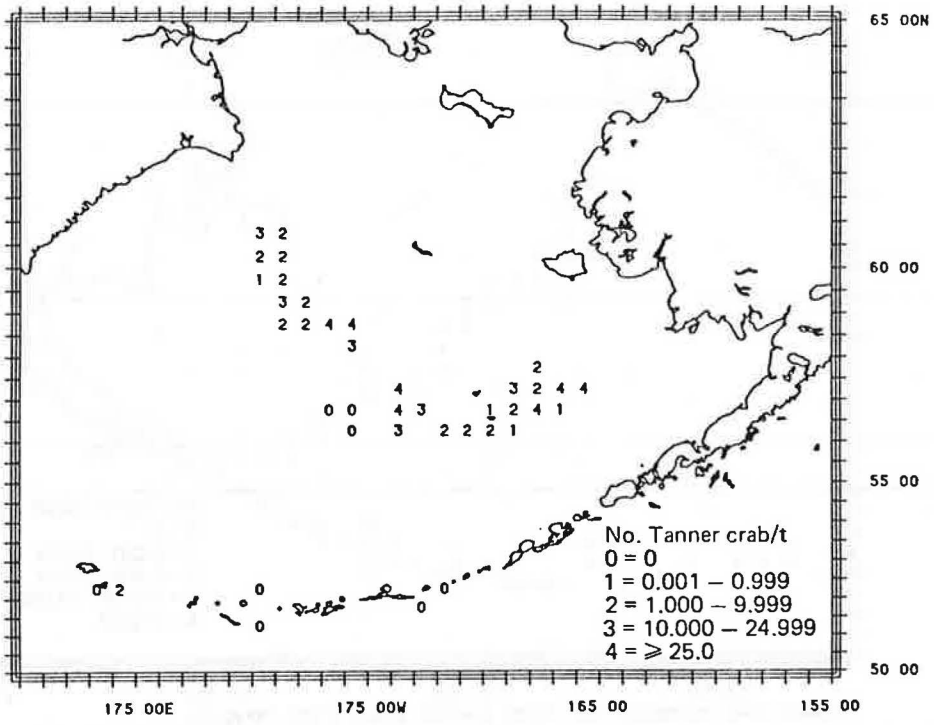


TANNER CRAB INCIDENCE 1981 THIRD QUARTER SMALL STERN TRAWLERS

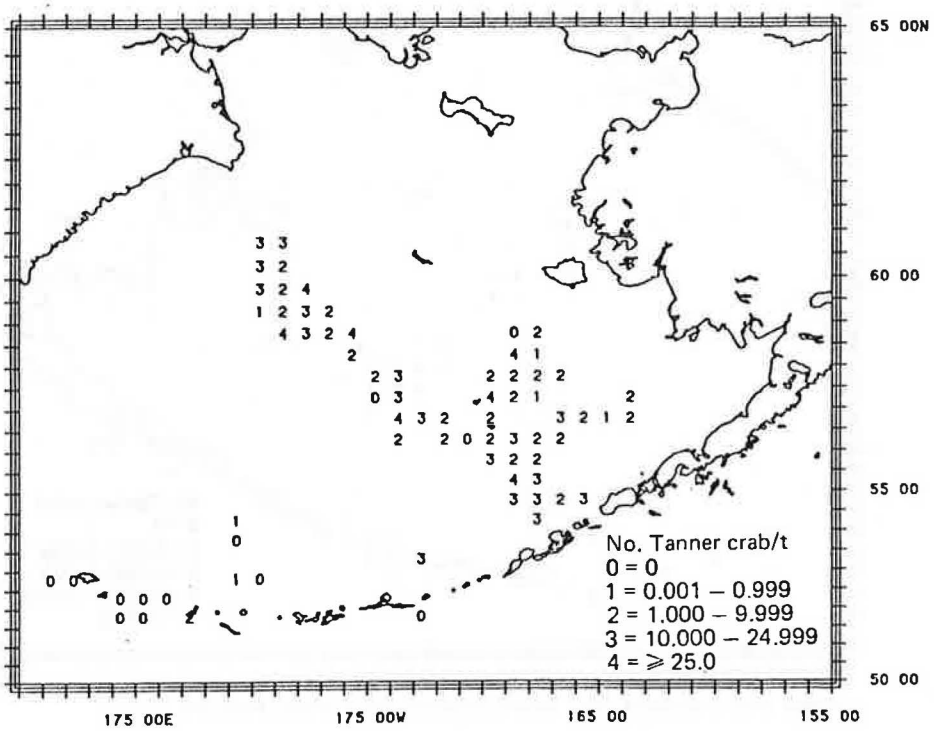


TANNER CRAB INCIDENCE 1981 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 13.--Continued.

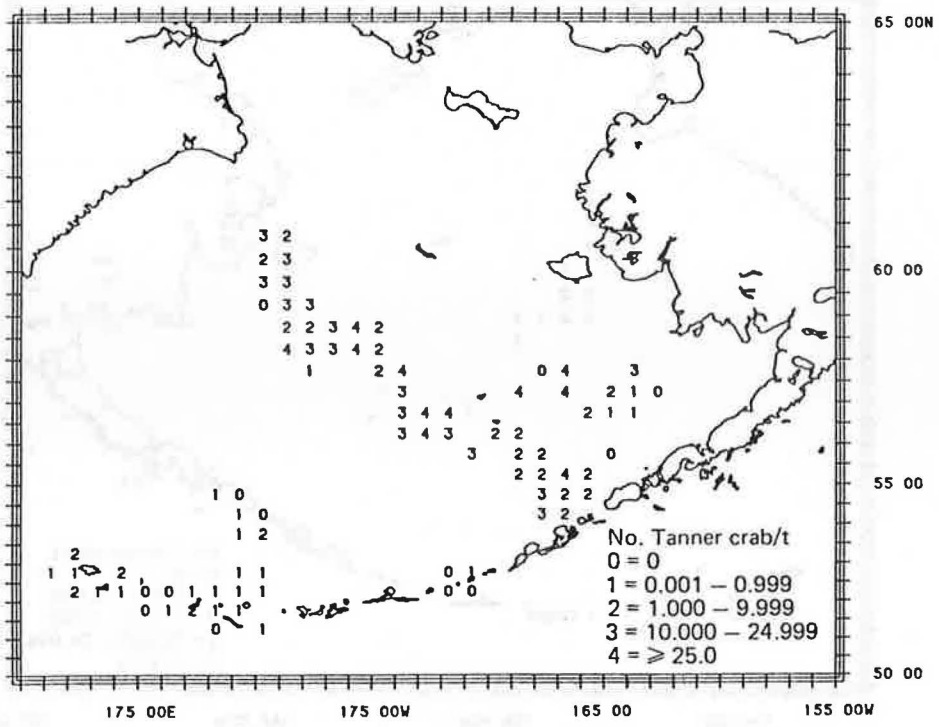


TANNER CRAB INCIDENCE 1982 FIRST QUARTER SMALL STERN TRAWLERS

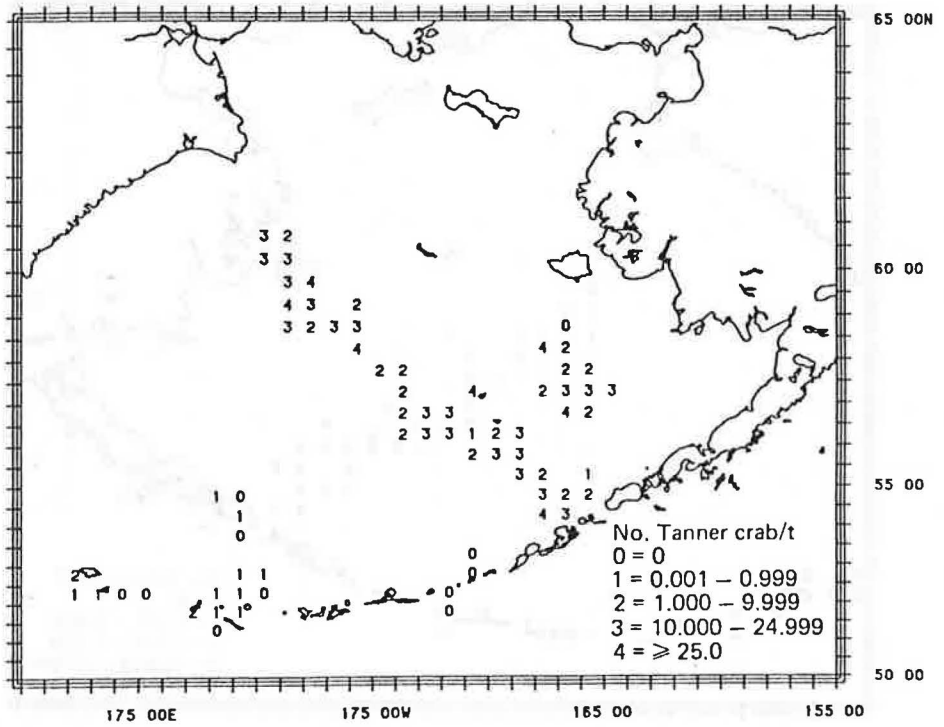


TANNER CRAB INCIDENCE 1982 SECOND QUARTER SMALL STERN TRAWLERS

Figure 14.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) (all nations) by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1982.

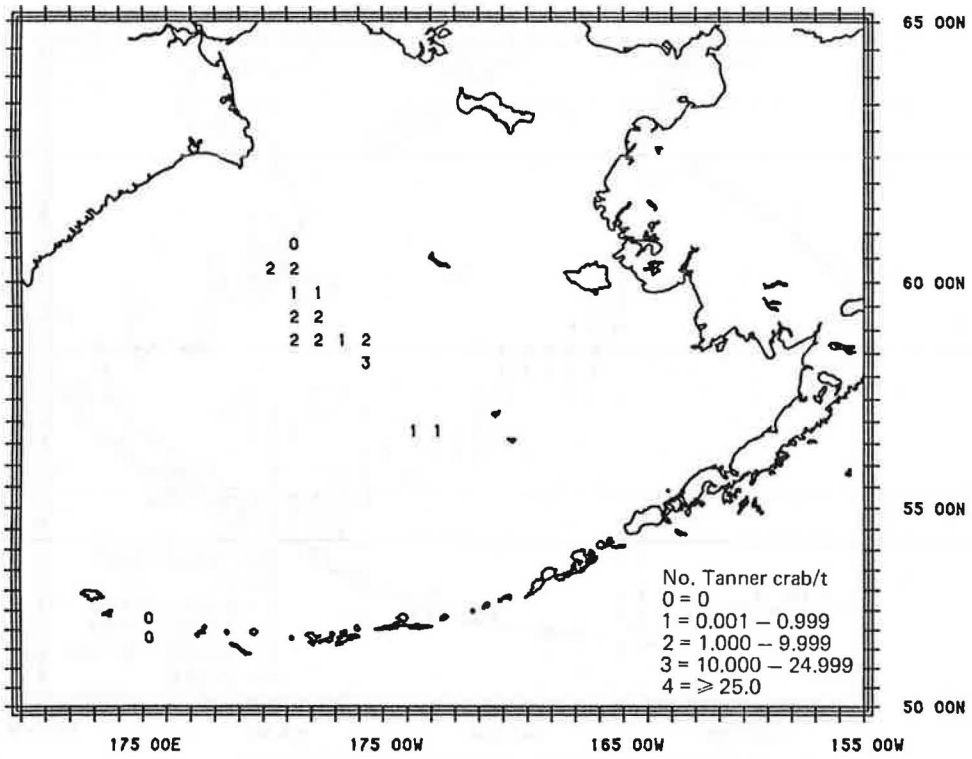


TANNER CRAB INCIDENCE 1982 THIRD QUARTER SMALL STERN TRAWLERS



TANNER CRAB INCIDENCE 1982 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 14.--continued.



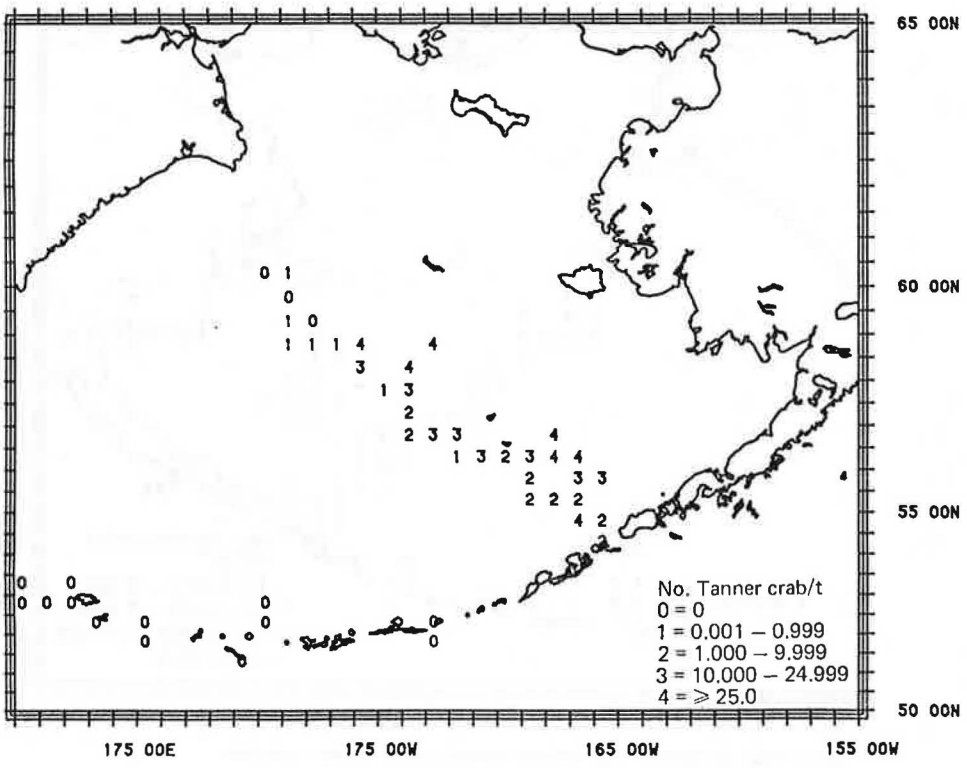
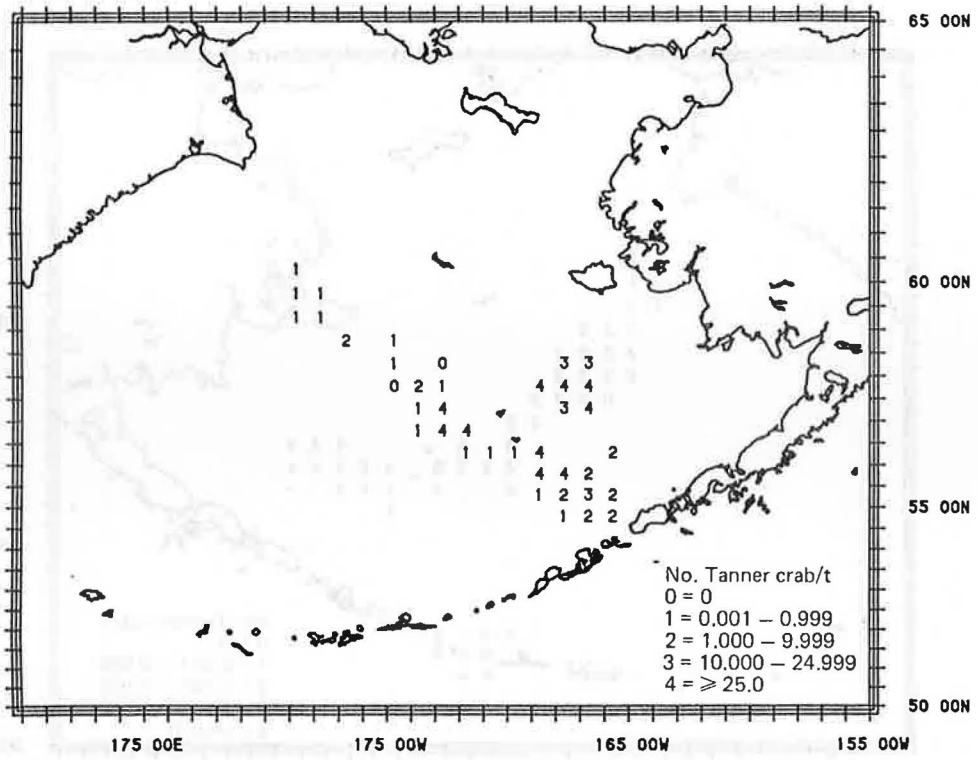
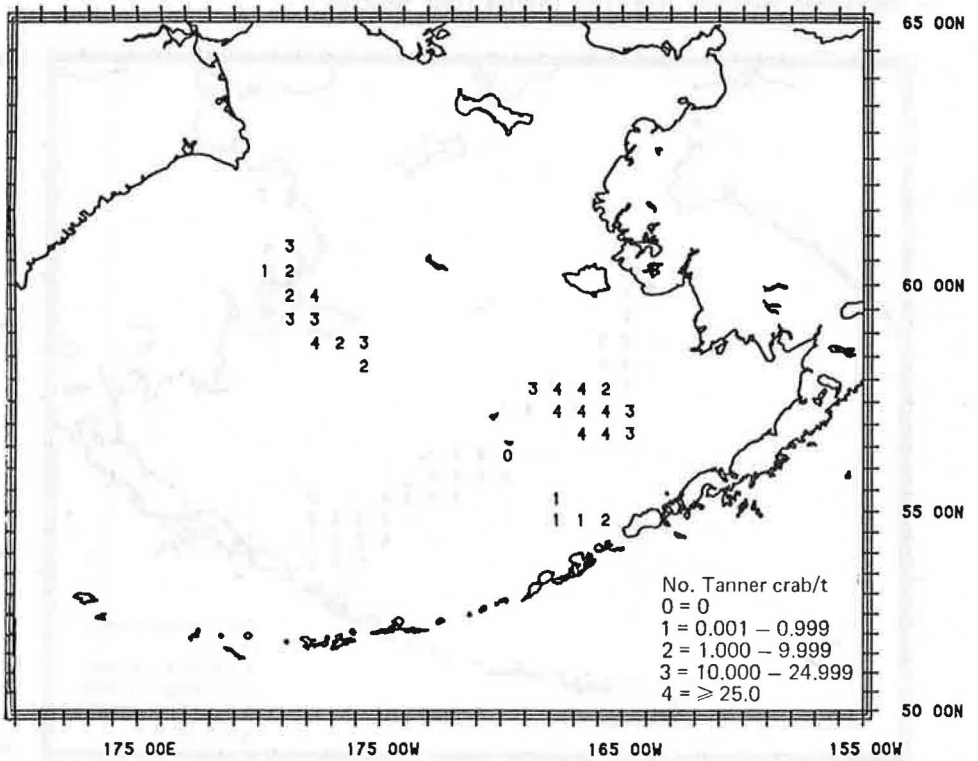


Figure 15.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on large trawlers (all nations) by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1978.

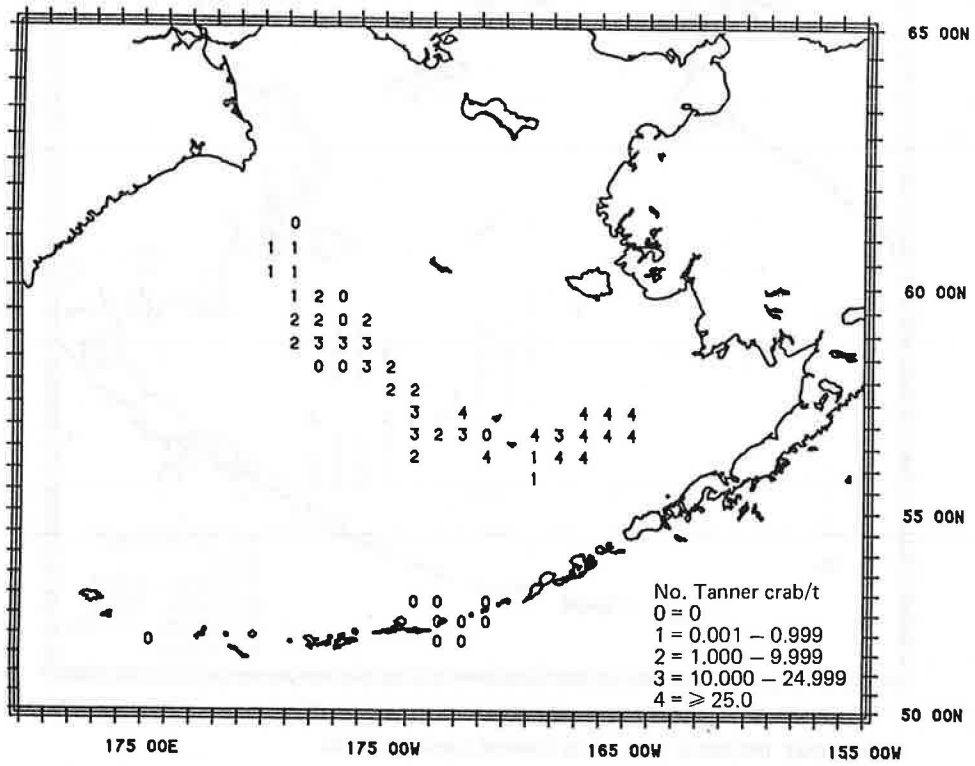


TANNER CRAB INCIDENCE 1978 THIRD QUARTER LARGE TRAWLERS

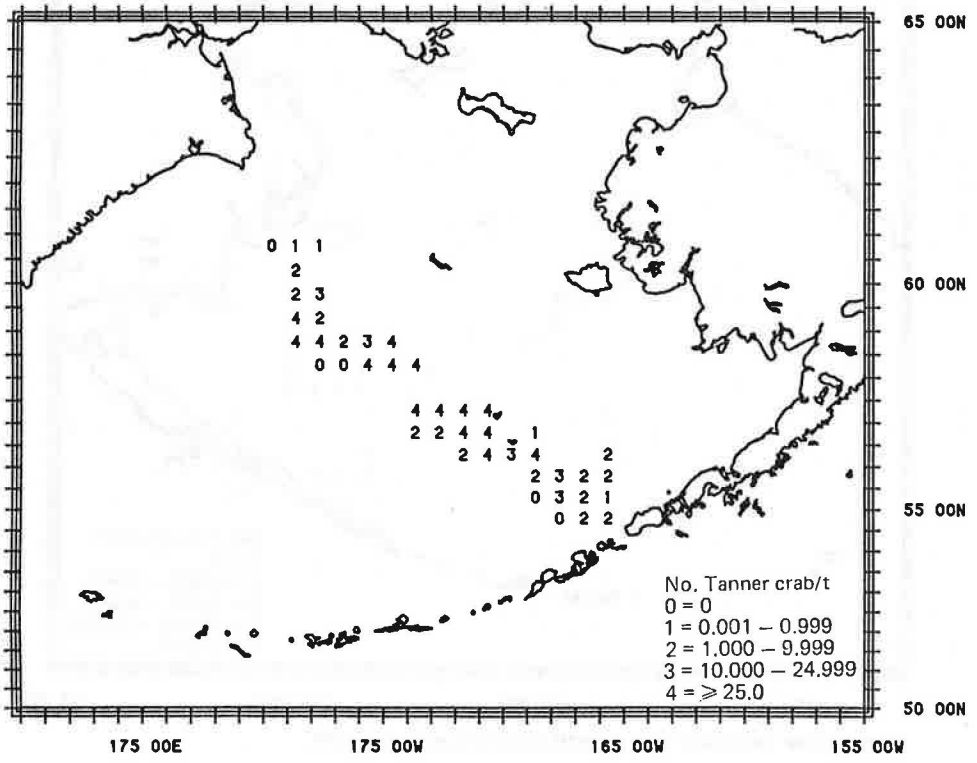


TANNER CRAB INCIDENCE 1978 FOURTH QUARTER LARGE TRAWLERS

Figure 15.--Continued.

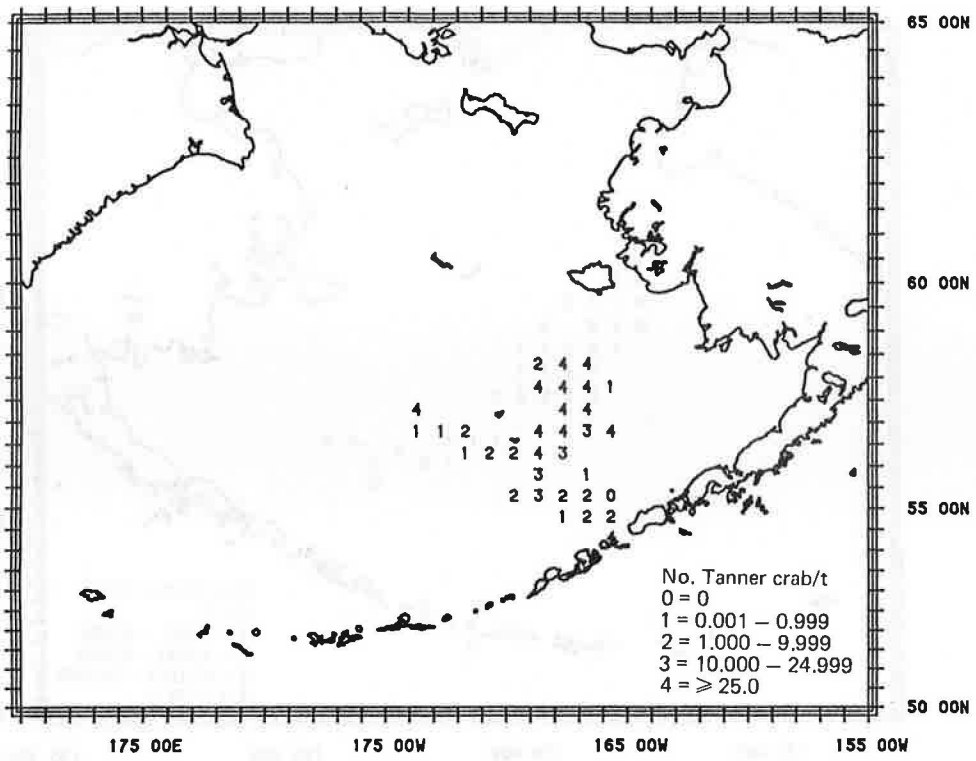


TANNER CRAB INCIDENCE 1979 FIRST QUARTER LARGE TRAWLERS

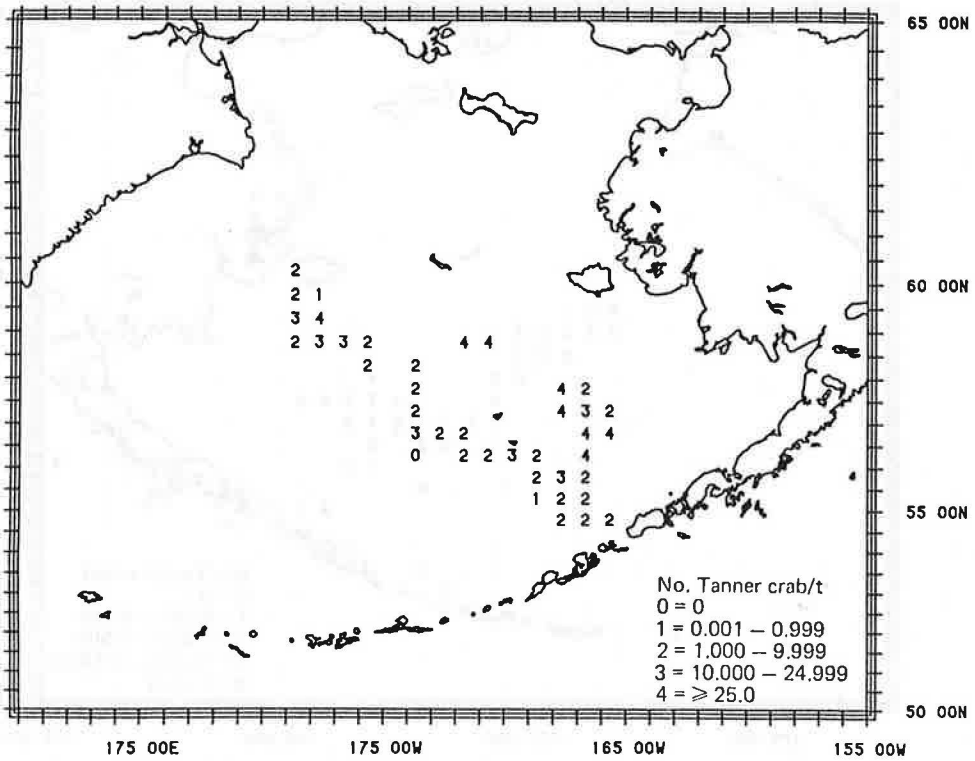


TANNER CRAB INCIDENCE 1979 SECOND QUARTER LARGE TRAWLERS

Figure 16.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on large trawlers (all nations) by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1979.

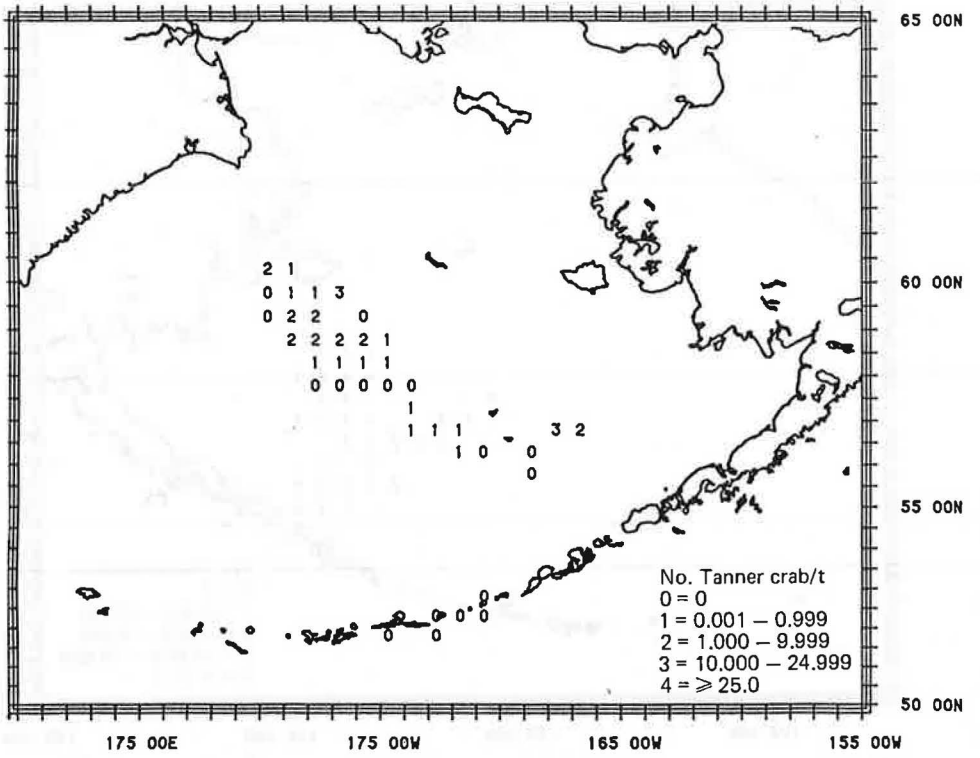


TANNER CRAB INCIDENCE 1979 THIRD QUARTER LARGE TRAWLERS



TANNER CRAB INCIDENCE 1979 FOURTH QUARTER LARGE TRAWLERS

Figure 16.--Continued.



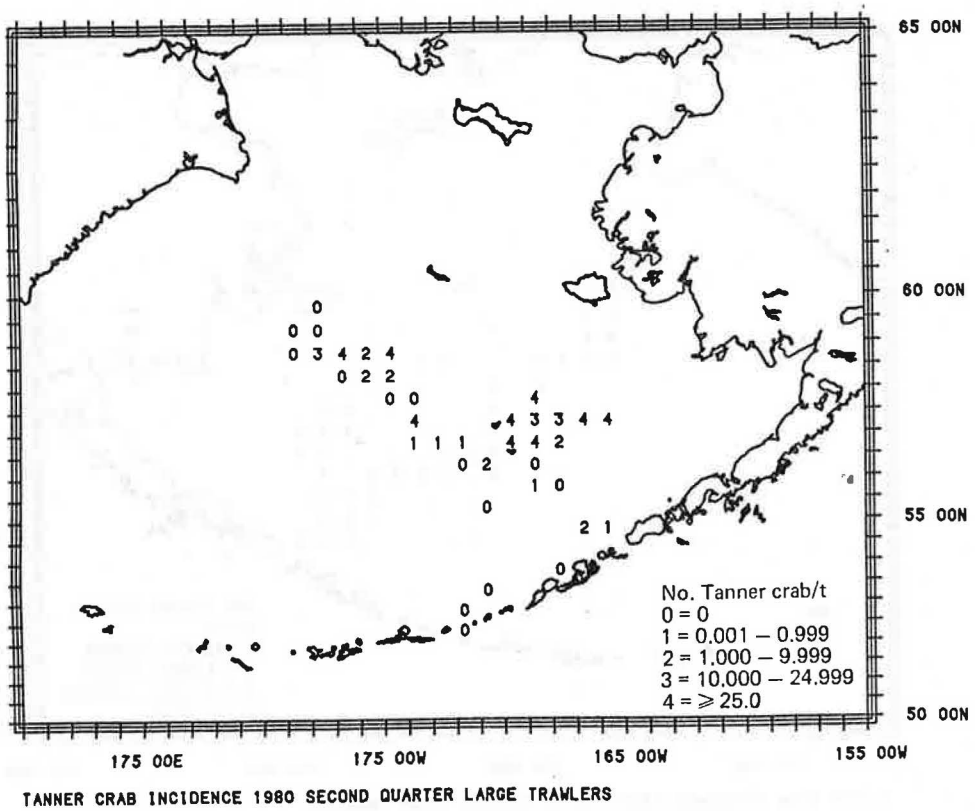
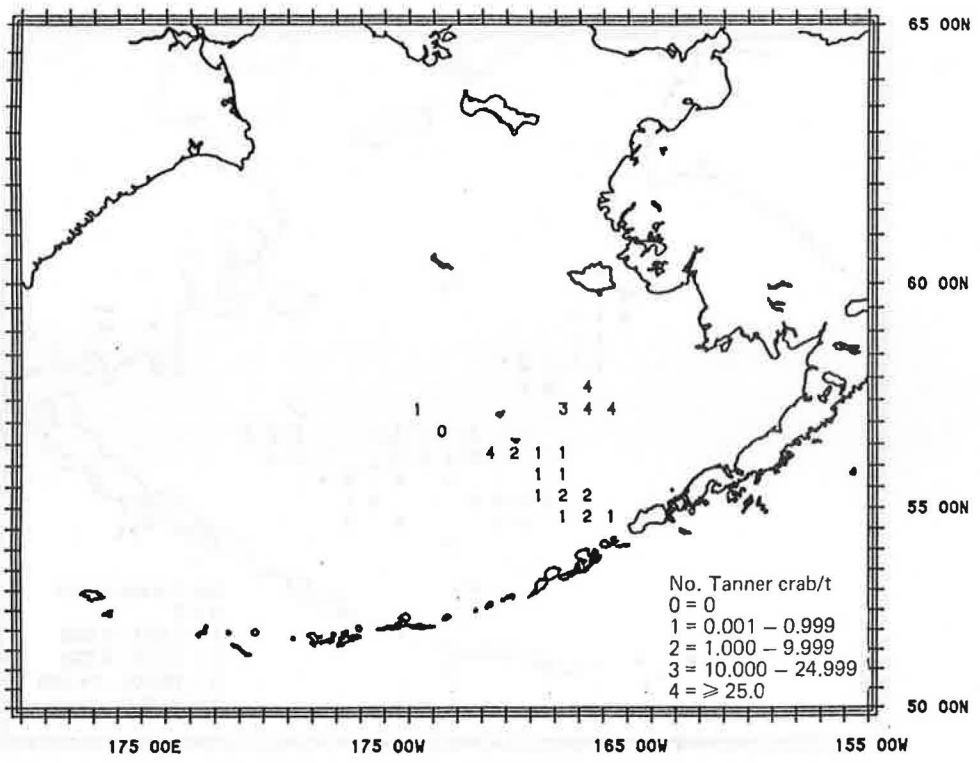
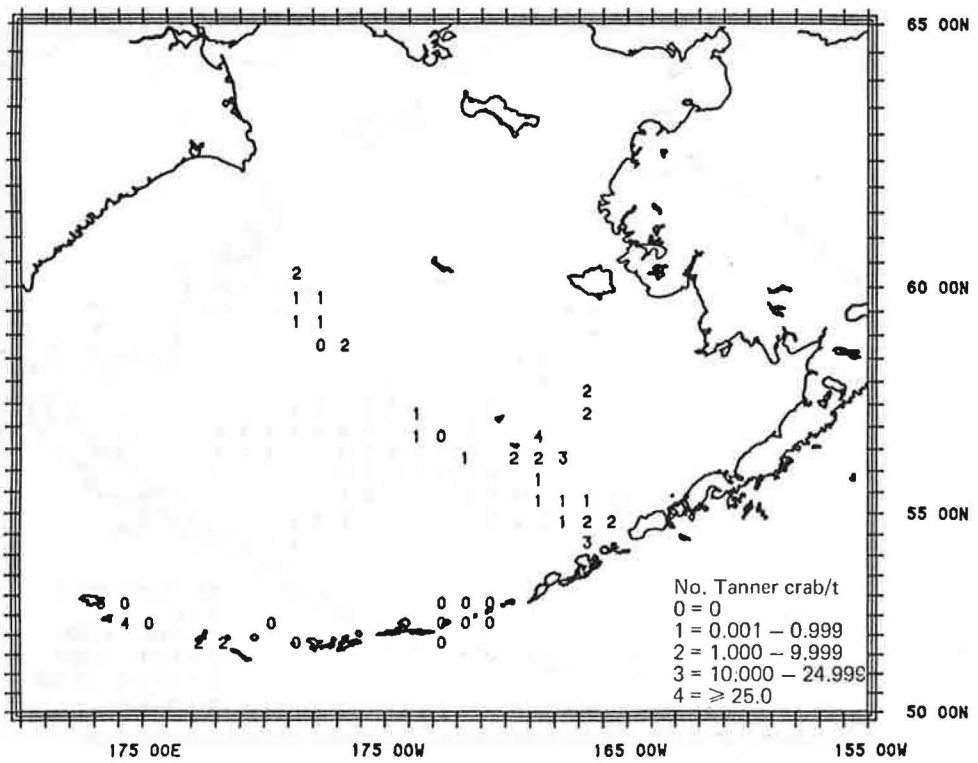


Figure 17.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on large trawlers (all nations) by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1980.

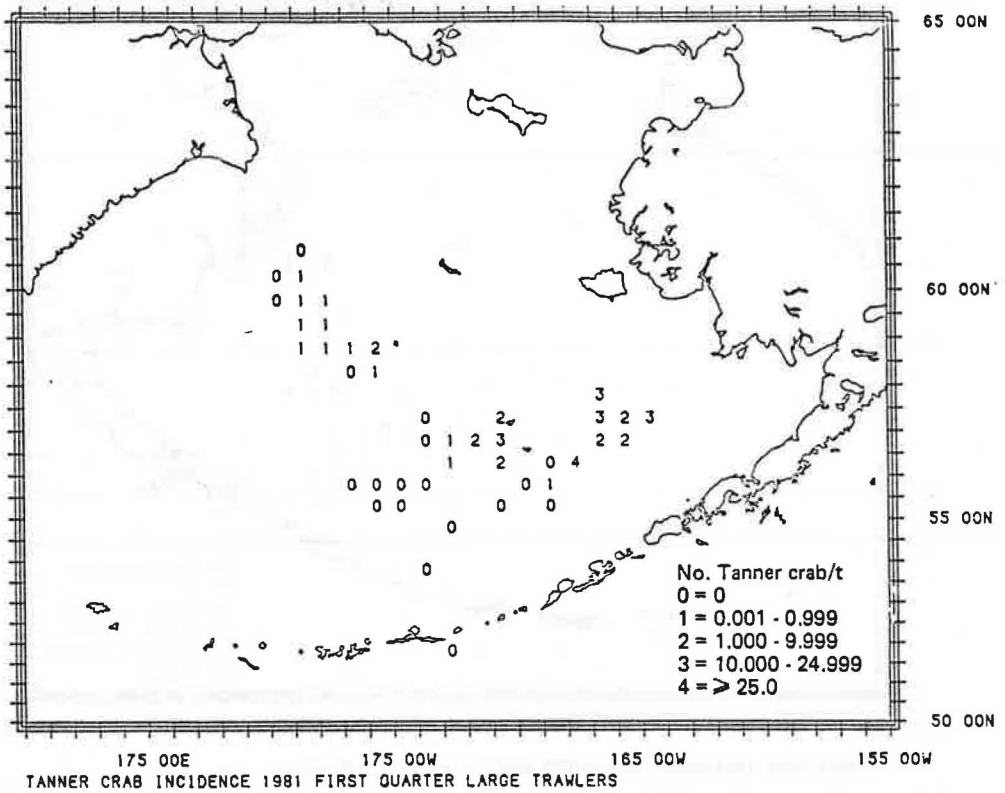


TANNER CRAB INCIDENCE 1980 THIRD QUARTER LARGE TRAWLERS



TANNER CRAB INCIDENCE 1980 FOURTH QUARTER LARGE TRAWLERS

Figure 17.--Continued.



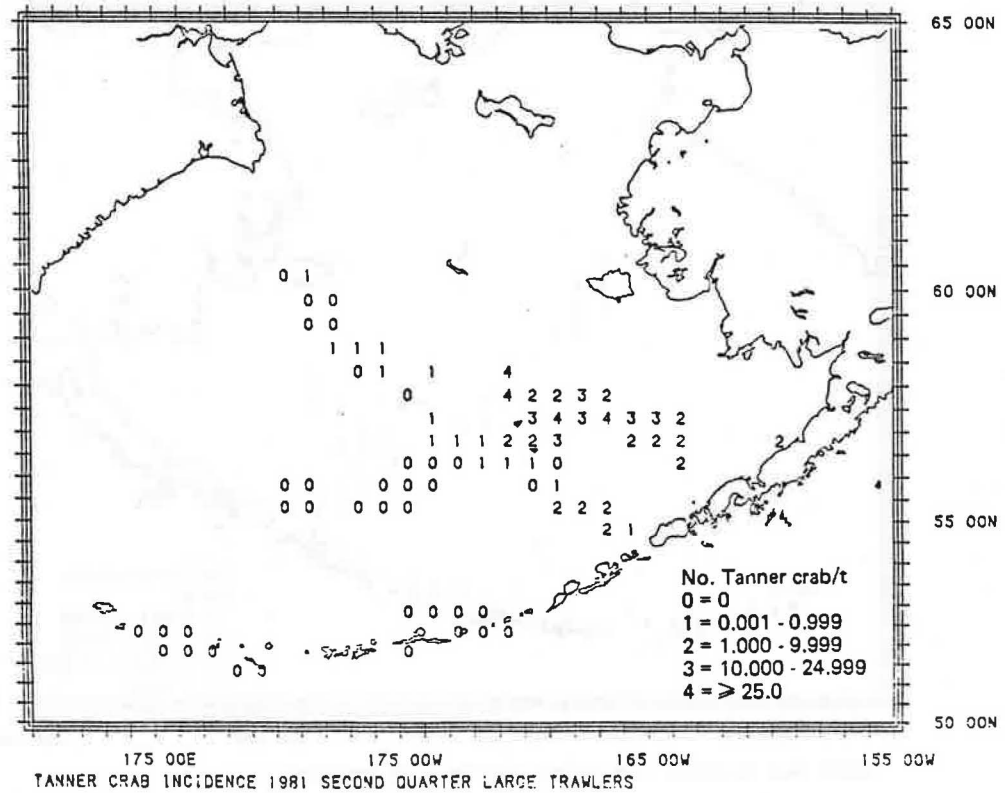
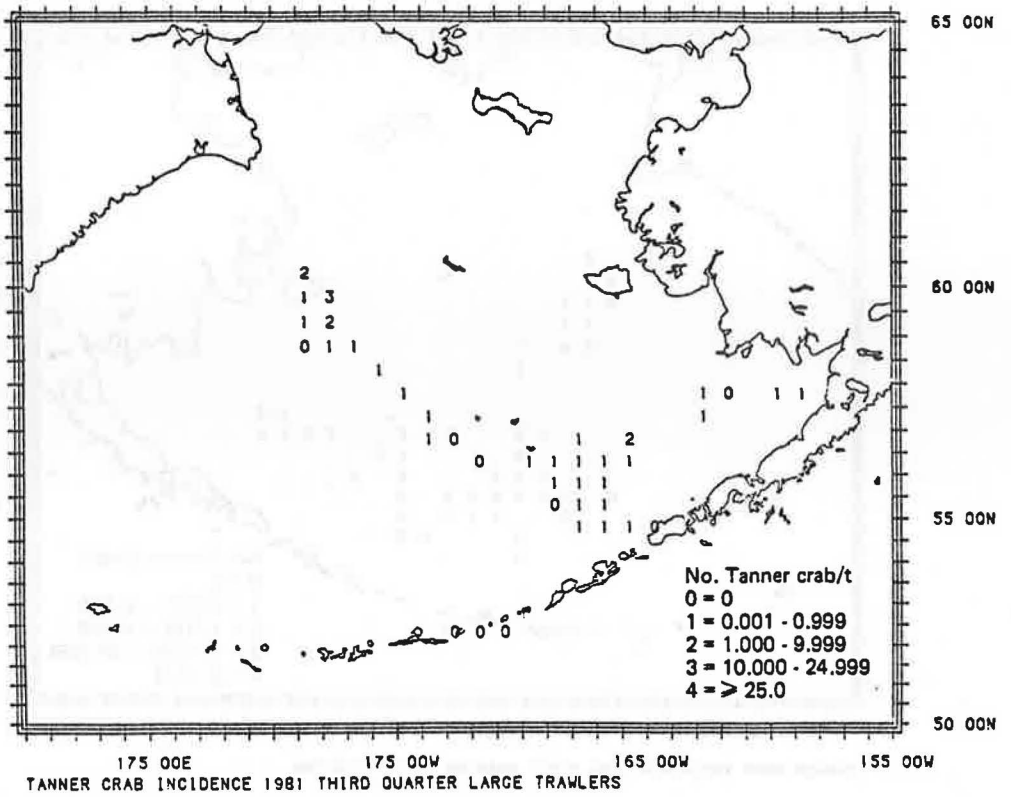
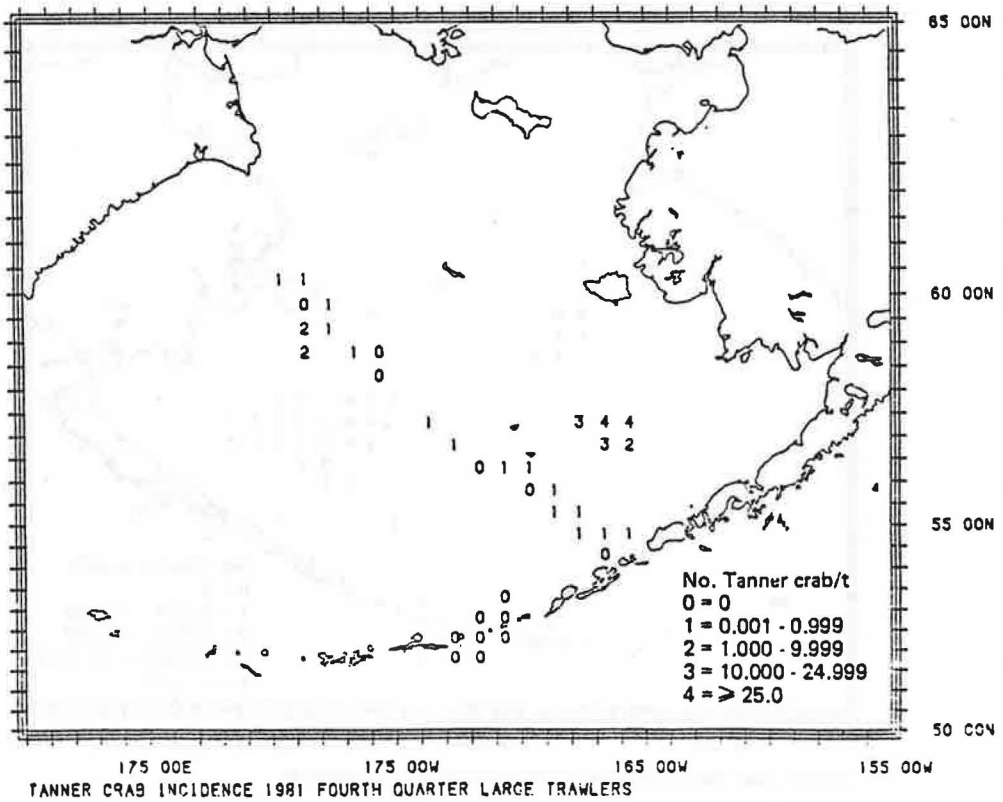


Figure 18.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on large trawlers (all nations) by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1981.

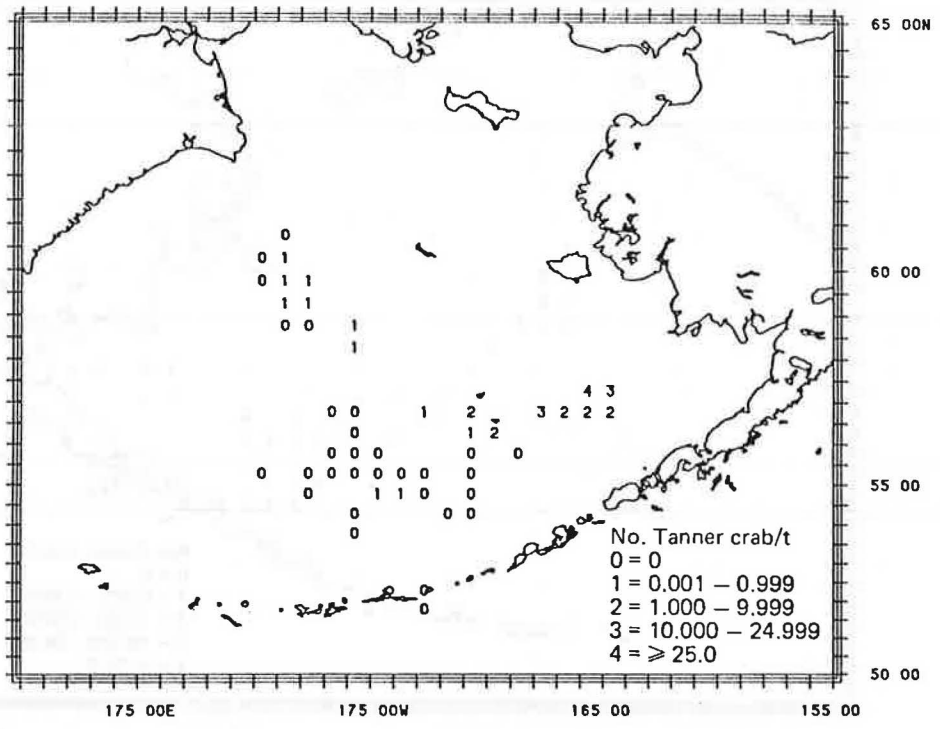


TANNER CRAB INCIDENCE 1981 THIRD QUARTER LARGE TRAWLERS



TANNER CRAB INCIDENCE 1981 FOURTH QUARTER LARGE TRAWLERS

Figure 18.--Continued.



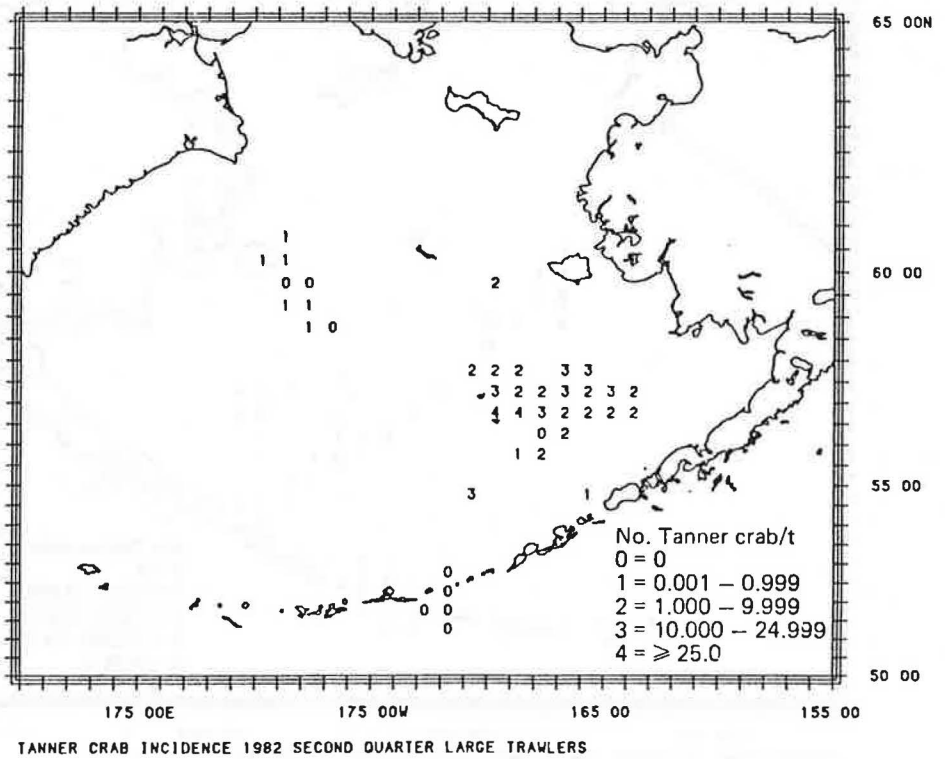
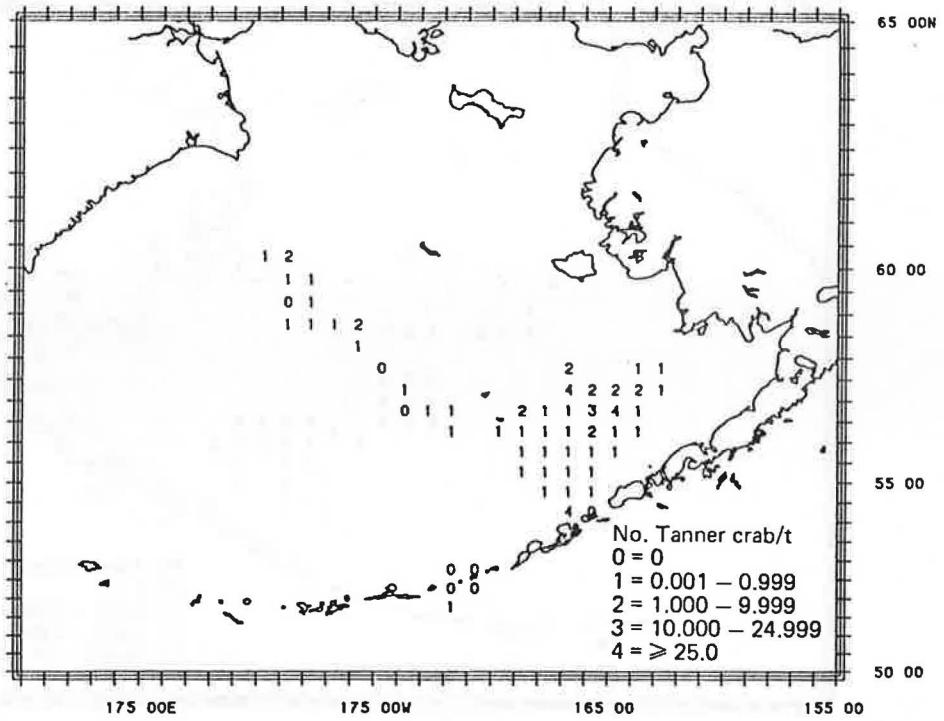
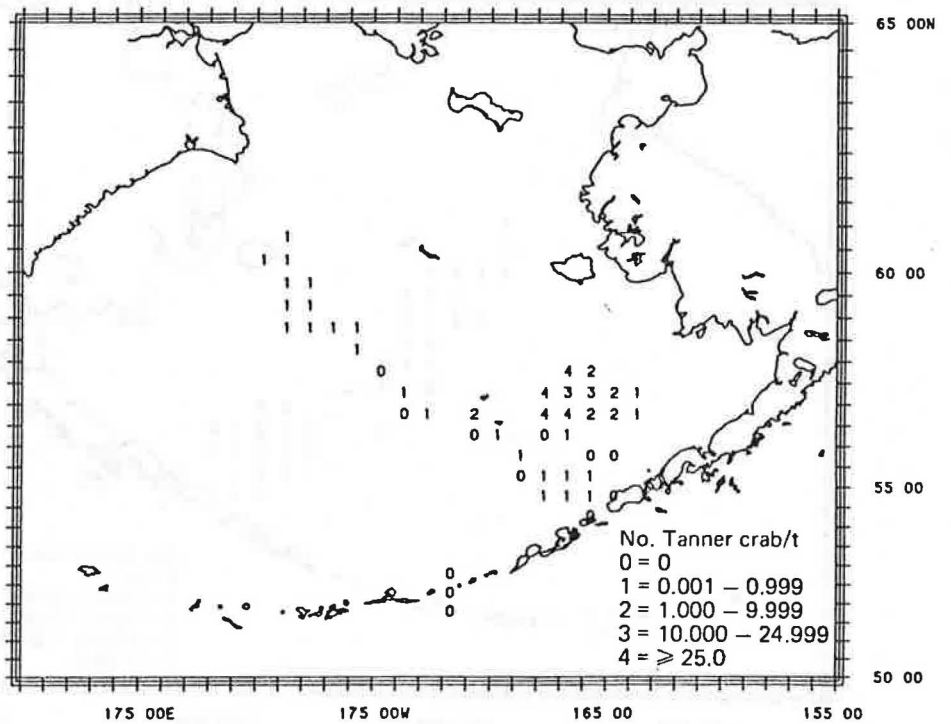


Figure 19.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on large trawlers (all nations) by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1982.

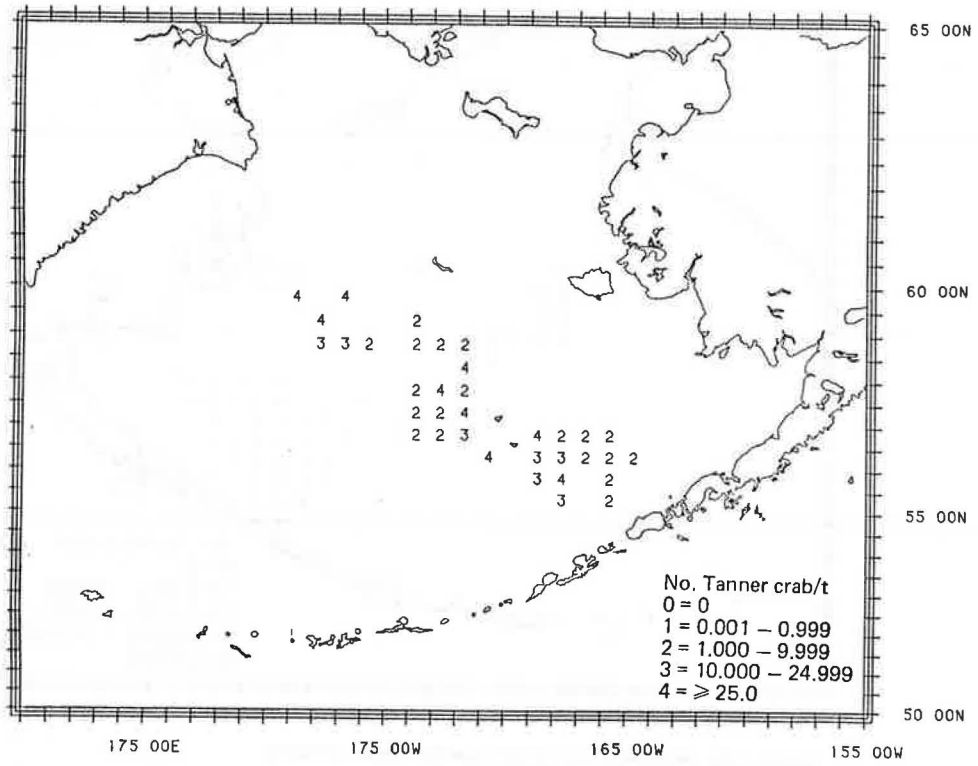


TANNER CRAB INCIDENCE 1982 THIRD QUARTER LARGE TRAWLERS



TANNER CRAB INCIDENCE 1982 FOURTH QUARTER LARGE TRAWLERS

Figure 19.--continued.



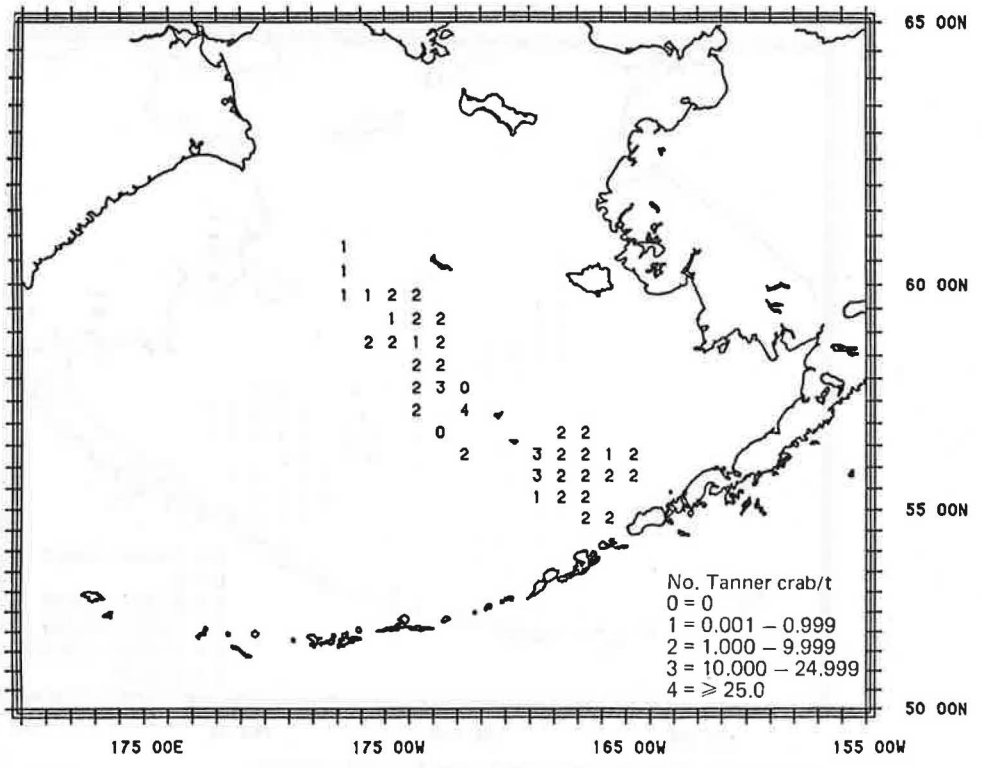


Figure 20.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on Japanese surimi motherships by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1978.

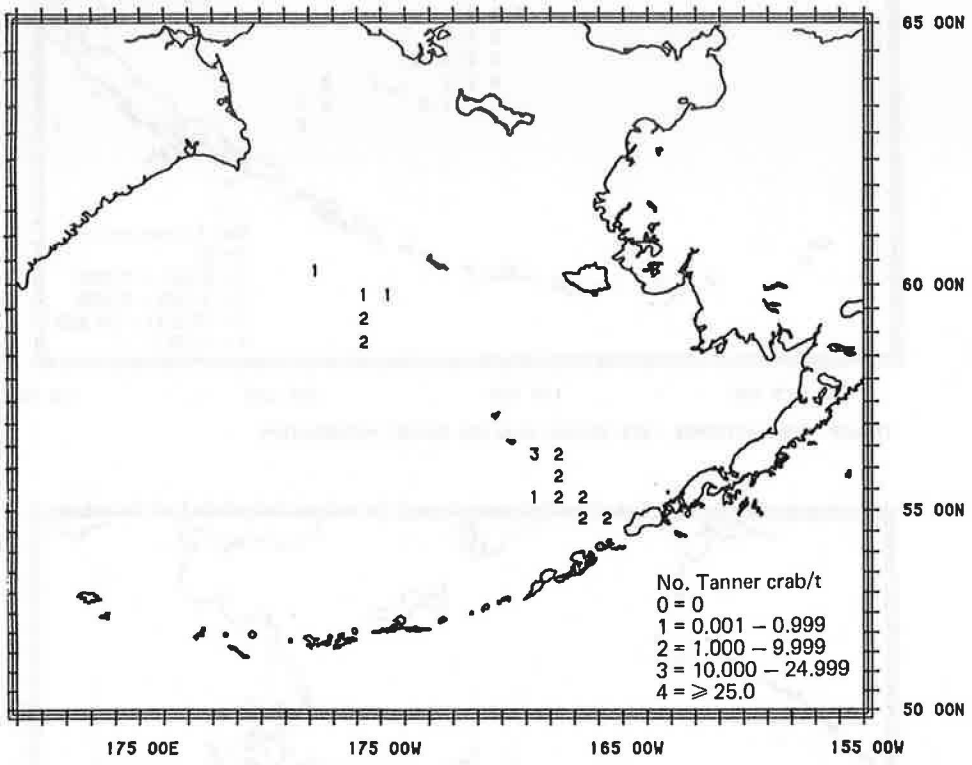
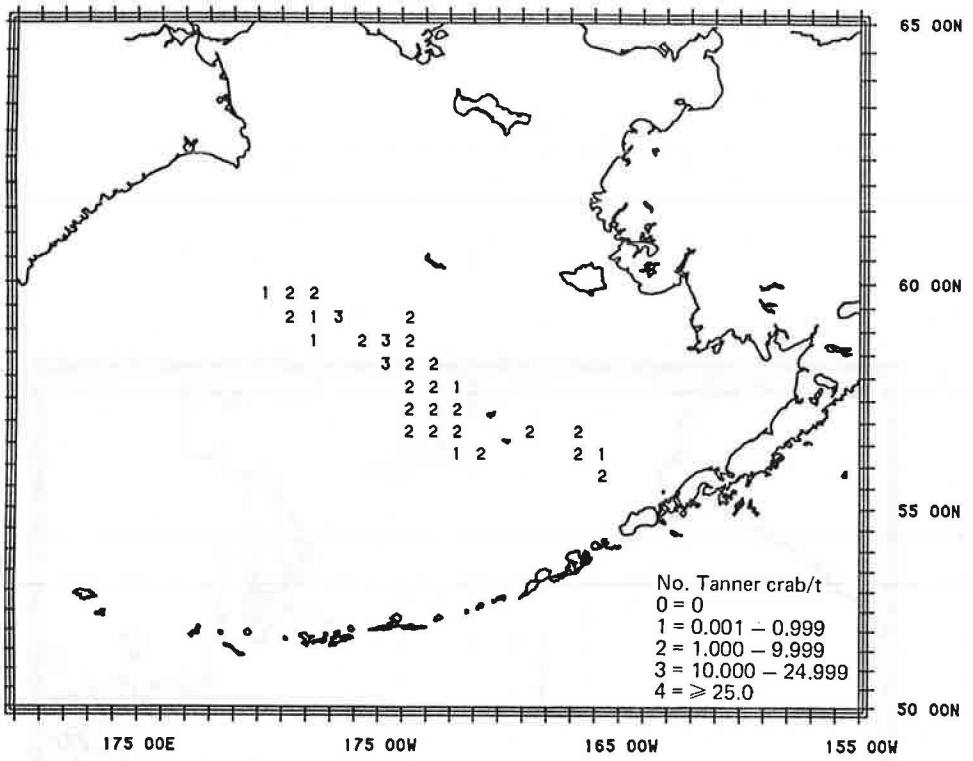


Figure 20.--Continued.



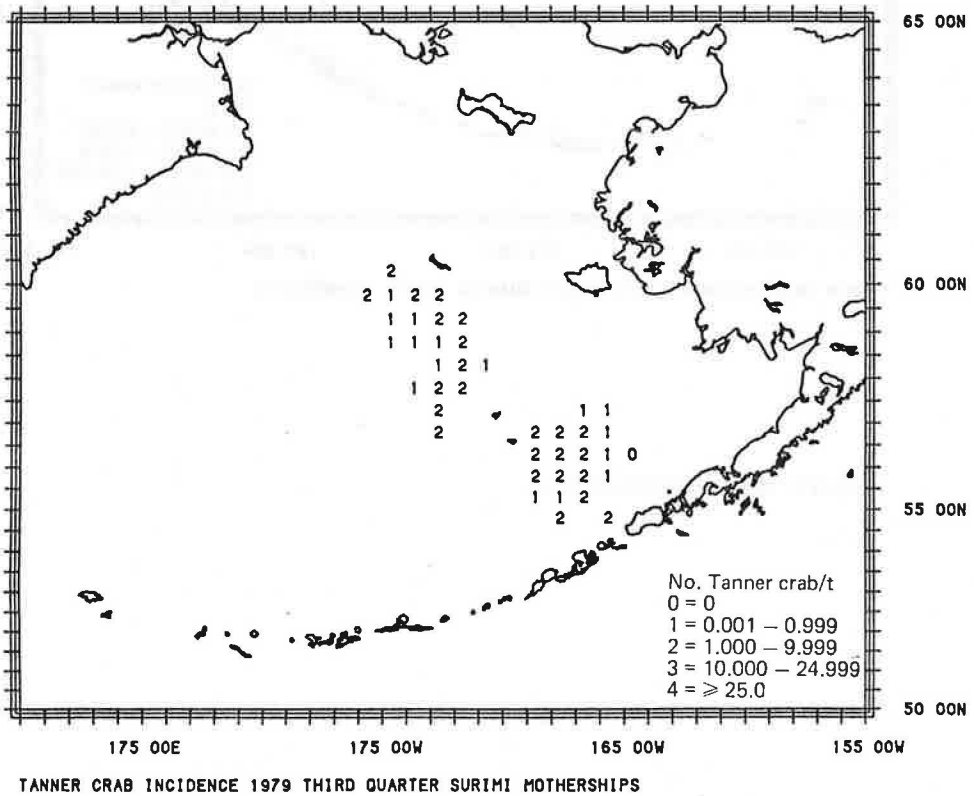


Figure 21.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on Japanese surimi motherships by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1979.

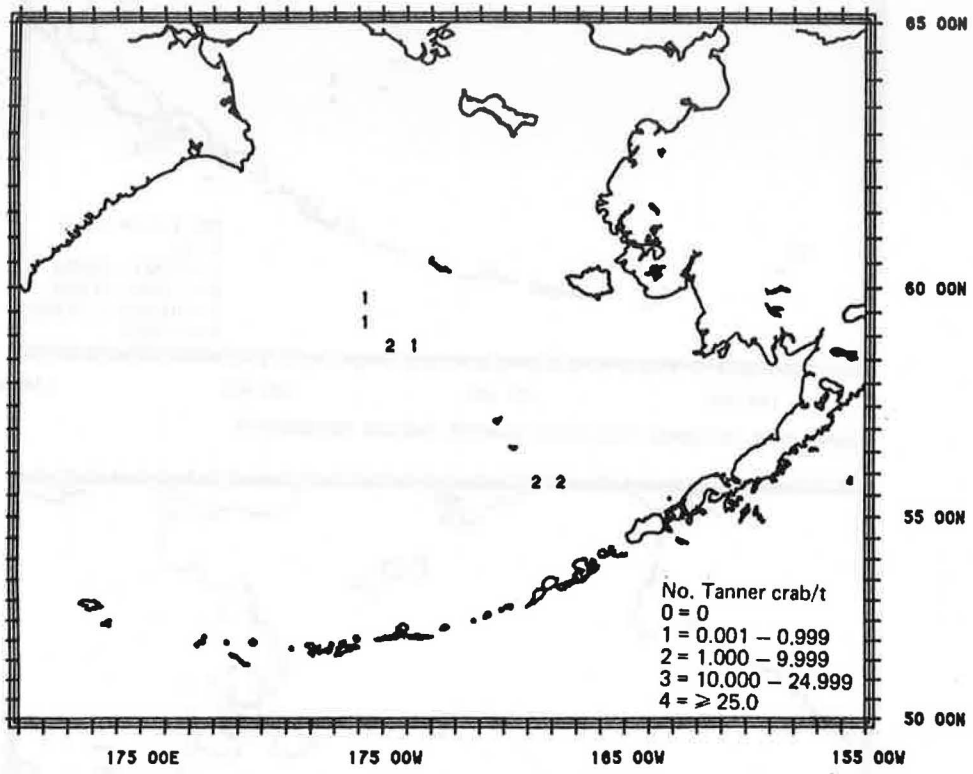
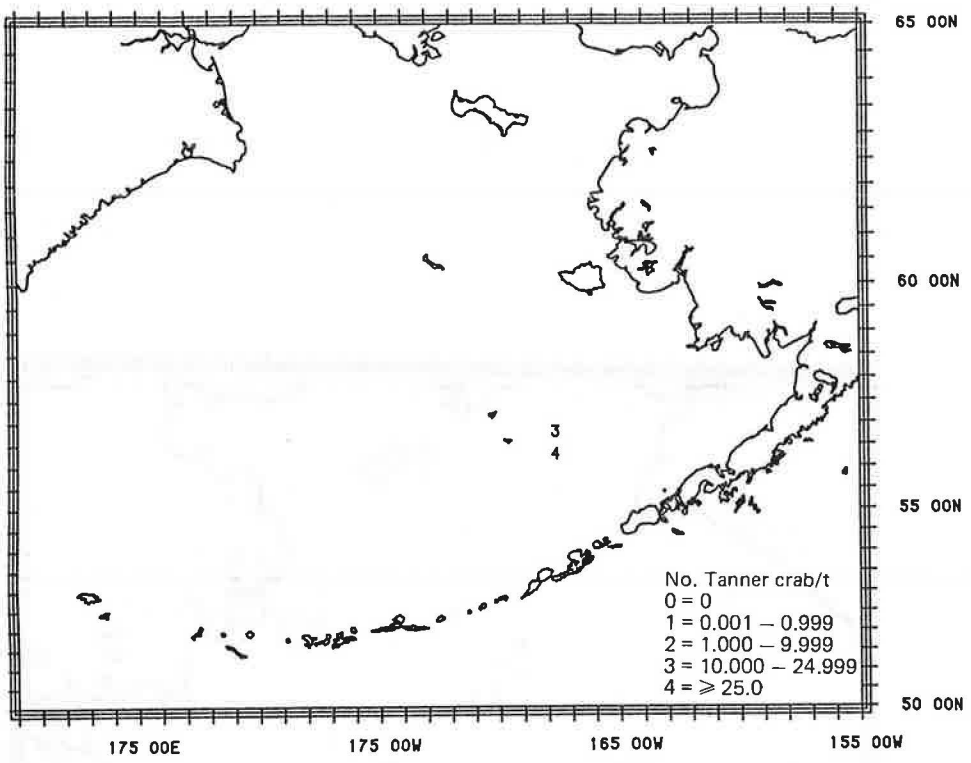
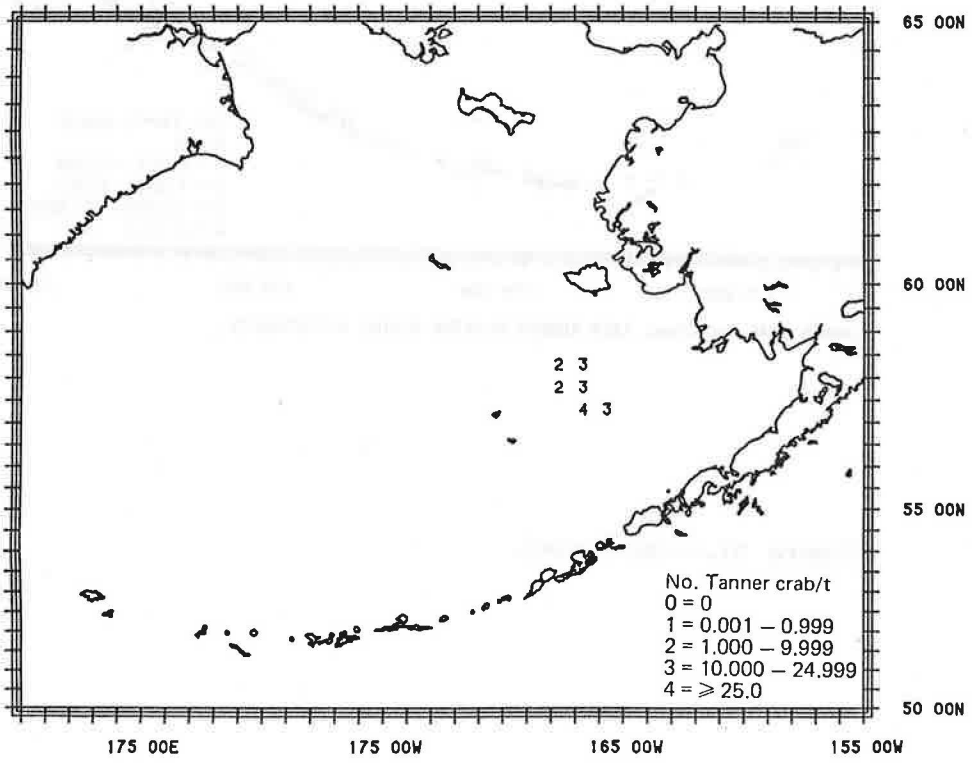


Figure 21.--Continued.

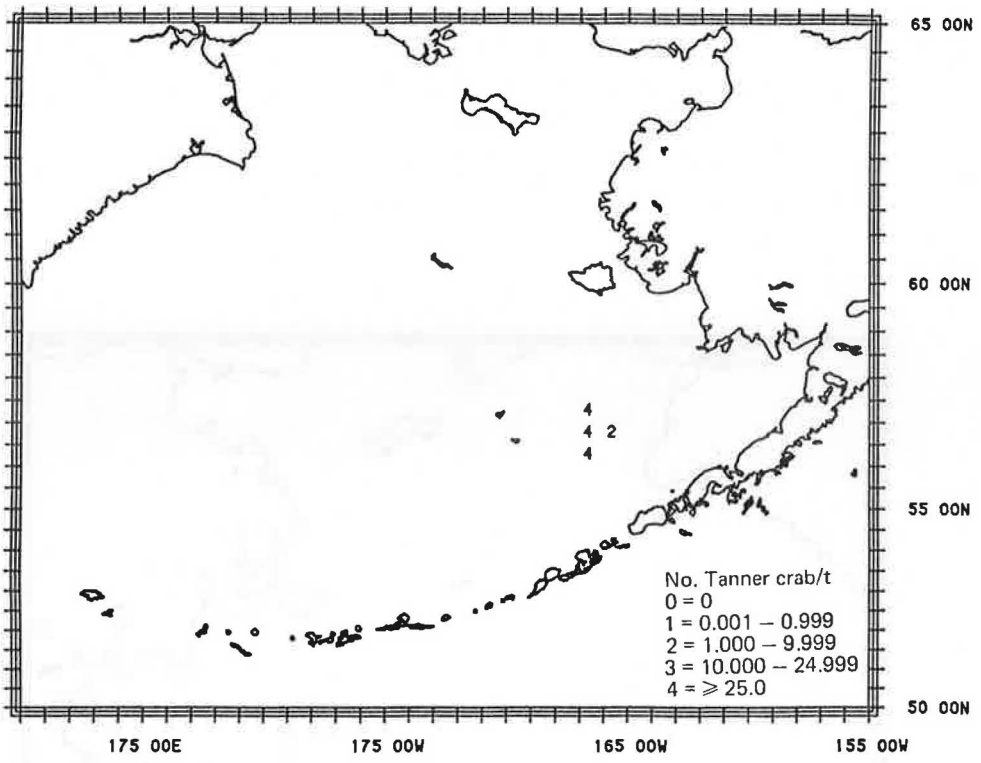


TANNER CRAB INCIDENCE 1978 FIRST QUARTER FREEZER MOTHERSHIPS

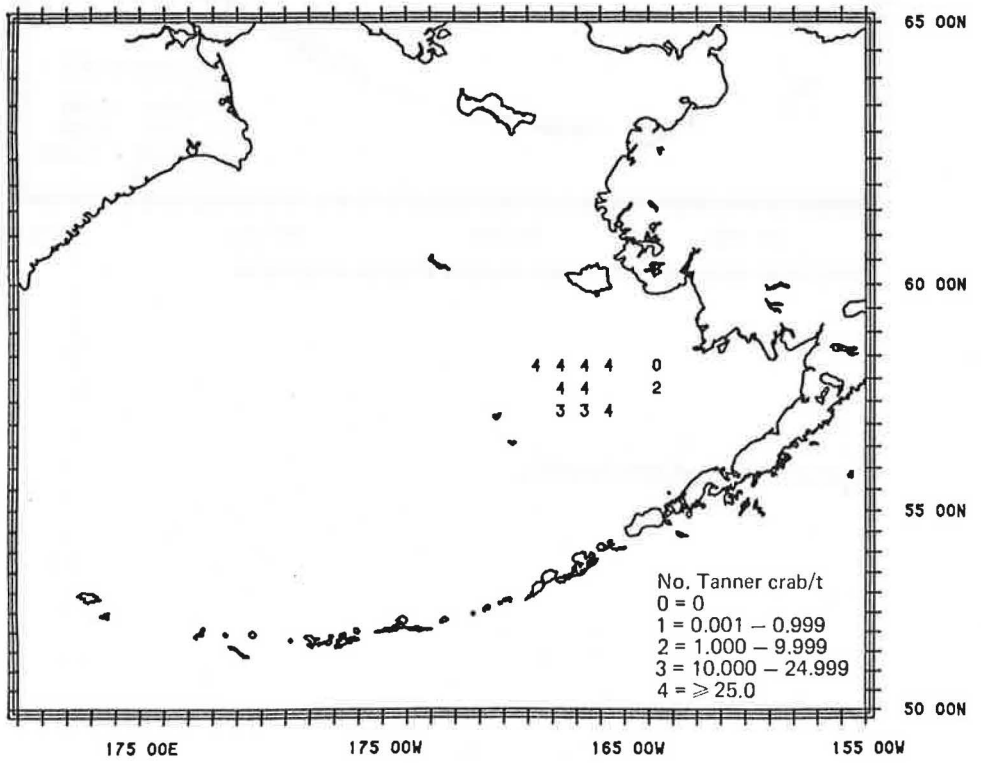


TANNER CRAB INCIDENCE 1978 THIRD QUARTER FREEZER MOTHERSHIPS

Figure 22.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on Japanese freezer motherships by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1978.



TANNER CRAB INCIDENCE 1979 FIRST QUARTER FREEZER MOTHERSHIPS



TANNER CRAB INCIDENCE 1979 THIRD QUARTER FREEZER MOTHERSHIPS

Figure 23.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) on Japanese freezer motherships by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1979.

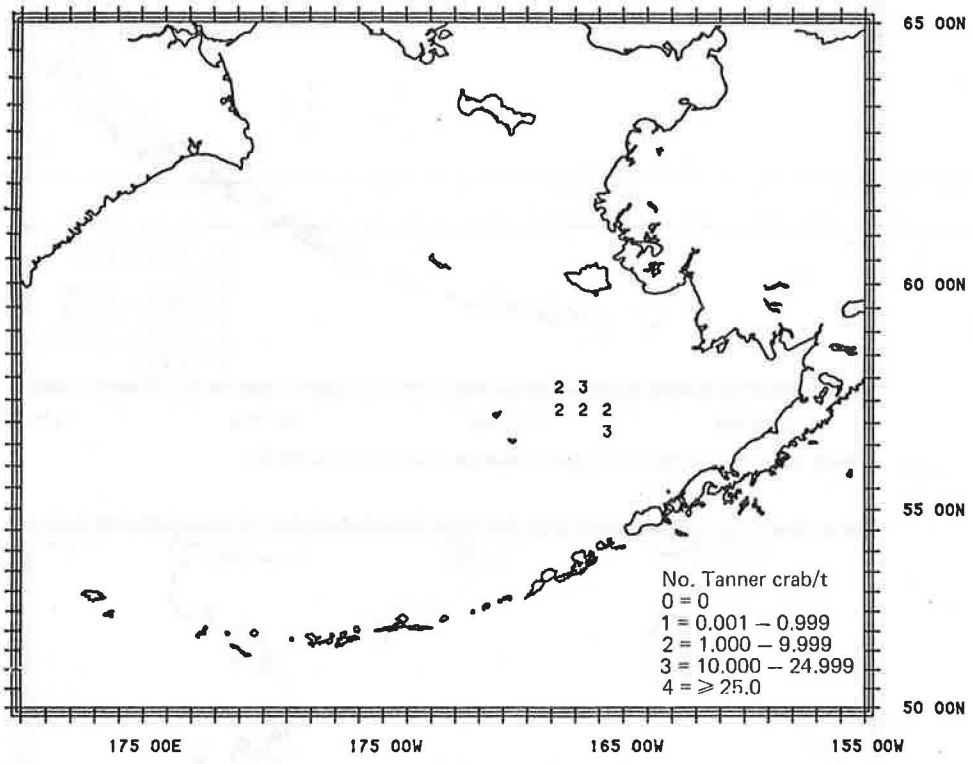
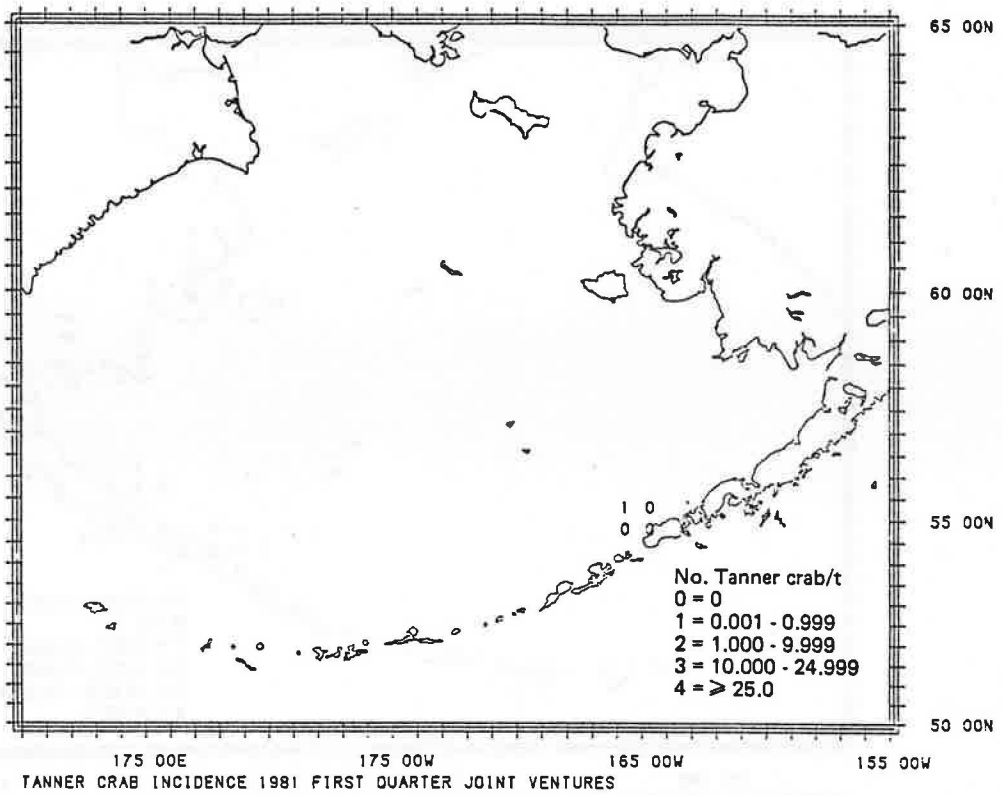


Figure 23.--Continued.



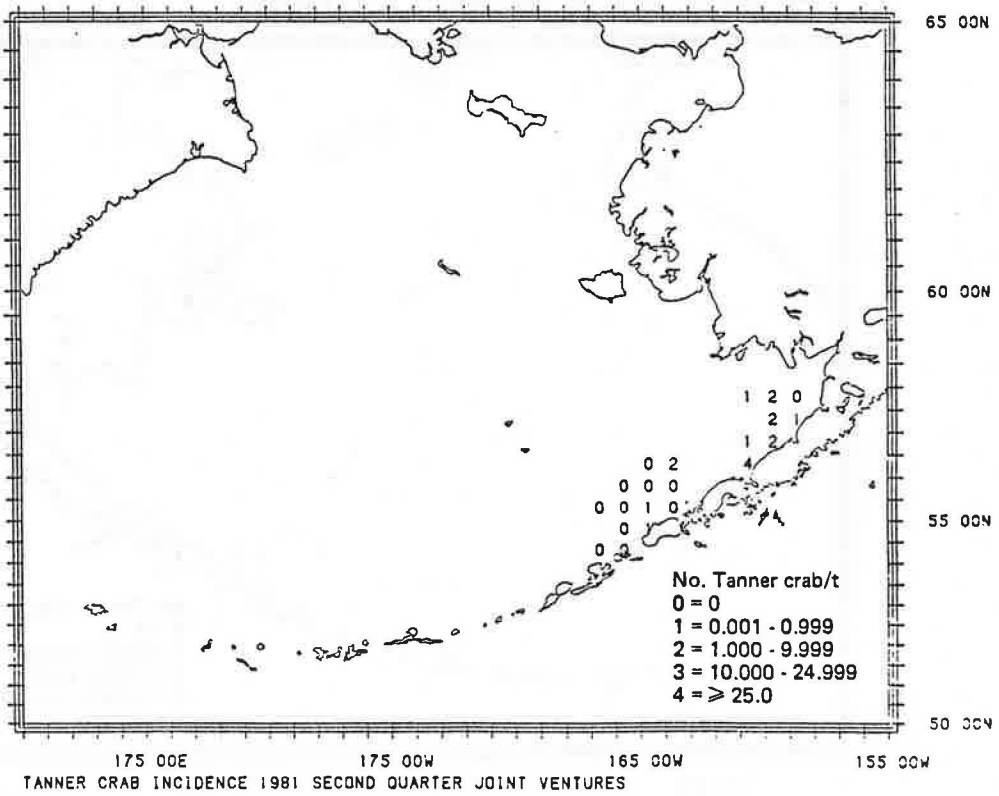
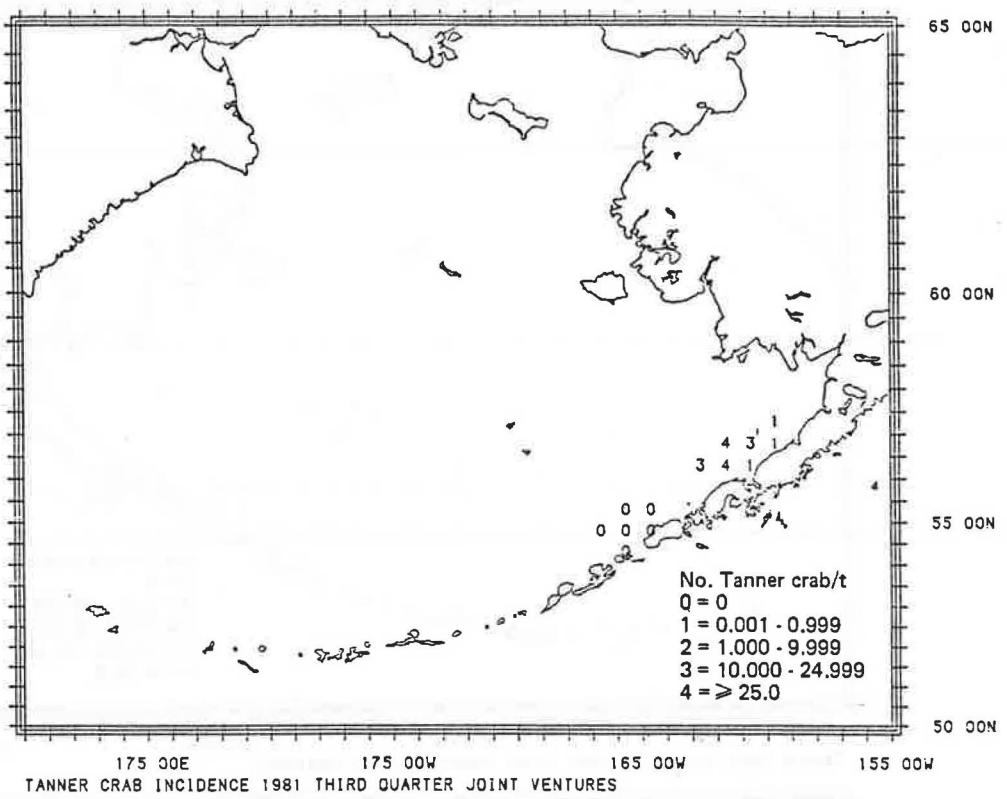
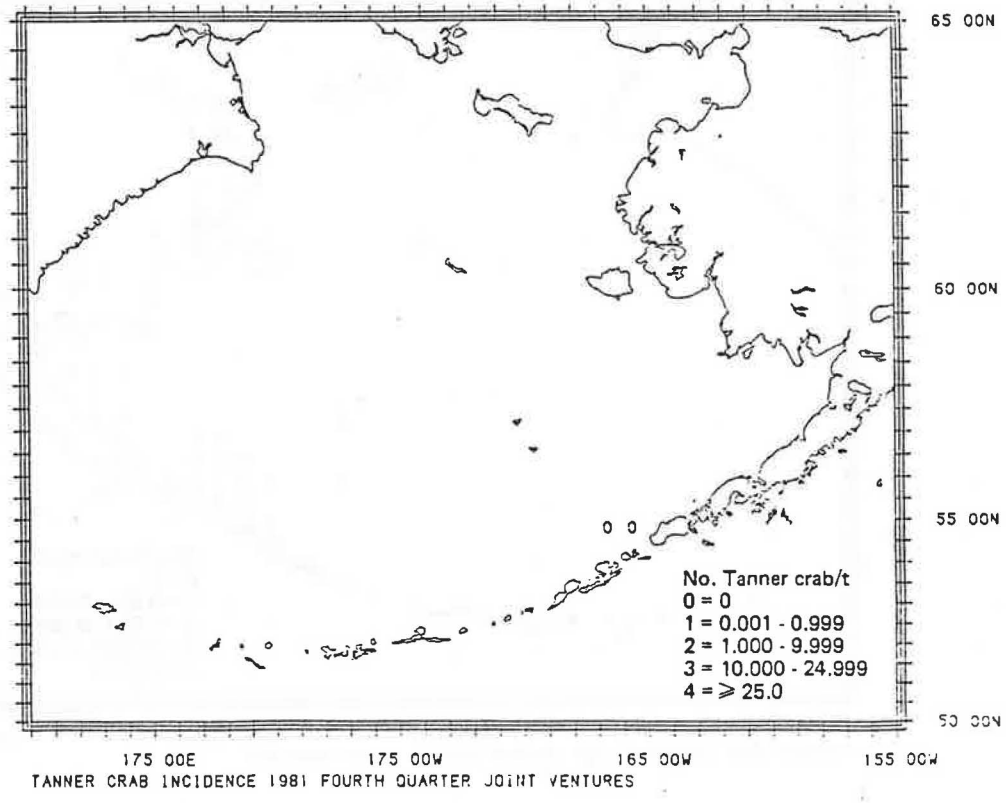


Figure 24.--Average incidence (No./ t) of Tanner crab (Chionoecetes spp.) in the joint venture fishery by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1981.

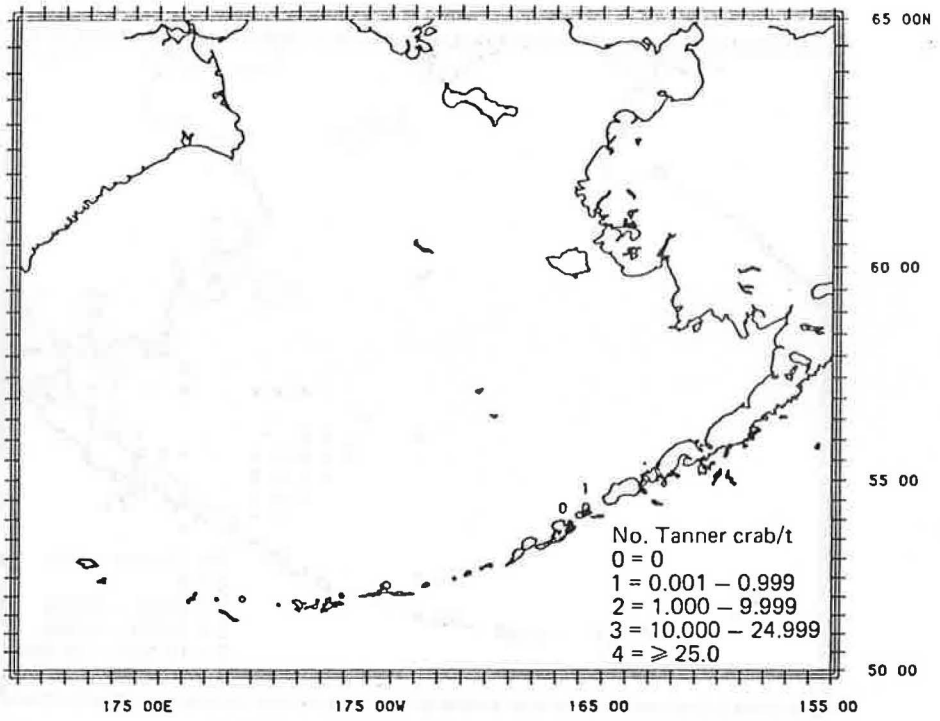


TANNER CRAB INCIDENCE 1981 THIRD QUARTER JOINT VENTURES



TANNER CRAB INCIDENCE 1981 FOURTH QUARTER JOINT VENTURES

Figure 24.--Continued.



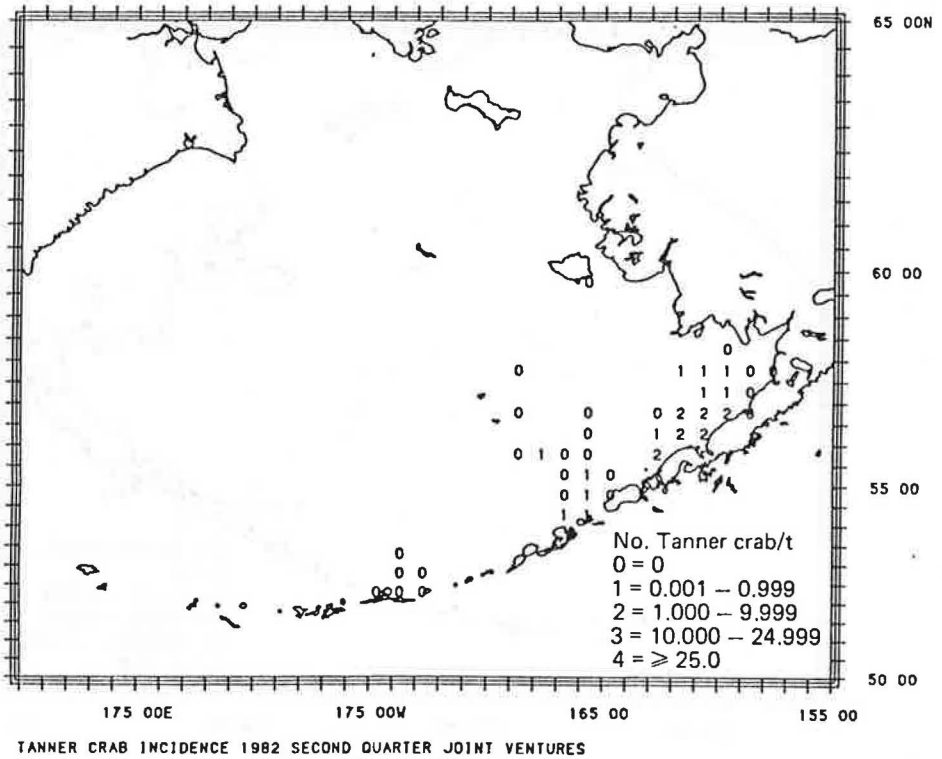
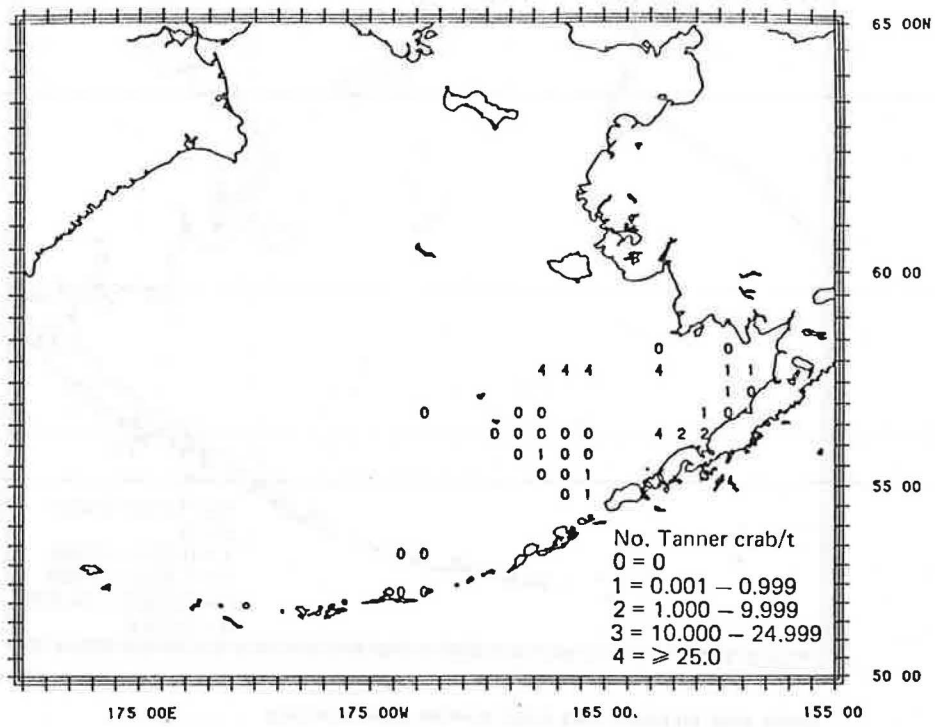
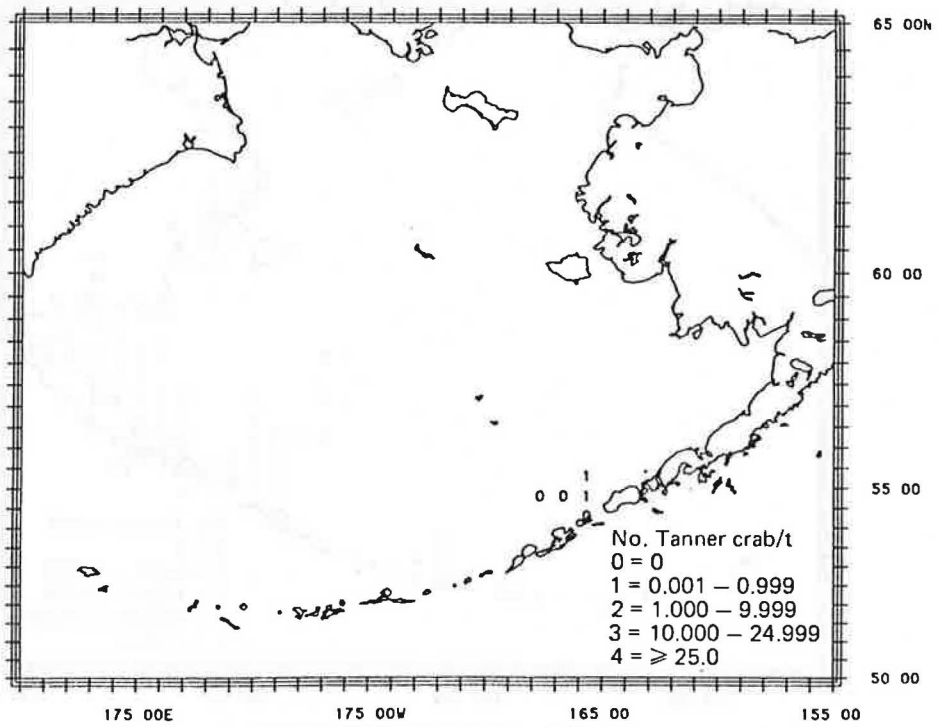


Figure 25.--Average incidence (No./t) of Tanner crab (Chionoecetes spp.) in the joint venture fishery by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1982.

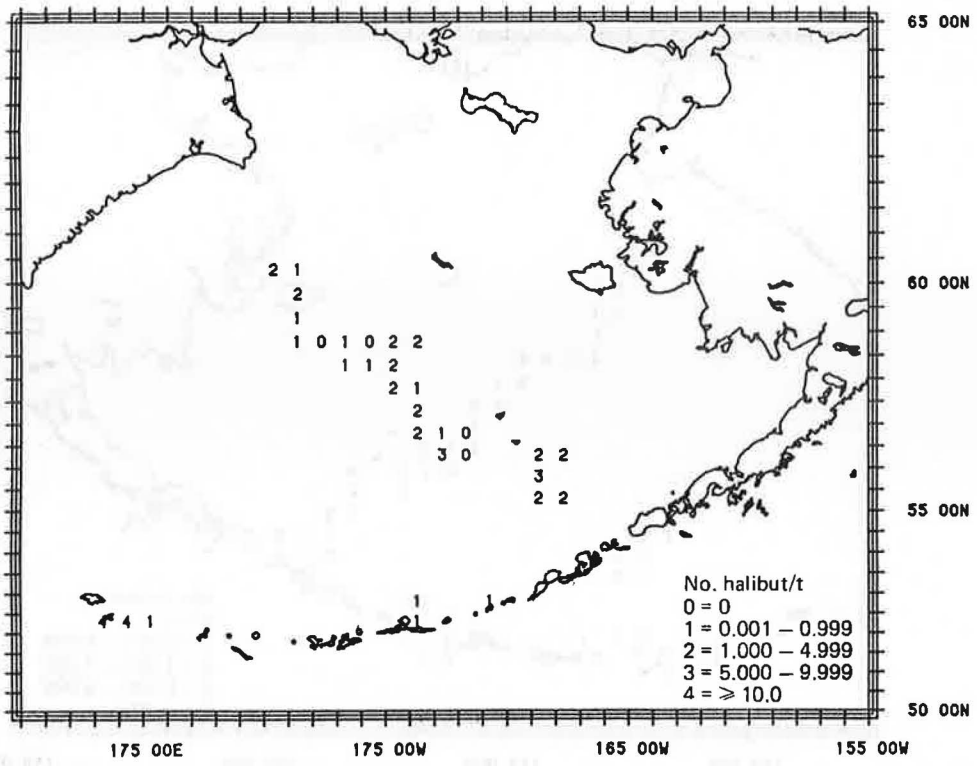


TANNER CRAB INCIDENCE 1982 THIRD QUARTER JOINT VENTURES

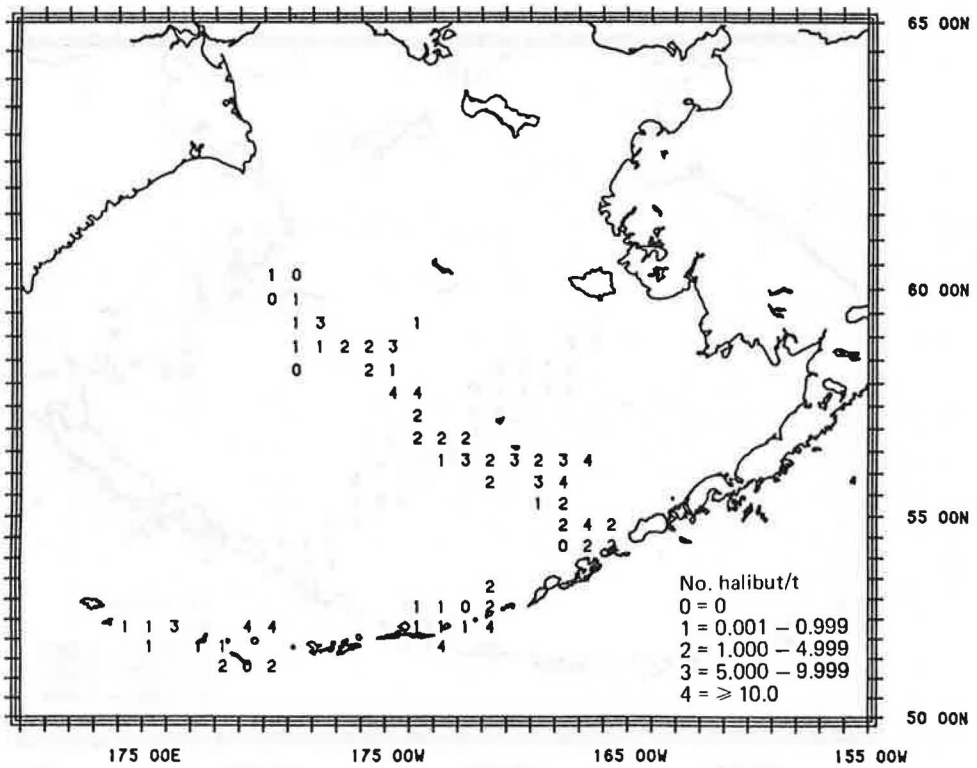


TANNER CRAB INCIDENCE 1982 FOURTH QUARTER JOINT VENTURES

Figure 25--continued.

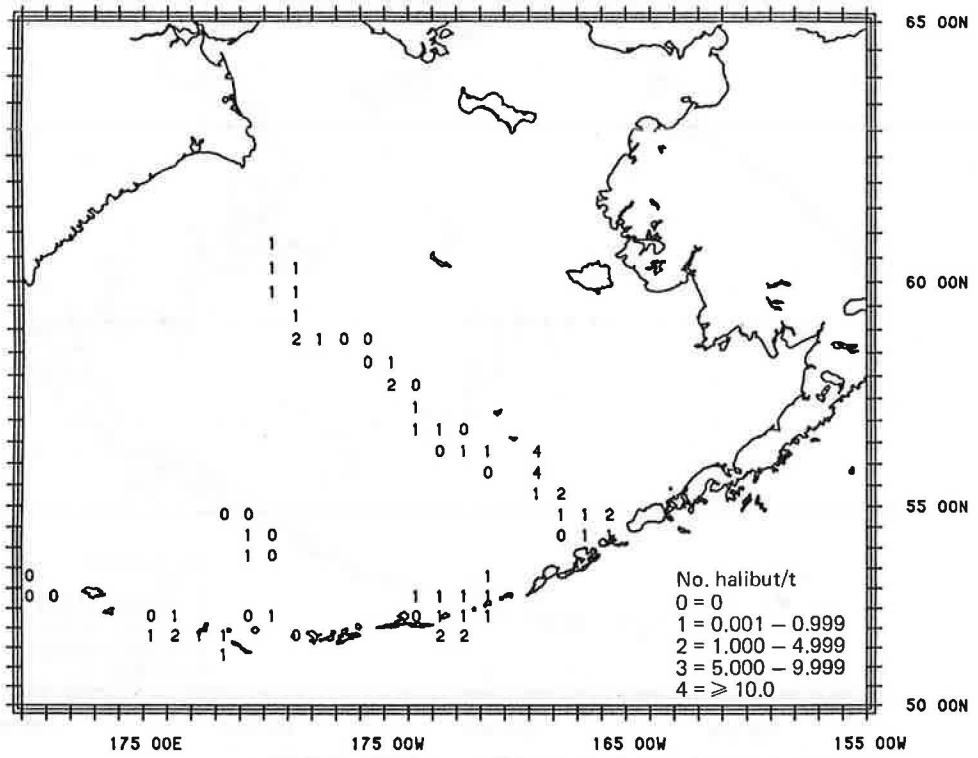


HALIBUT INCIDENCE 1978 FIRST QUARTER SMALL STERN TRAWLERS

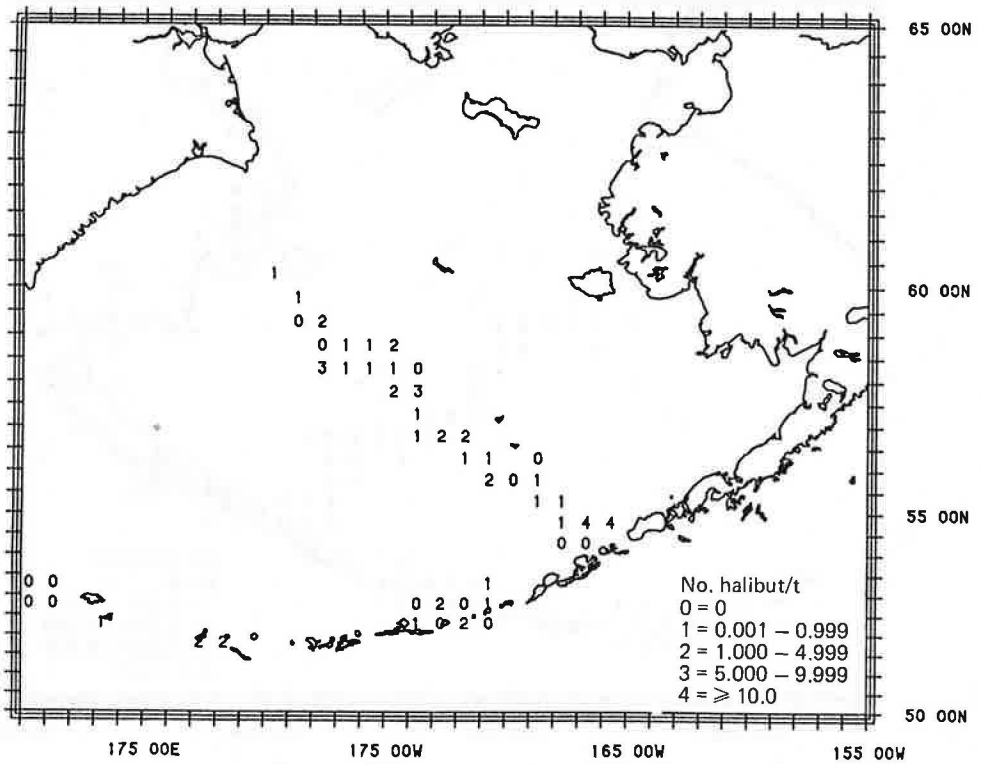


HALIBUT INCIDENCE 1978 SECOND QUARTER SMALL STERN TRAWLERS

Figure 26.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) on Japanese small stern trawlers by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1978.

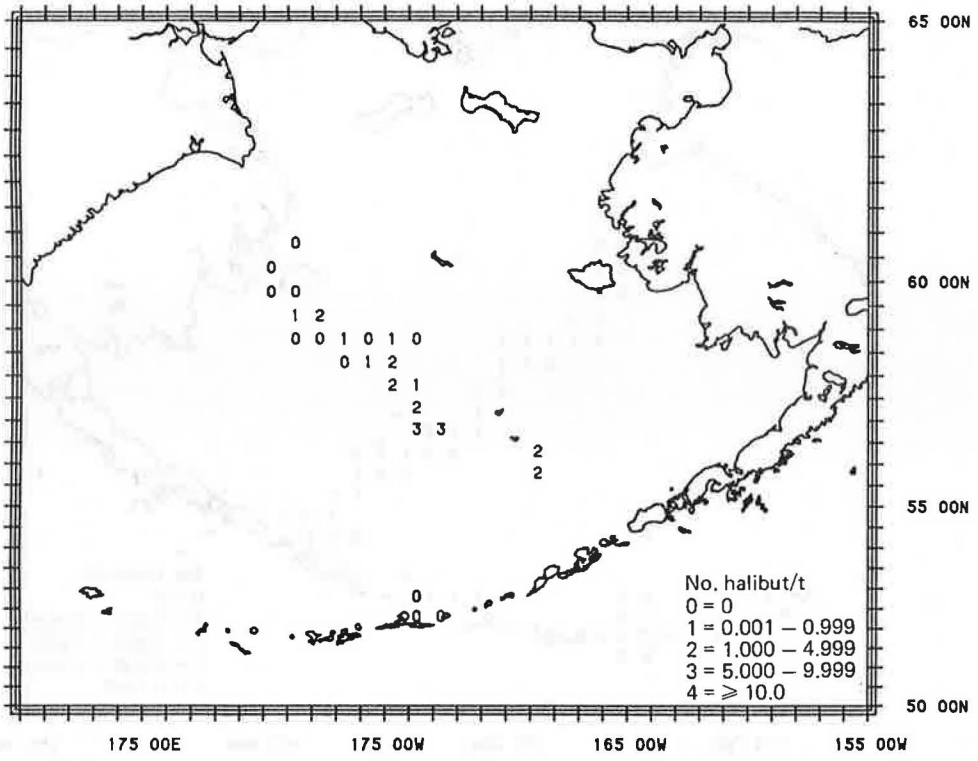


HALIBUT INCIDENCE 1978 THIRD QUARTER SMALL STERN TRAWLERS



HALIBUT INCIDENCE 1978 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 26.--Continued.



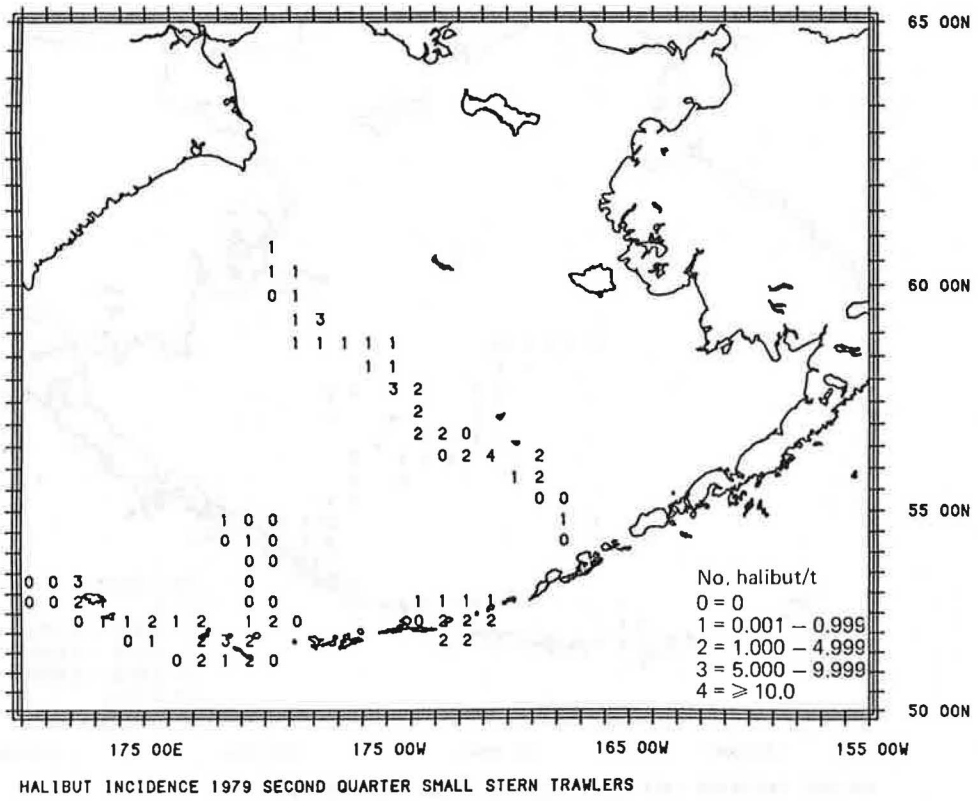
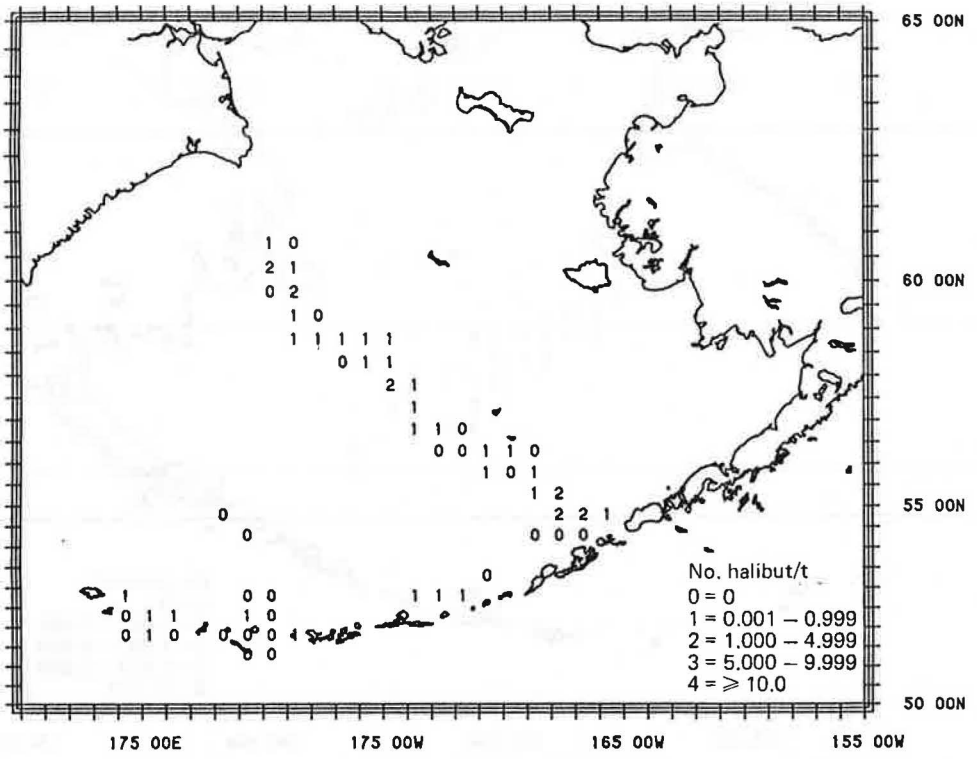
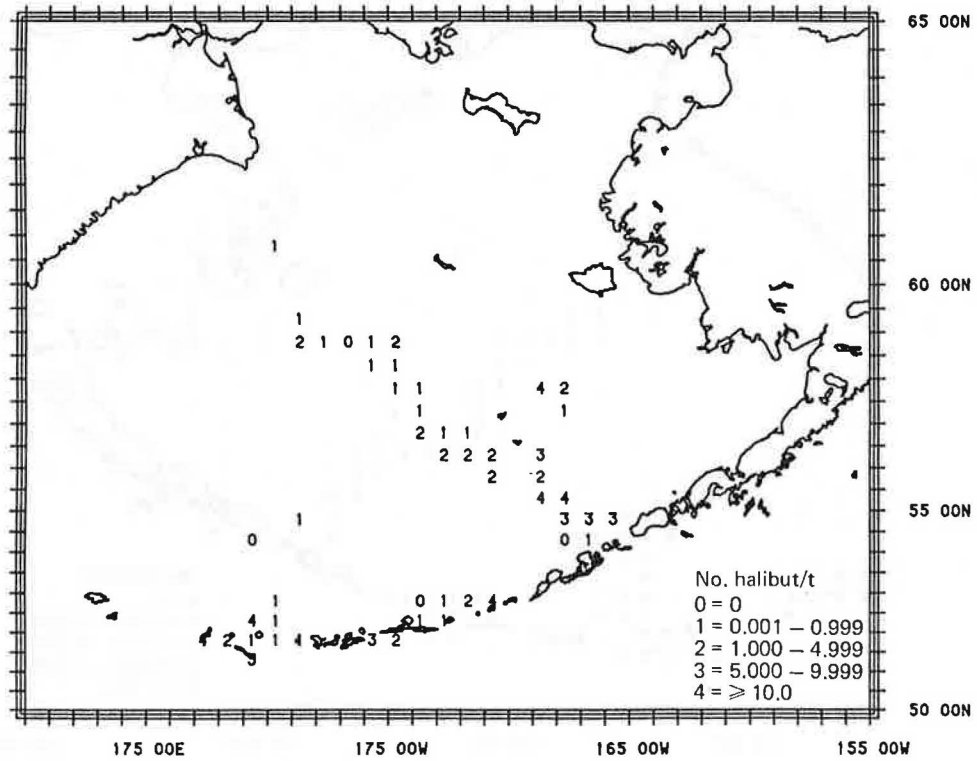


Figure 27.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) on Japanese small stern trawlers by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1979.

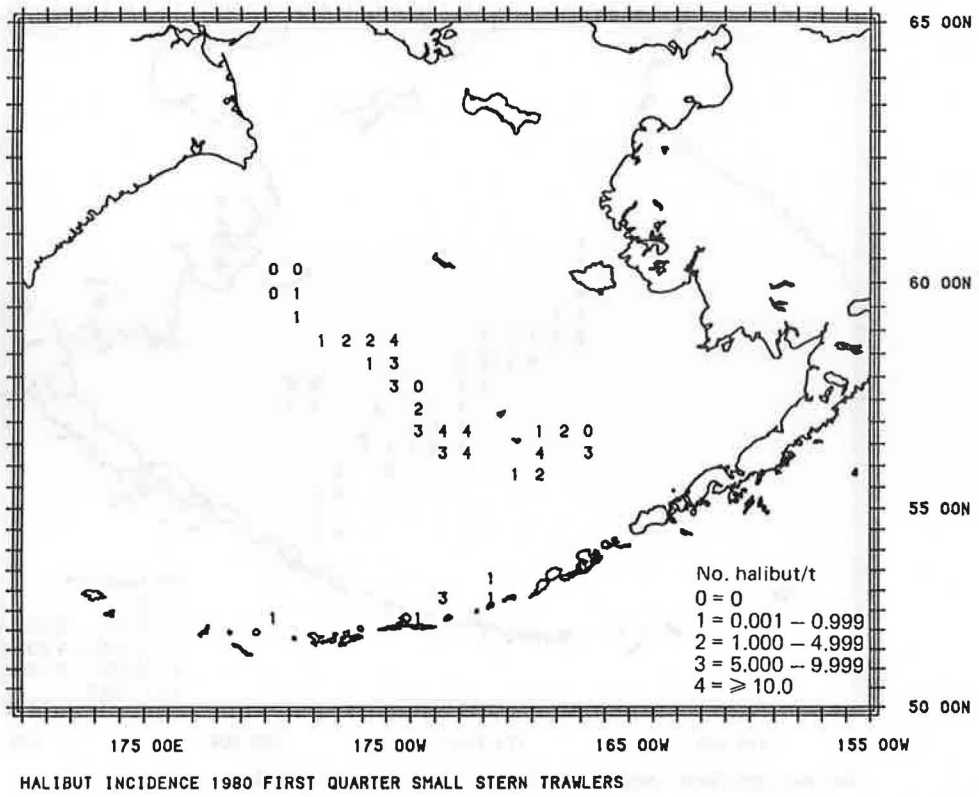


HALIBUT INCIDENCE 1979 THIRD QUARTER SMALL STERN TRAWLERS



HALIBUT INCIDENCE 1979 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 27.--Continued.



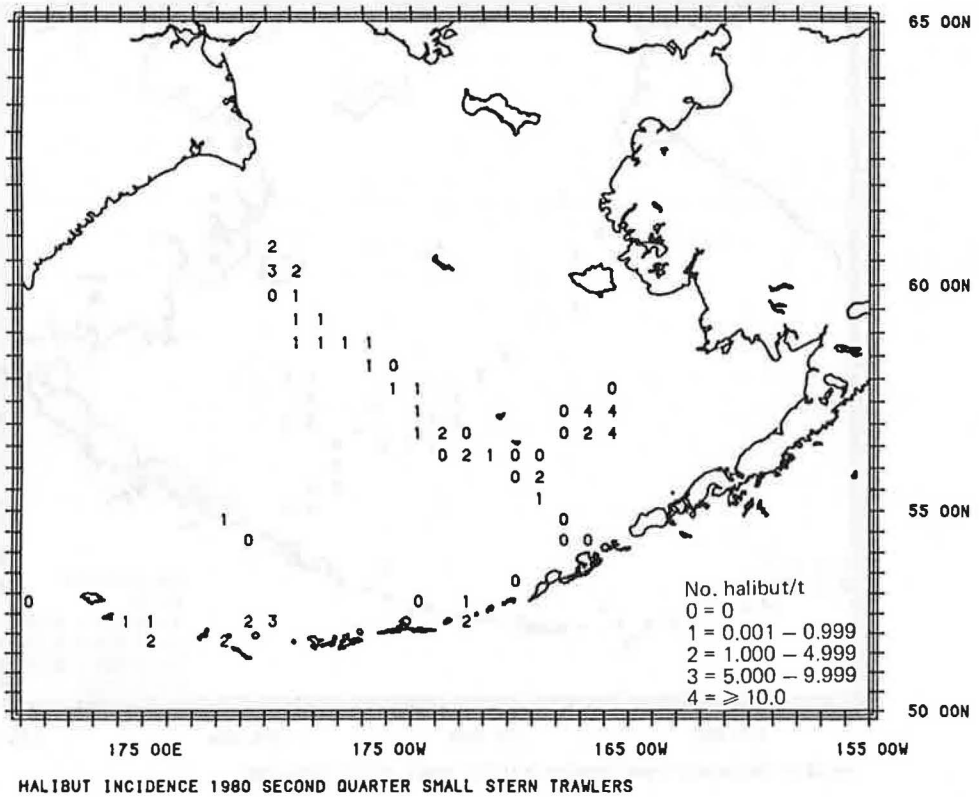
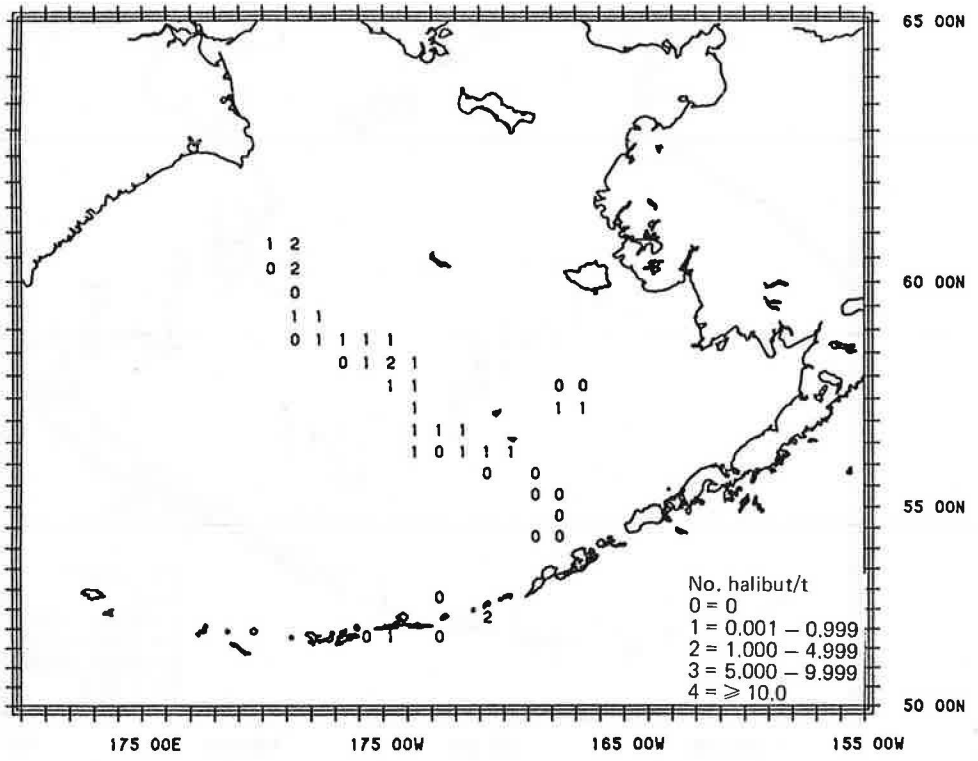
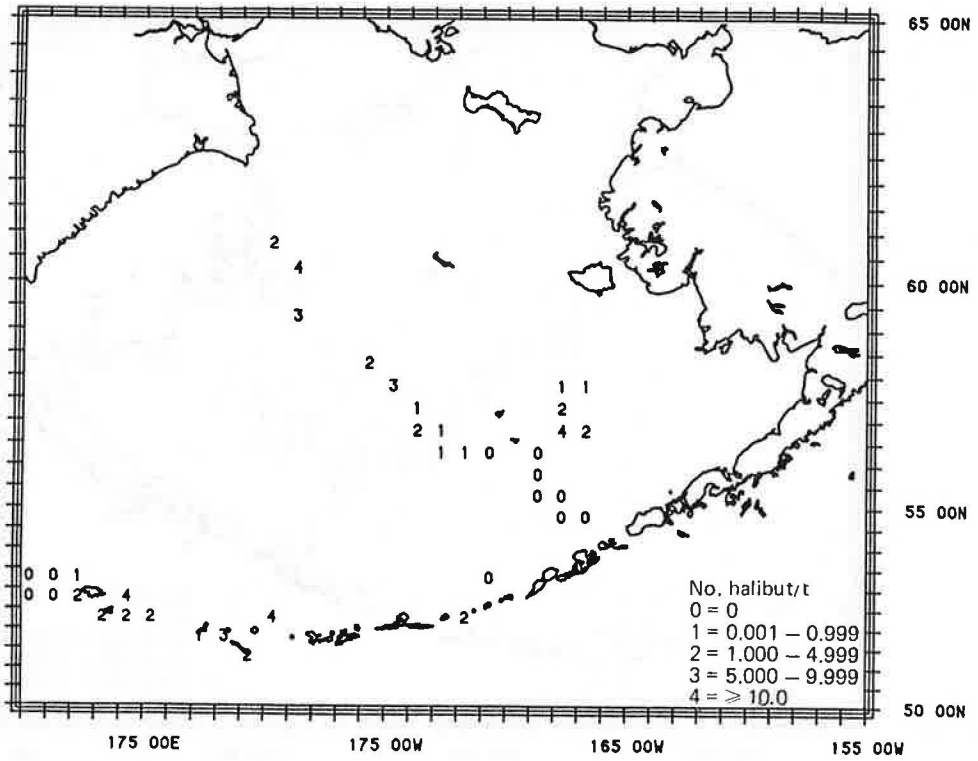


Figure 28.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) on Japanese small stern trawlers by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1980.



HALIBUT INCIDENCE 1980 THIRD QUARTER SMALL STERN TRAWLERS



HALIBUT INCIDENCE 1980 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 28.--Continued.

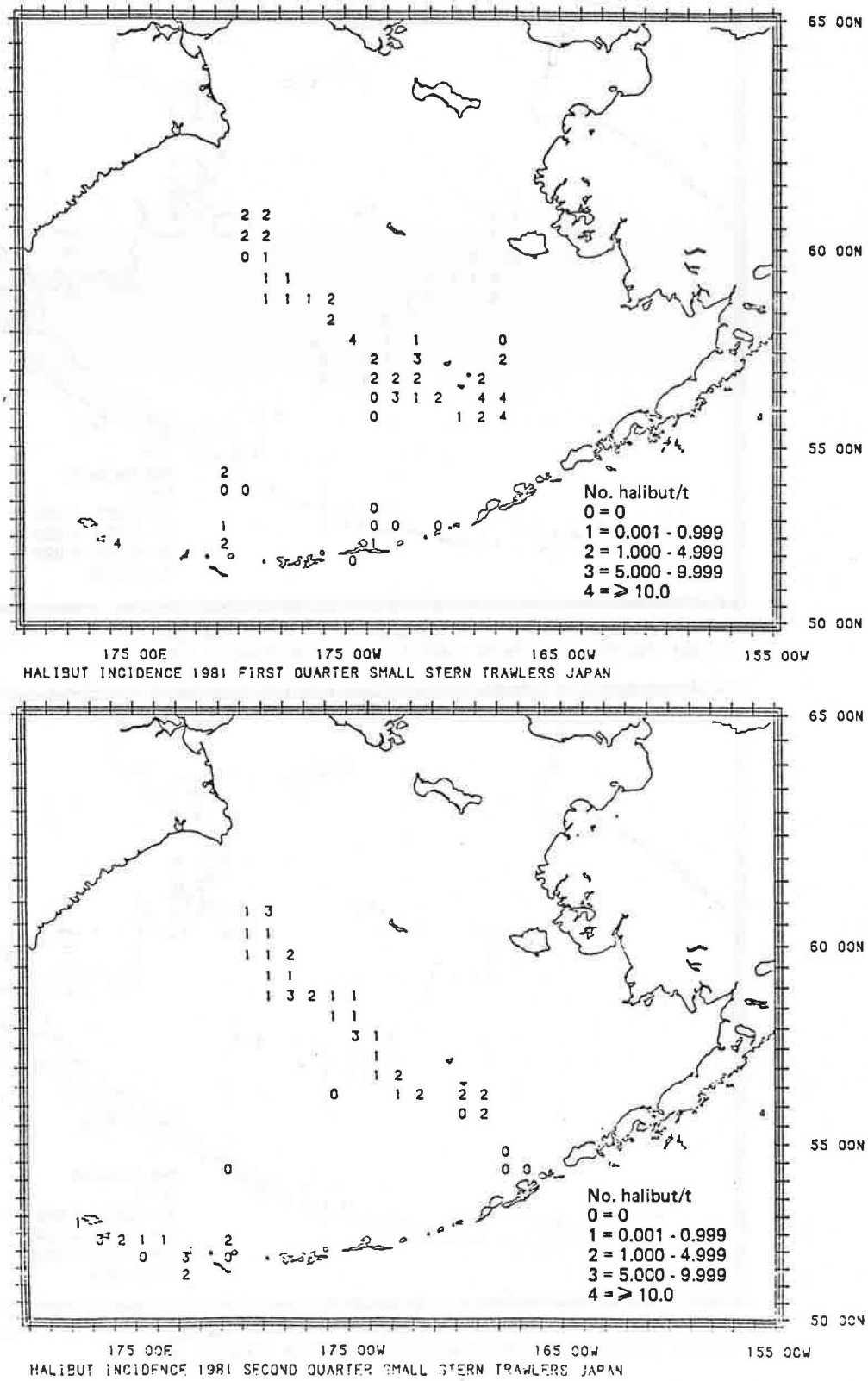
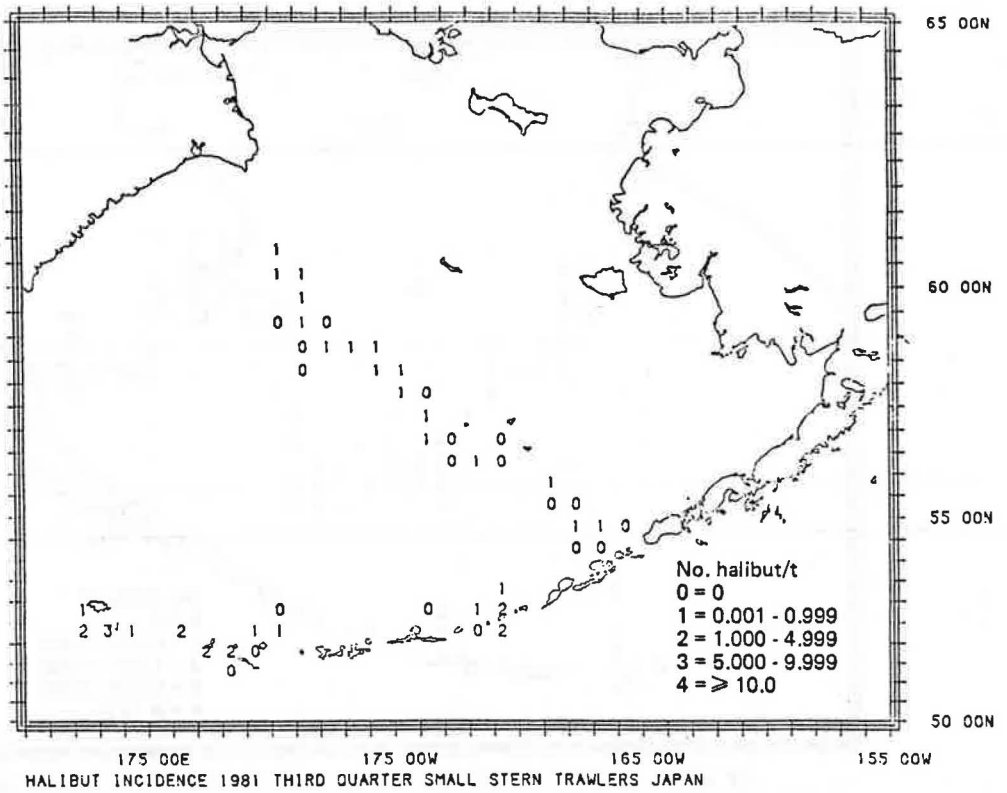
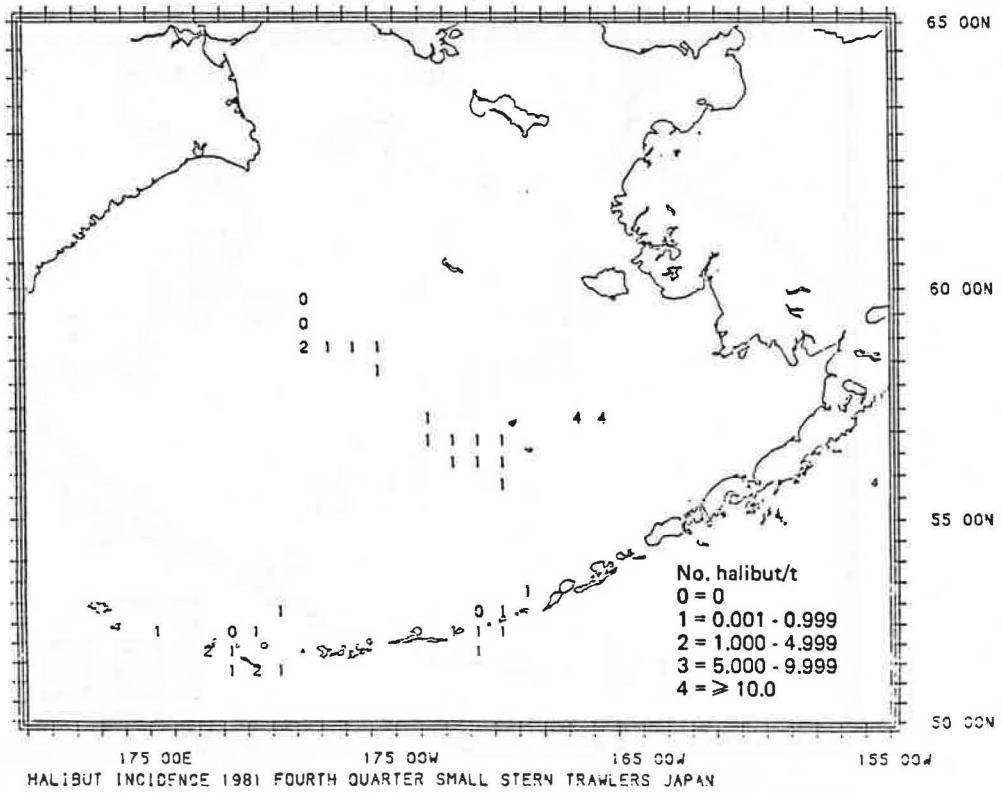


Figure 29.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) on Japanese small stern trawlers by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1981.

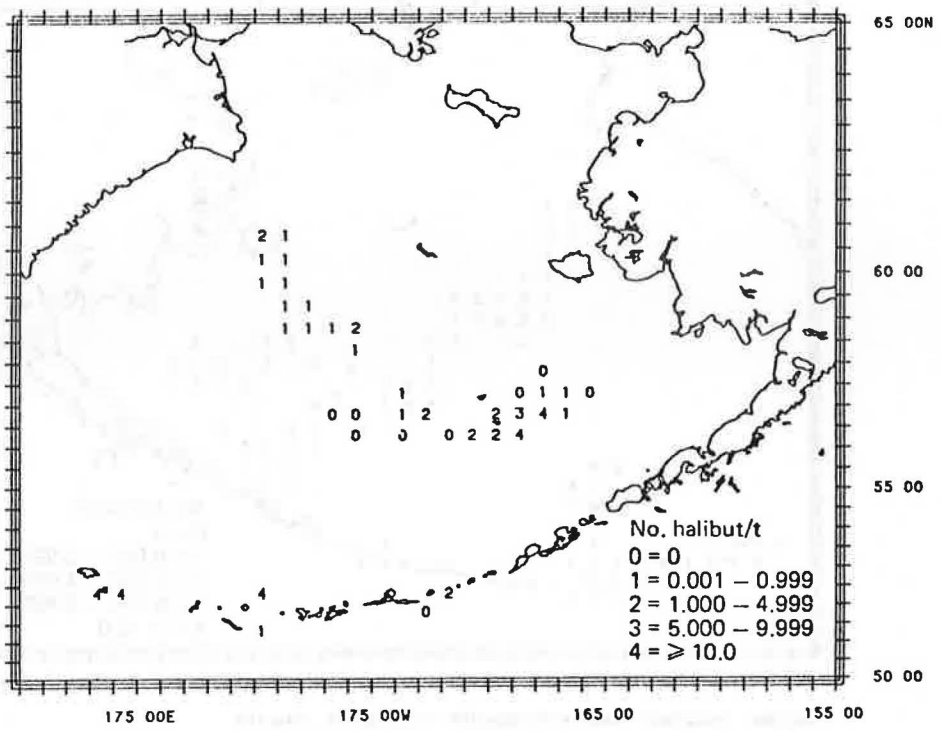


HALIBUT INCIDENCE 1981 THIRD QUARTER SMALL STERN TRAWLERS JAPAN



HALIBUT INCIDENCE 1981 FOURTH QUARTER SMALL STERN TRAWLERS JAPAN

Figure 29.--Continued.



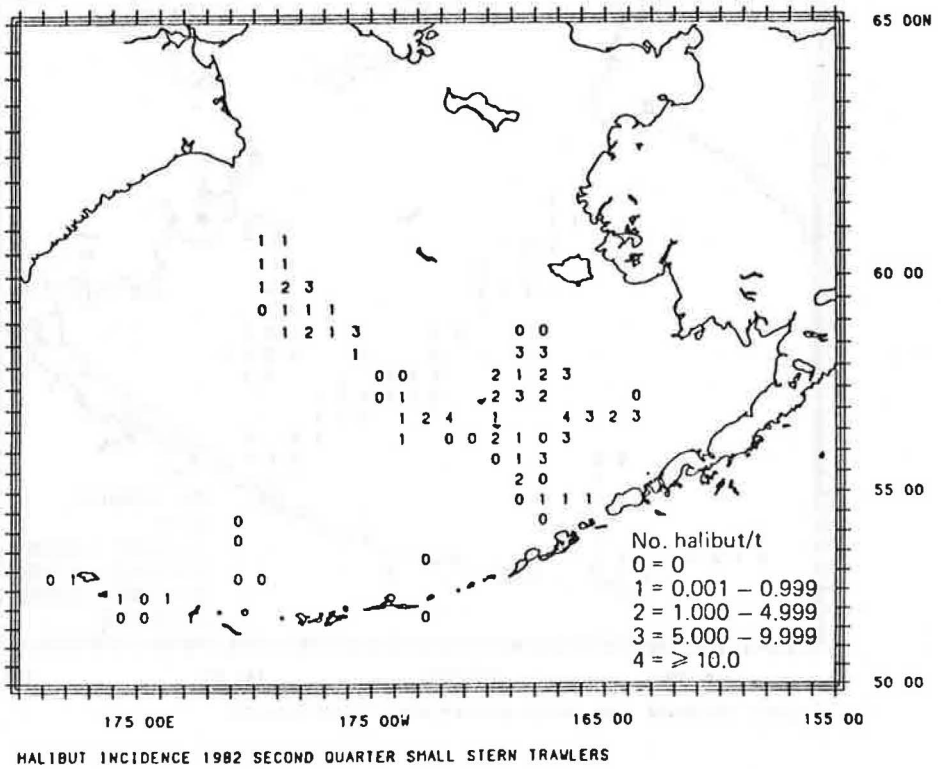
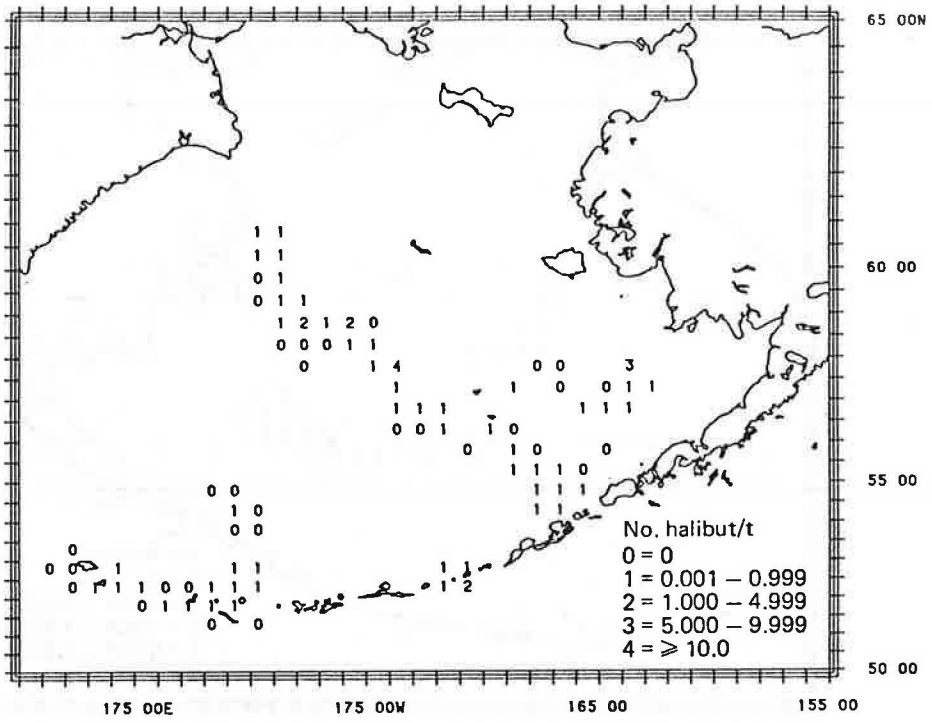
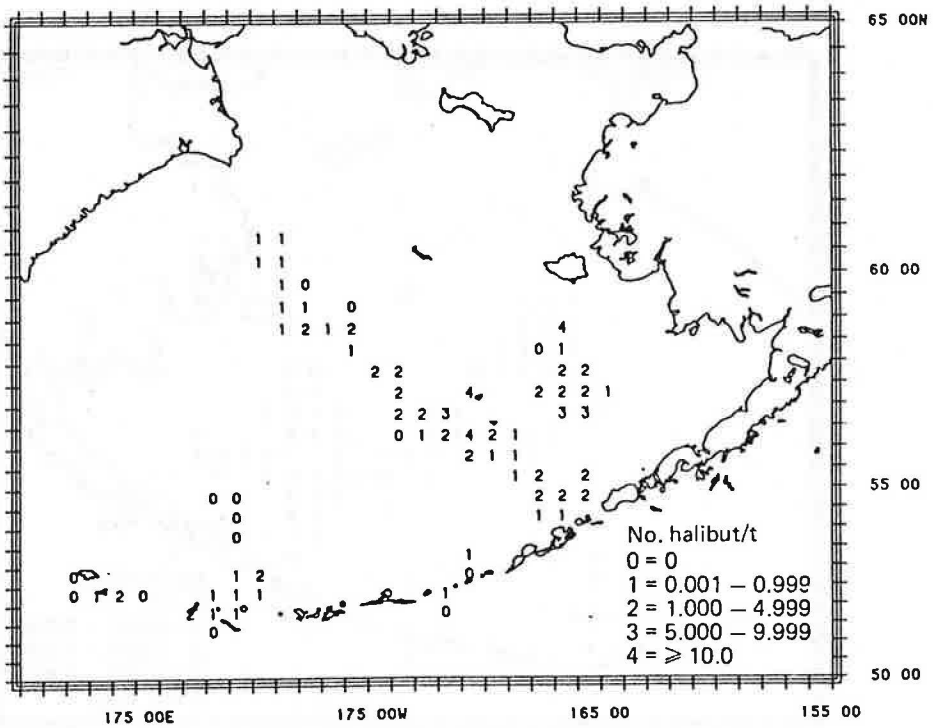


Figure 30.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) on small stern trawlers (all nations) by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1982.

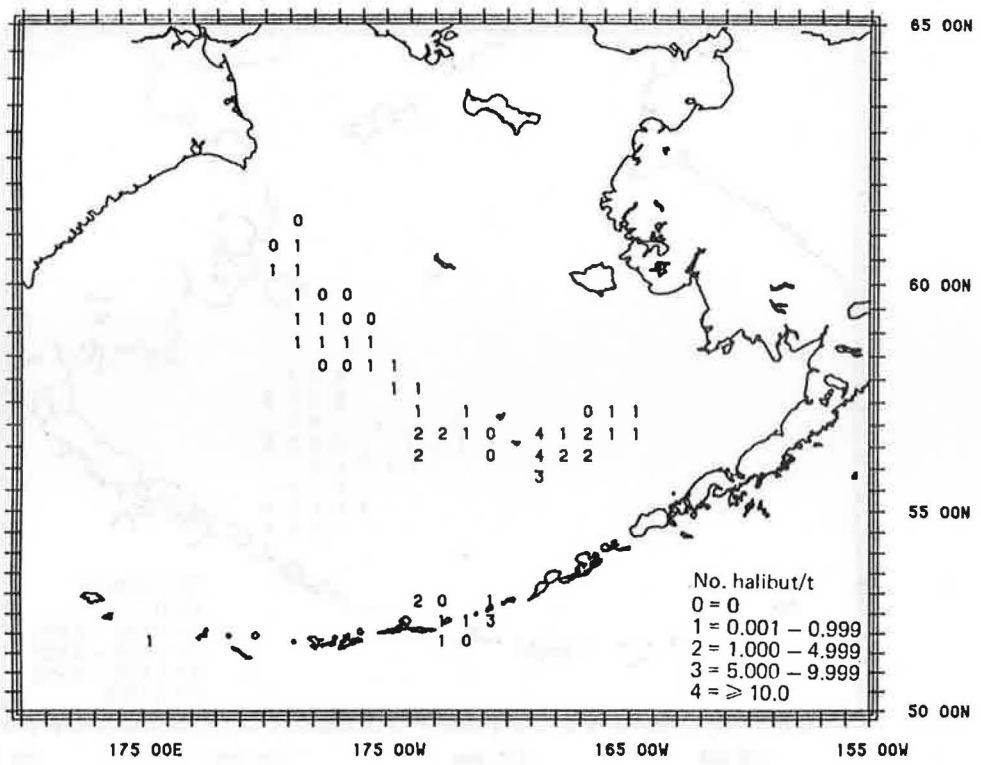


HALIBUT INCIDENCE 1982 THIRD QUARTER SMALL STERN TRAWLERS



HALIBUT INCIDENCE 1982 FOURTH QUARTER SMALL STERN TRAWLERS

Figure 30.--continued.



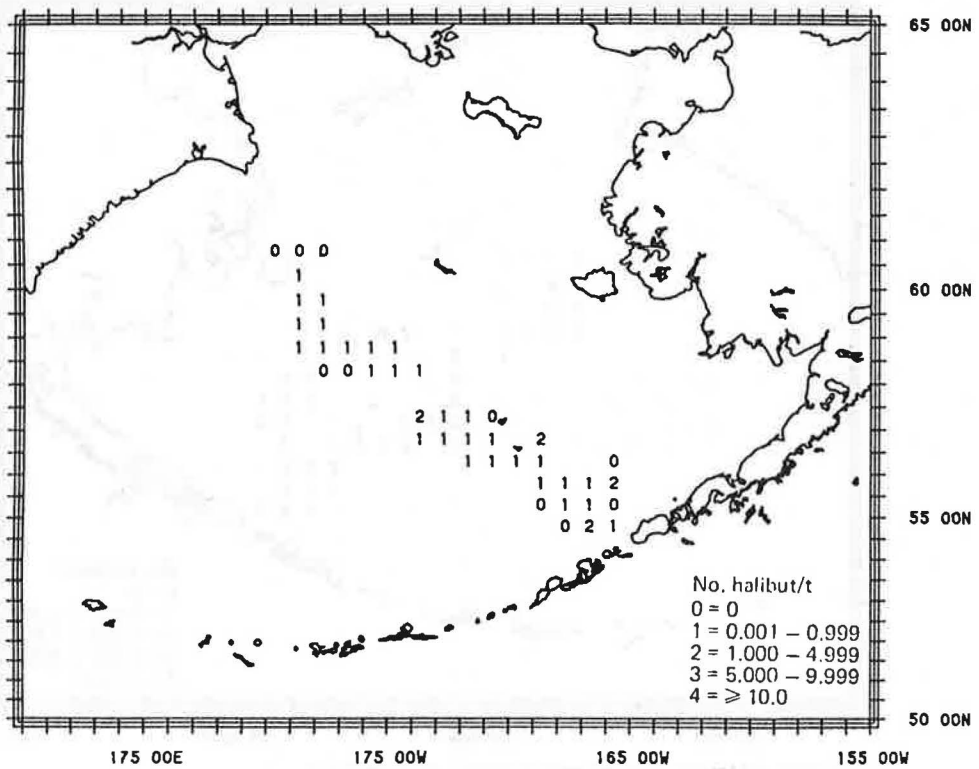
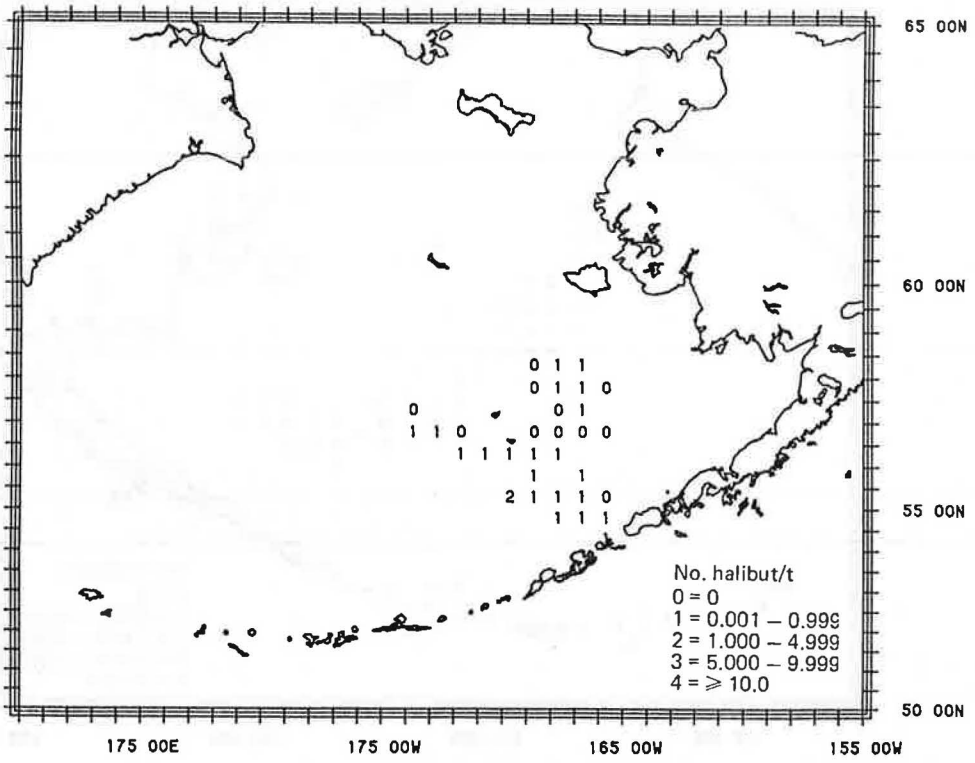
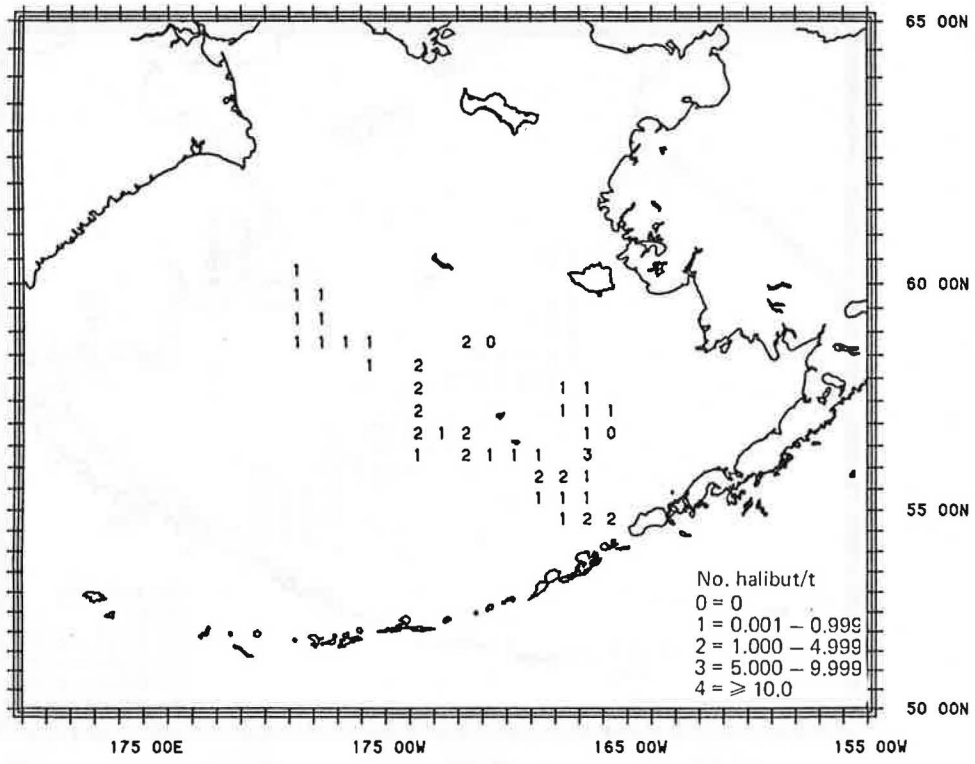


Figure 31.--Average incidence (No./ .t) of Pacific halibut (Hippoglossus stenolepis) on large trawlers (all nations) by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1979.

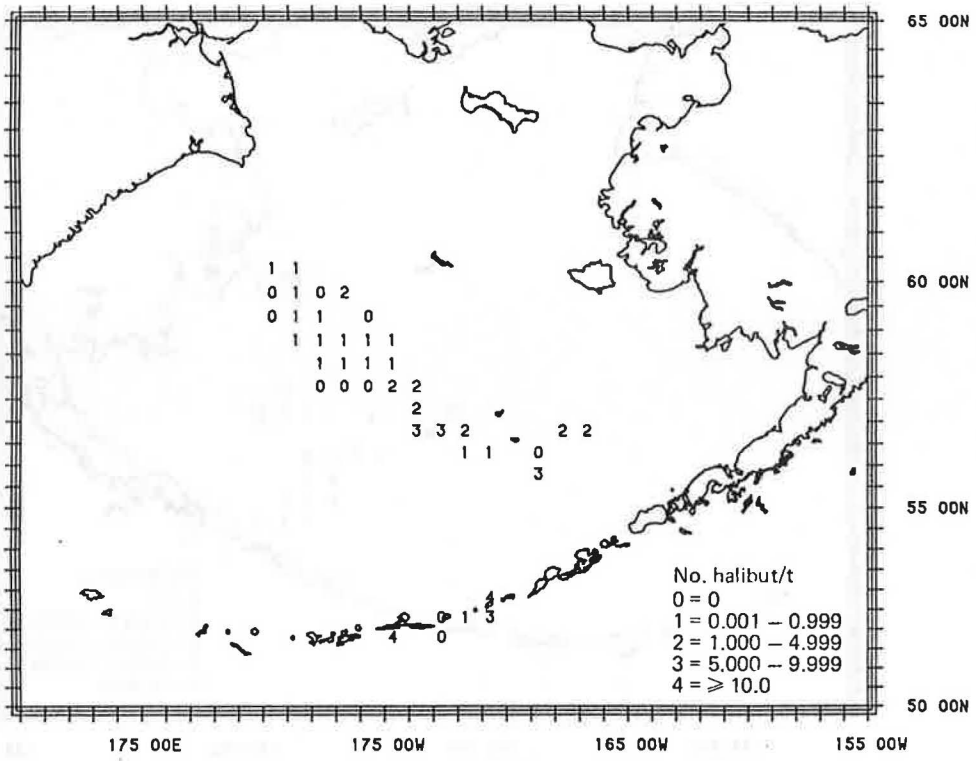


HALIBUT INCIDENCE 1979 THIRD QUARTER LARGE TRAWLERS



HALIBUT INCIDENCE 1979 FOURTH QUARTER LARGE TRAWLERS

Figure 31.--Continued.



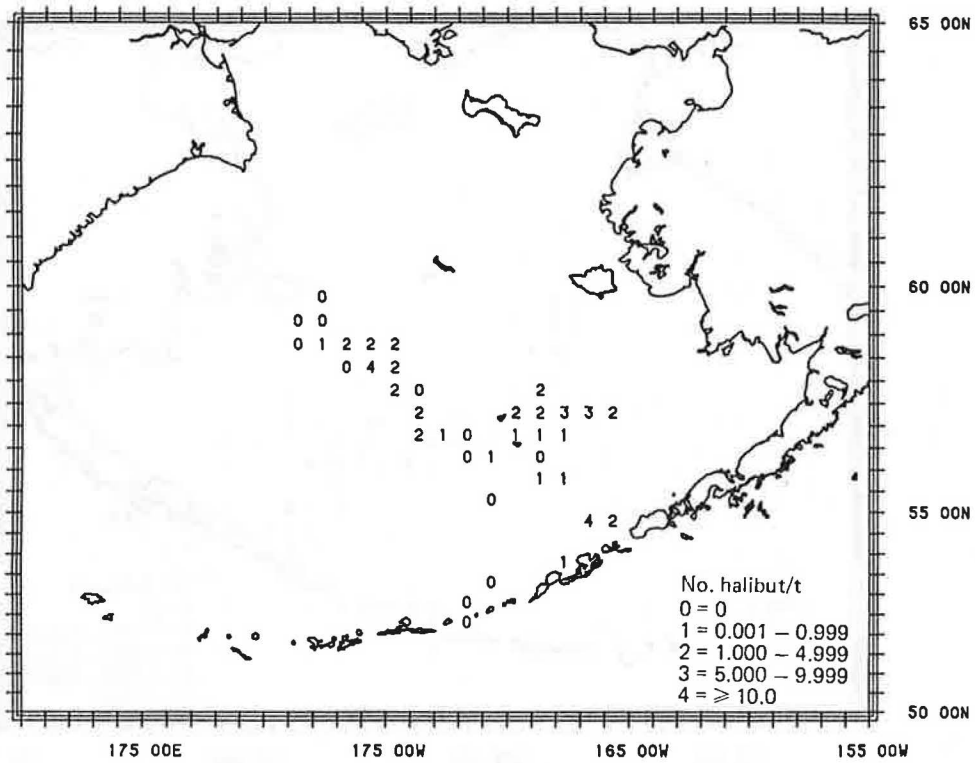
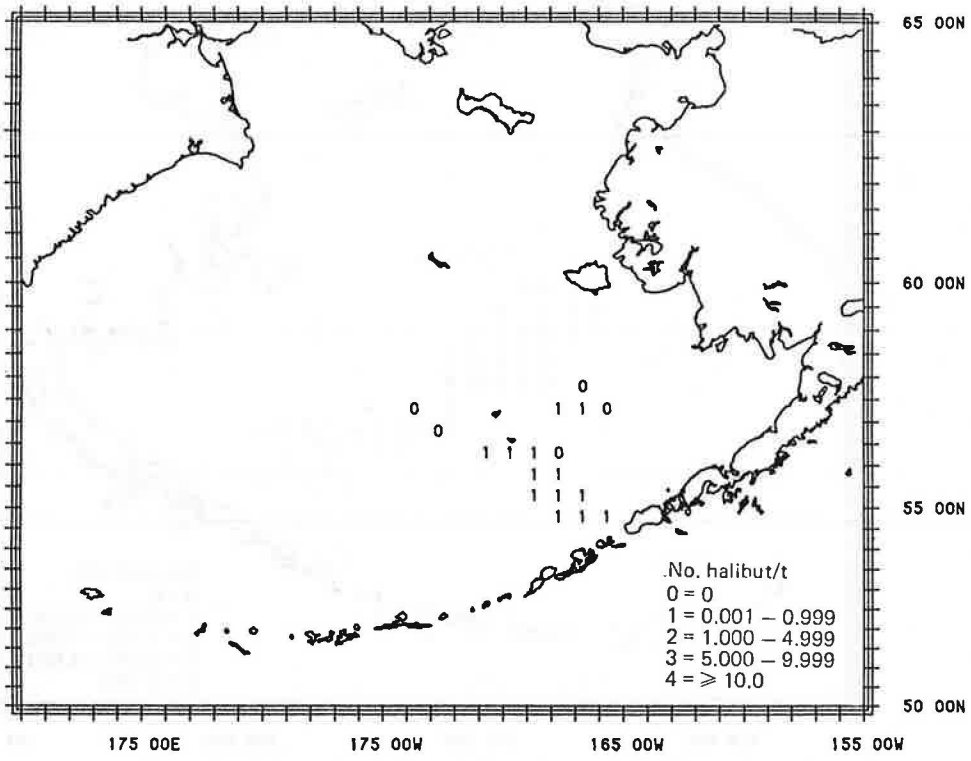
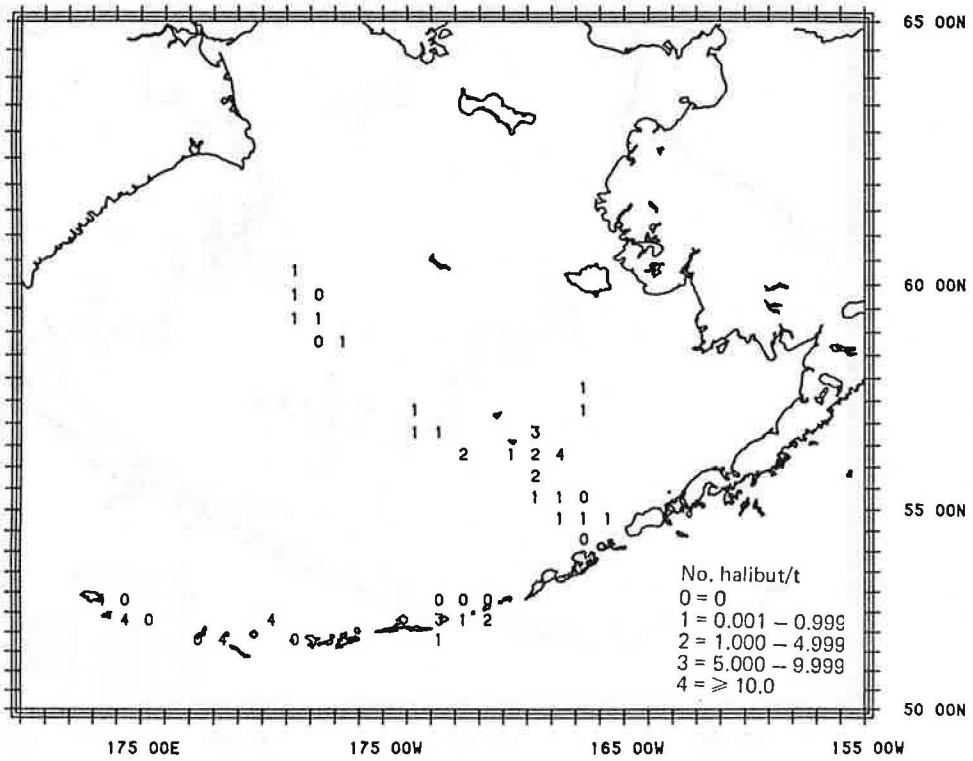


Figure 32.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) on large trawlers (all nations) by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1980.



HALIBUT INCIDENCE 1980 THIRD QUARTER LARGE TRAWLERS



HALIBUT INCIDENCE 1980 FOURTH QUARTER LARGE TRAWLERS

Figure 32.--Continued.

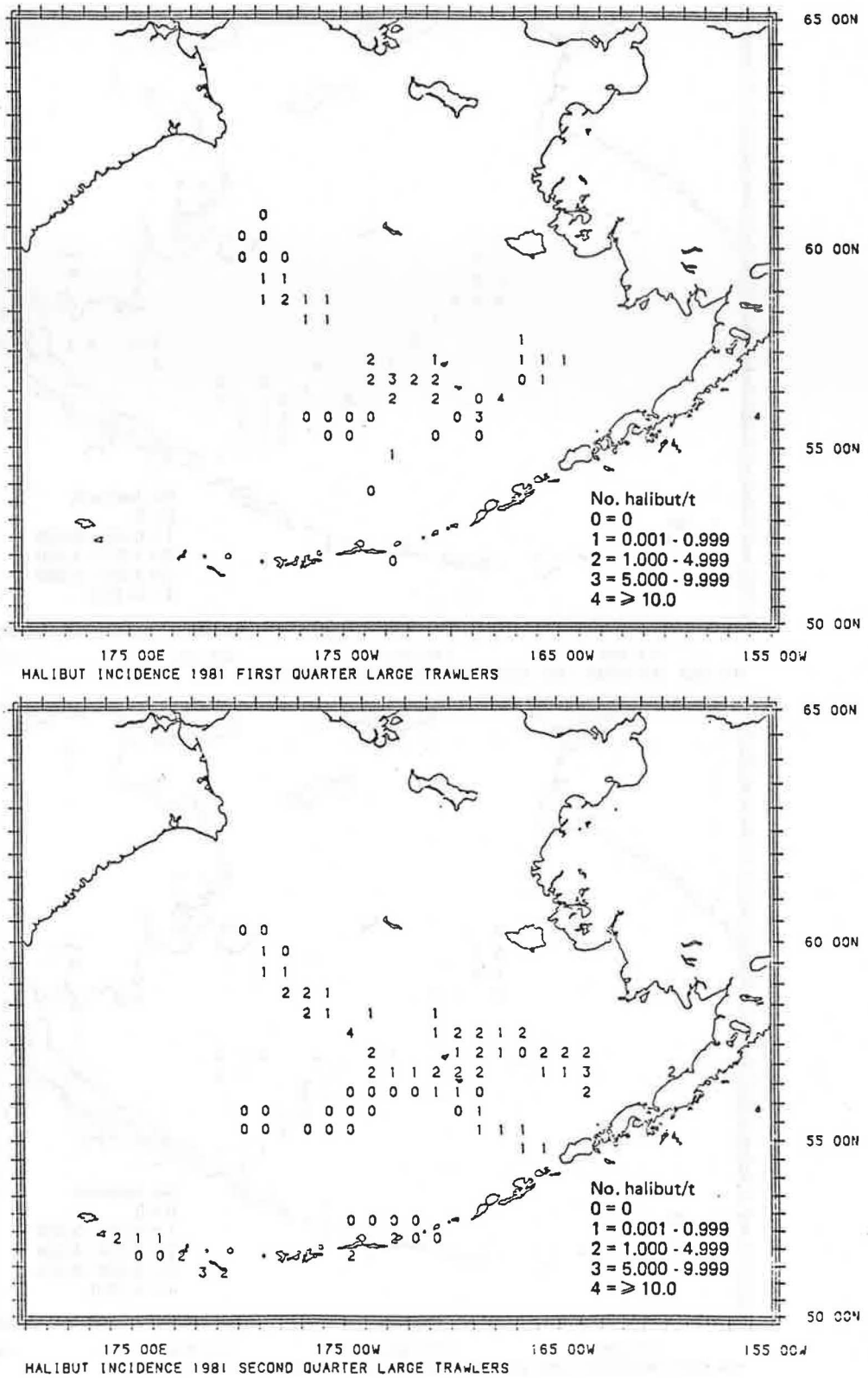
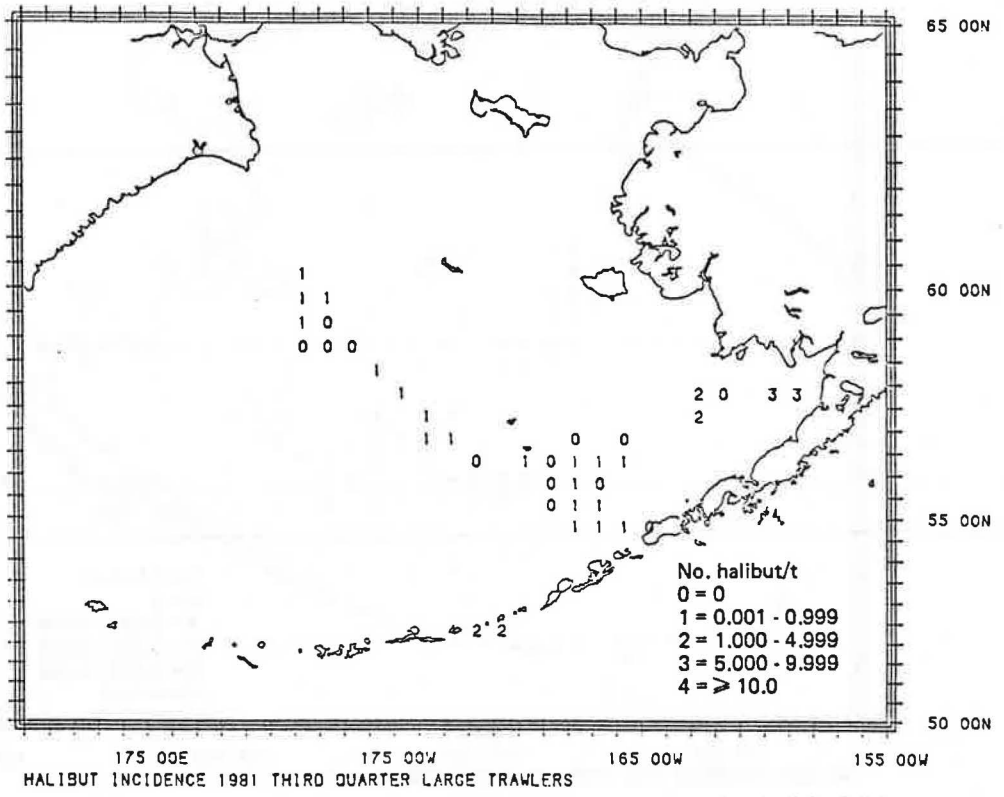
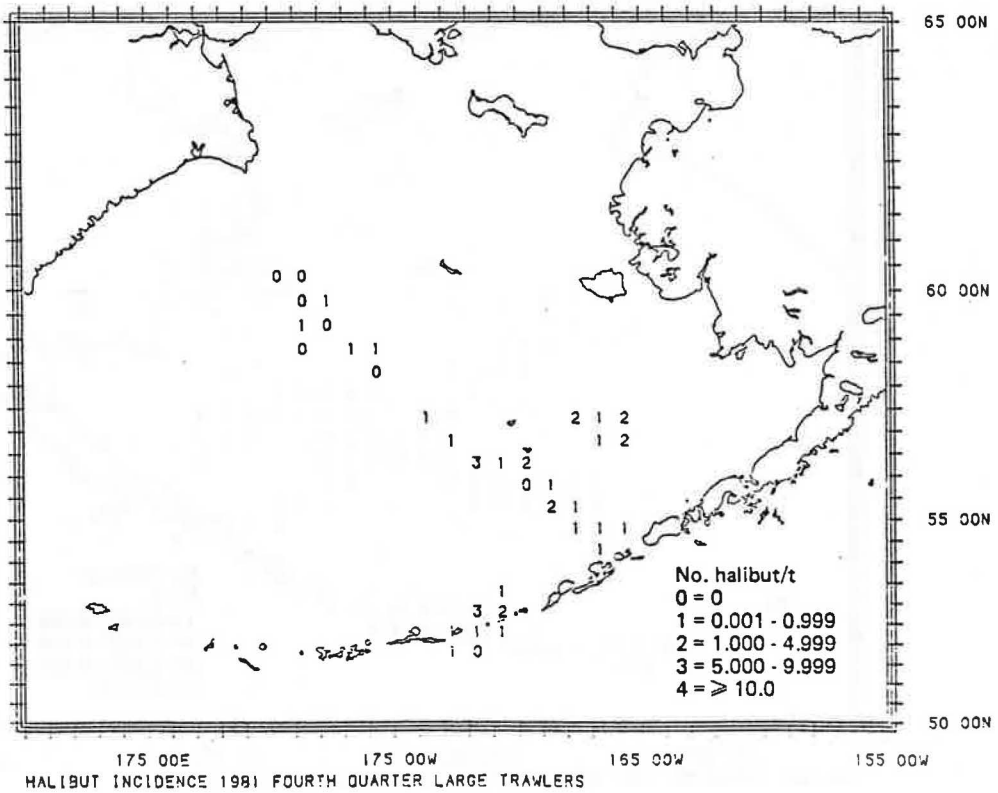


Figure 33.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) on large trawlers (all nations) by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1981.

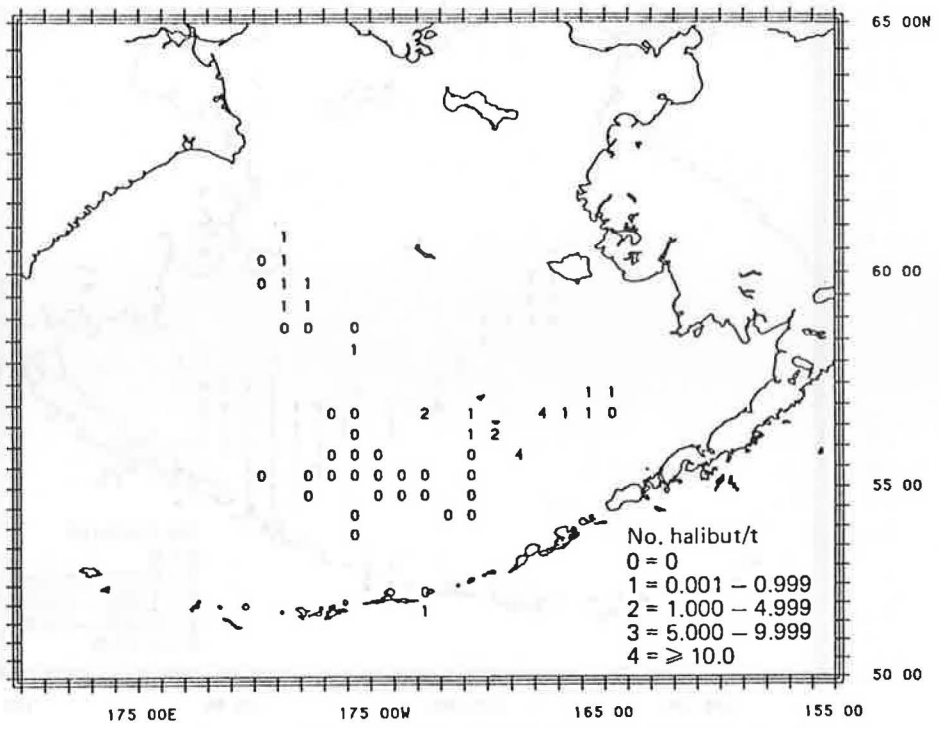


HALIBUT INCIDENCE 1981 THIRD QUARTER LARGE TRAWLERS



HALIBUT INCIDENCE 1981 FOURTH QUARTER LARGE TRAWLERS

Figure 33.--Continued.



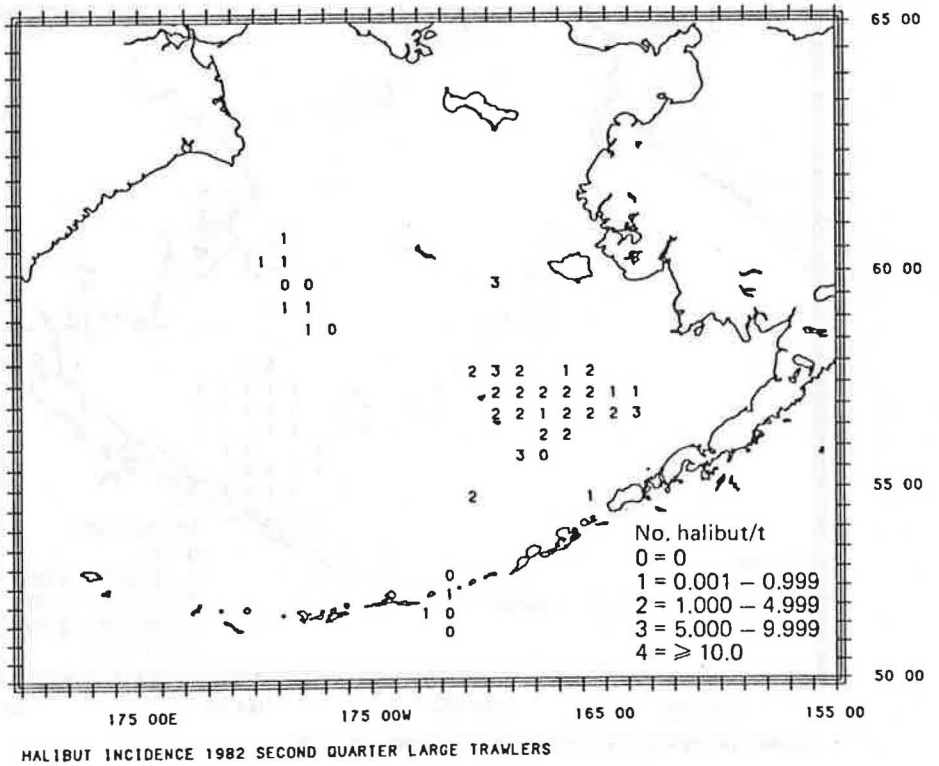
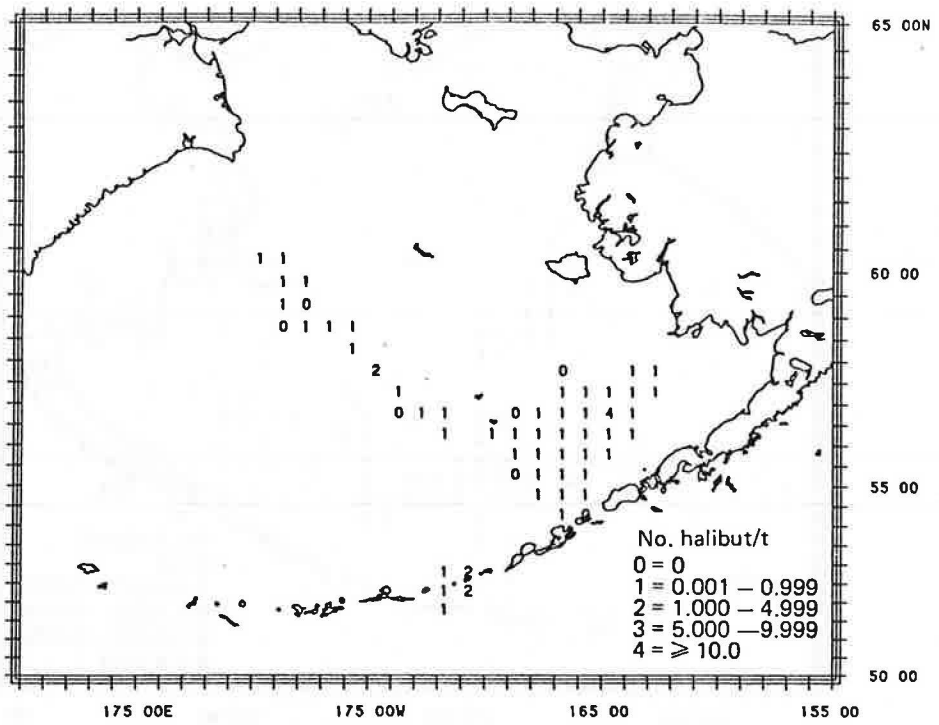
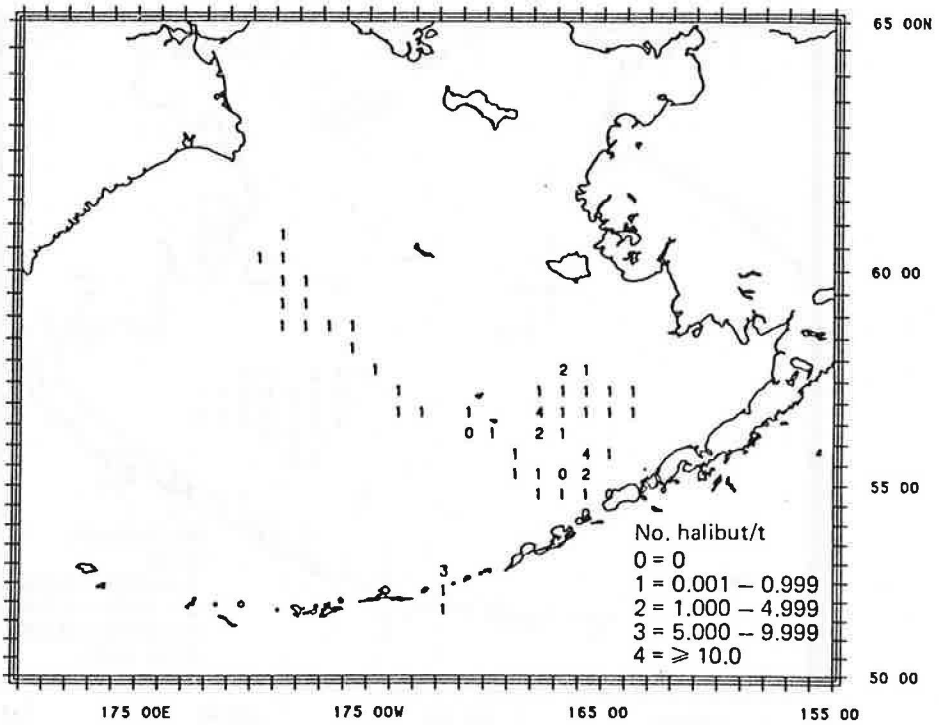


Figure 34.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) on large trawlers (all nations) by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1982



HALIBUT INCIDENCE 1982 THIRD QUARTER LARGE TRAWLERS



HALIBUT INCIDENCE 1982 FOURTH QUARTER LARGE TRAWLERS

Figure 34.--continued.

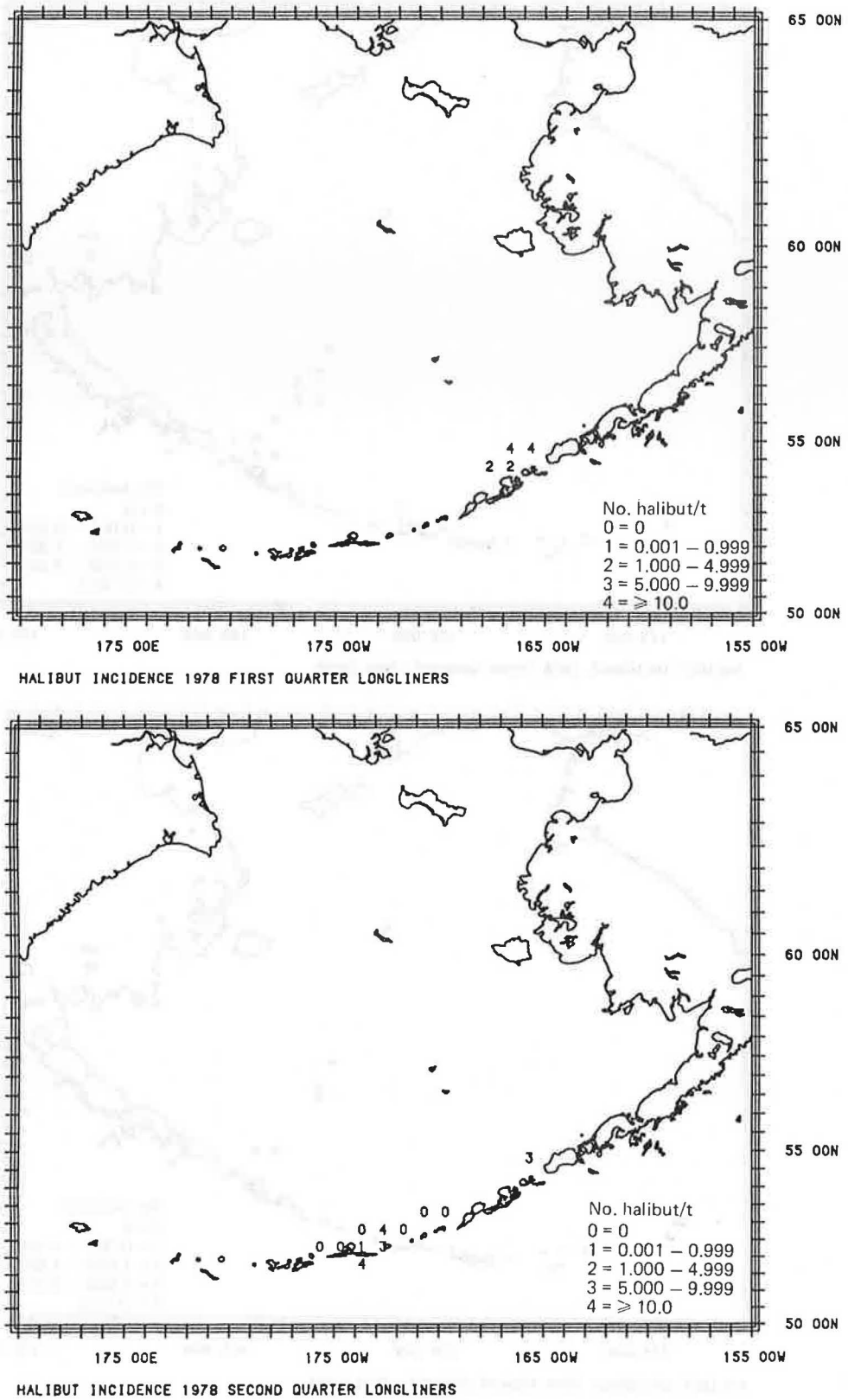
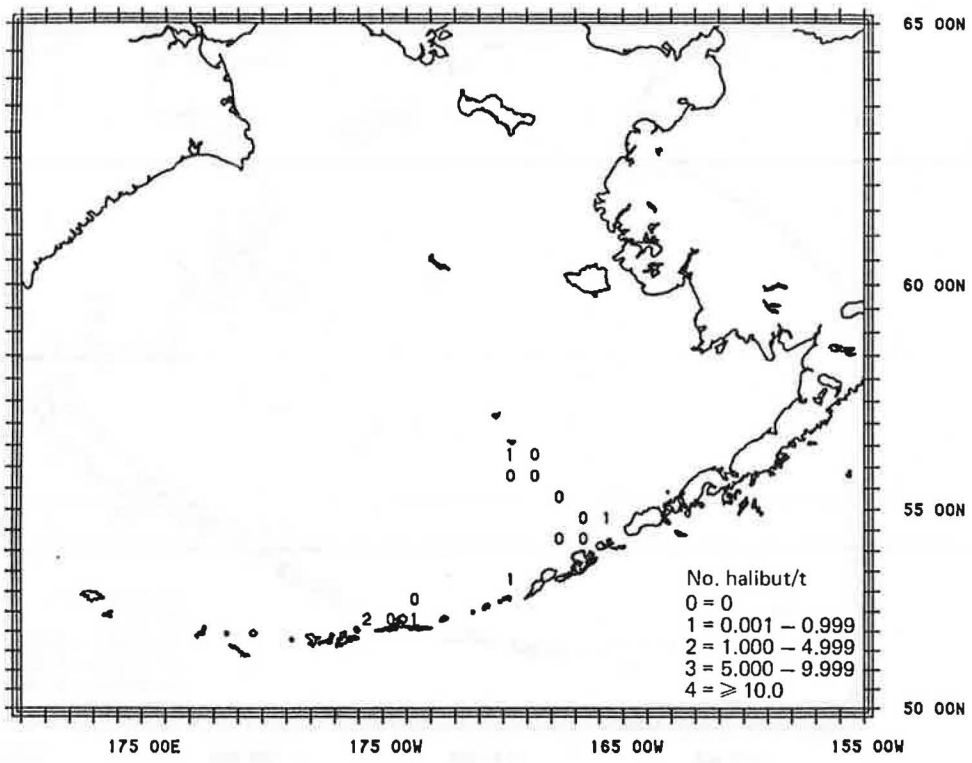
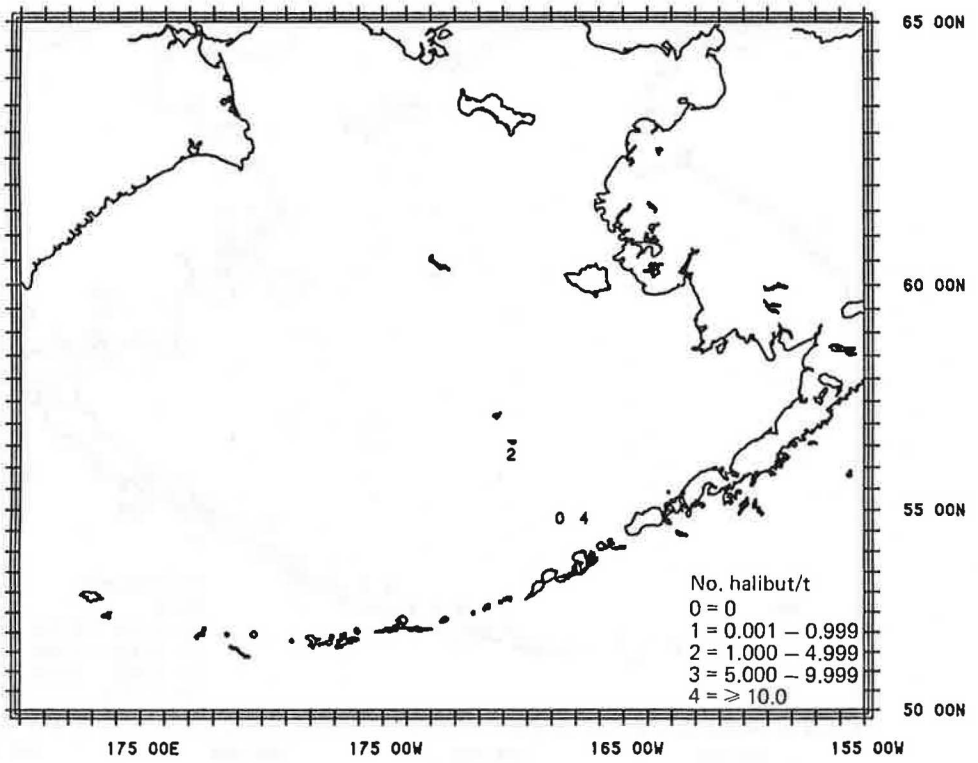


Figure 35.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) on Japanese longliners by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1978.



HALIBUT INCIDENCE 1978 THIRD QUARTER LONGLINERS



HALIBUT INCIDENCE 1978 FOURTH QUARTER LONGLINERS

Figure 35.--Continued.

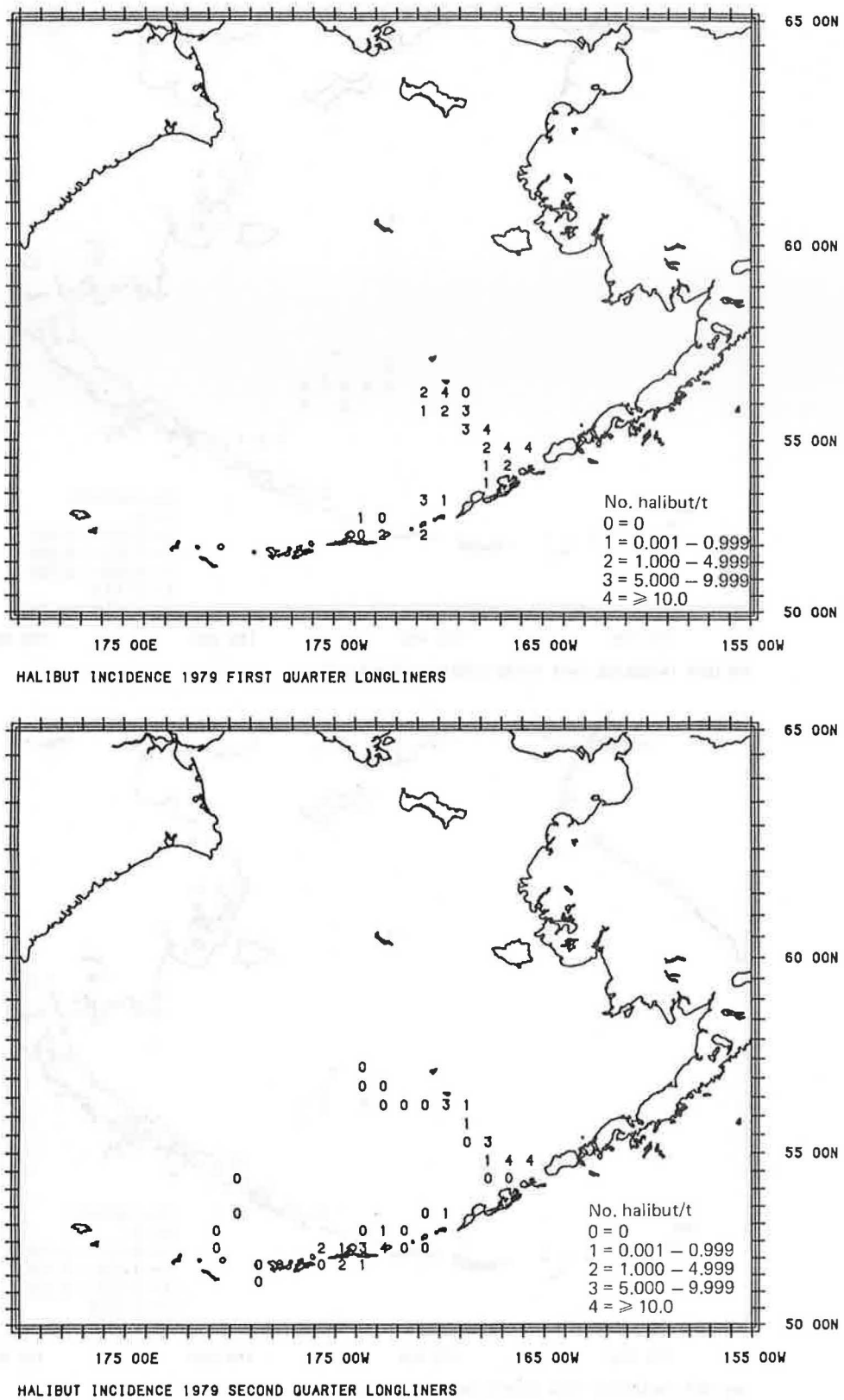
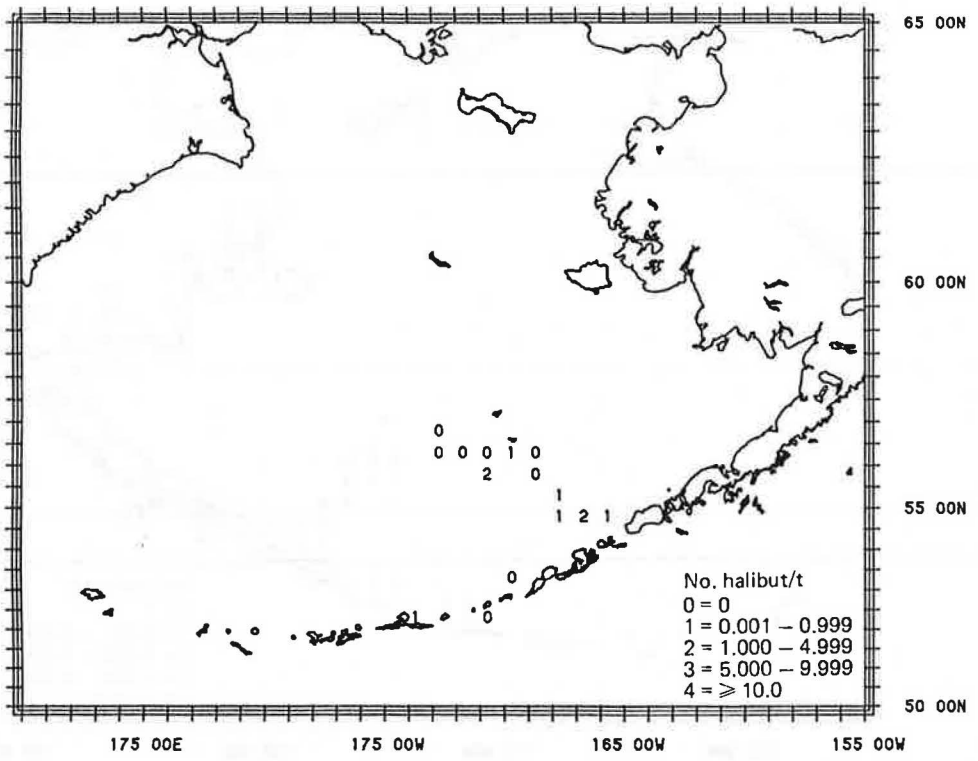
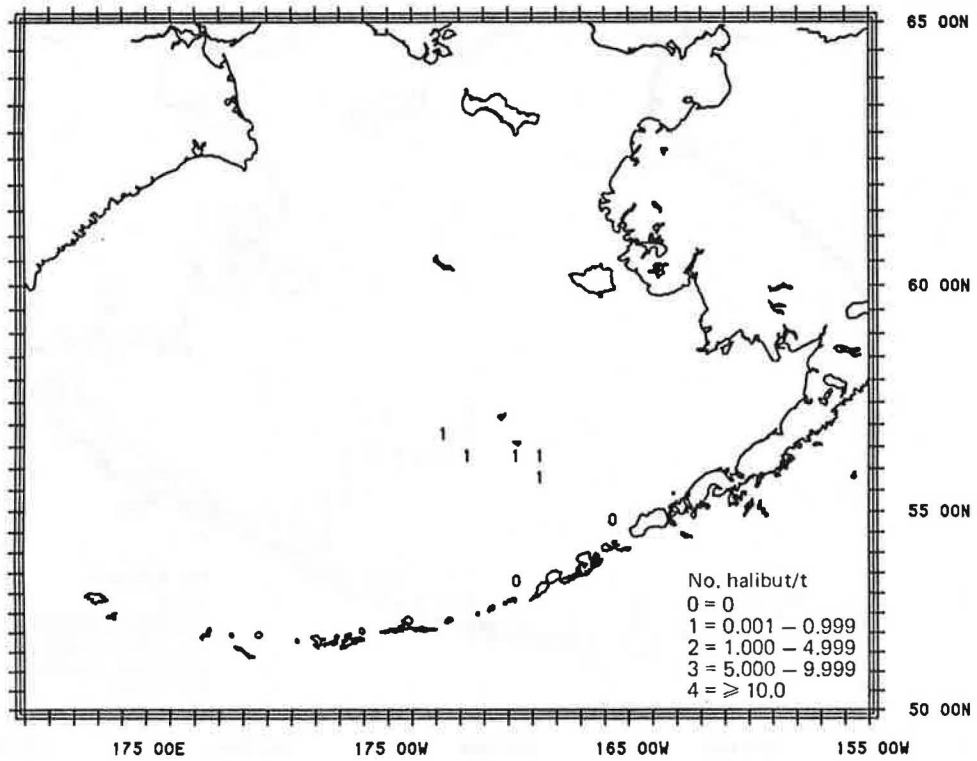


Figure 36.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) on Japanese longliners by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1979.

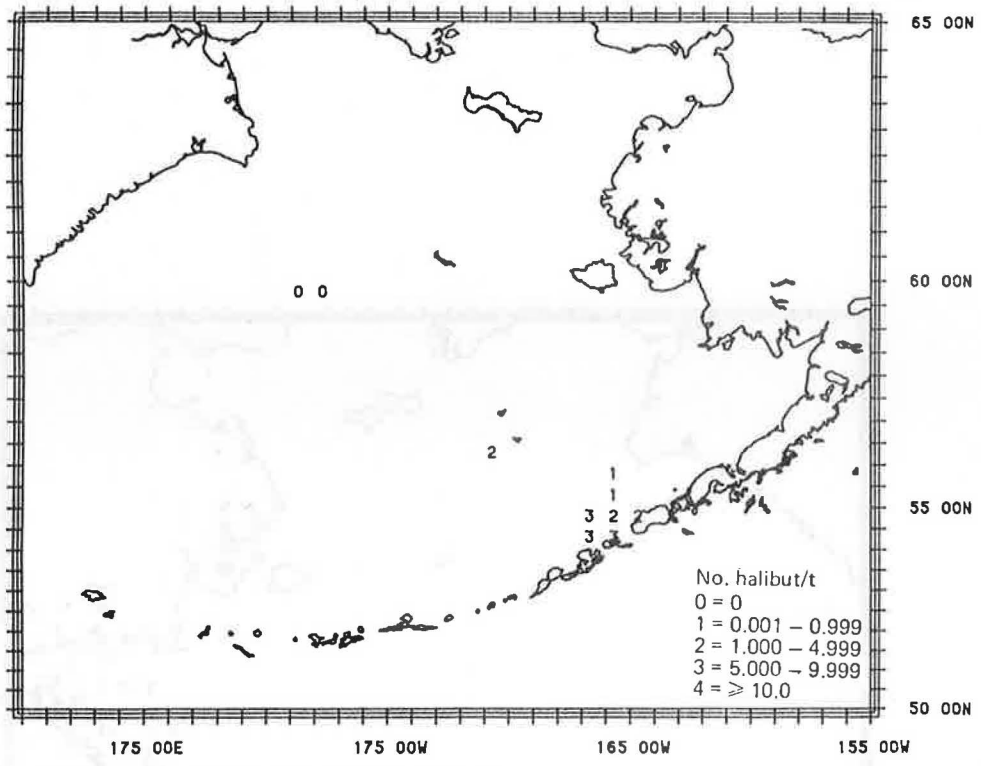


HALIBUT INCIDENCE 1979 THIRD QUARTER LONGLINERS

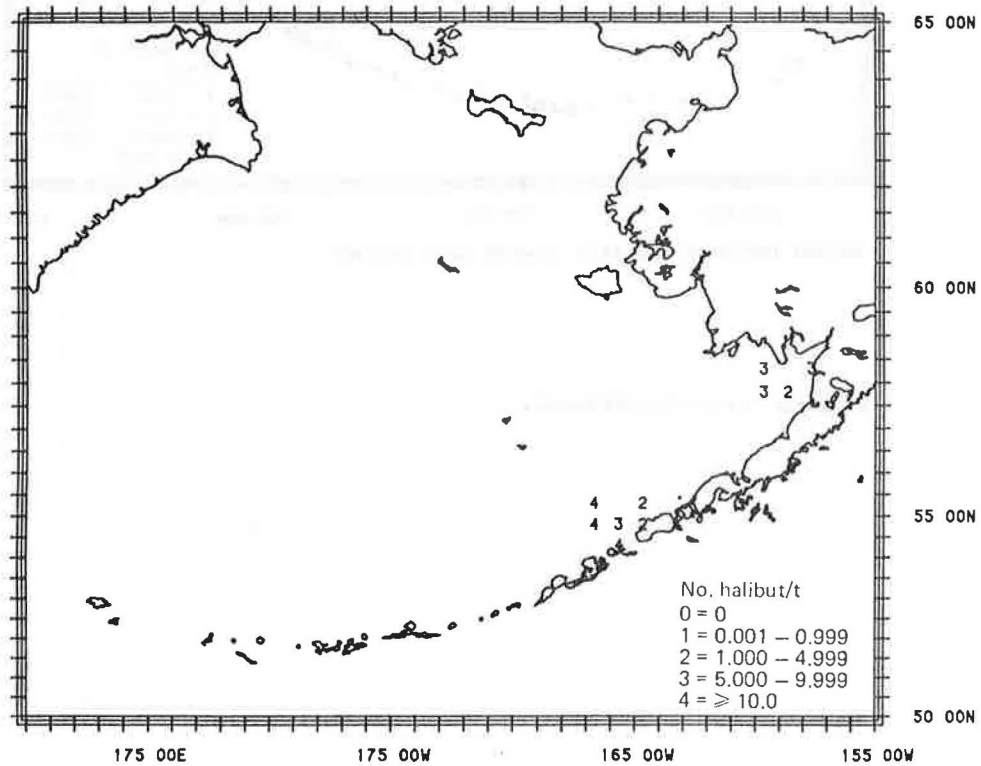


HALIBUT INCIDENCE 1979 FOURTH QUARTER LONGLINERS

Figure 36.--Continued.



HALIBUT INCIDENCE 1980 FIRST QUARTER JOINT VENTURES



HALIBUT INCIDENCE 1980 SECOND QUARTER JOINT VENTURES

Figure 37.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) in the joint venture fishery by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1980.

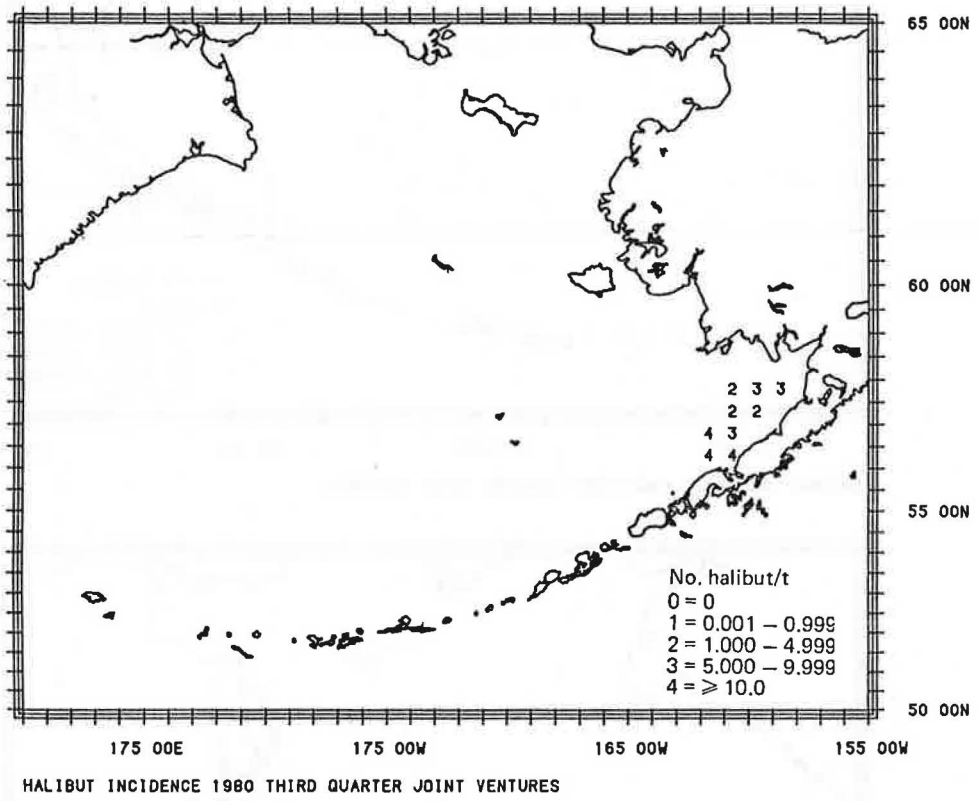


Figure 37.--Continued.

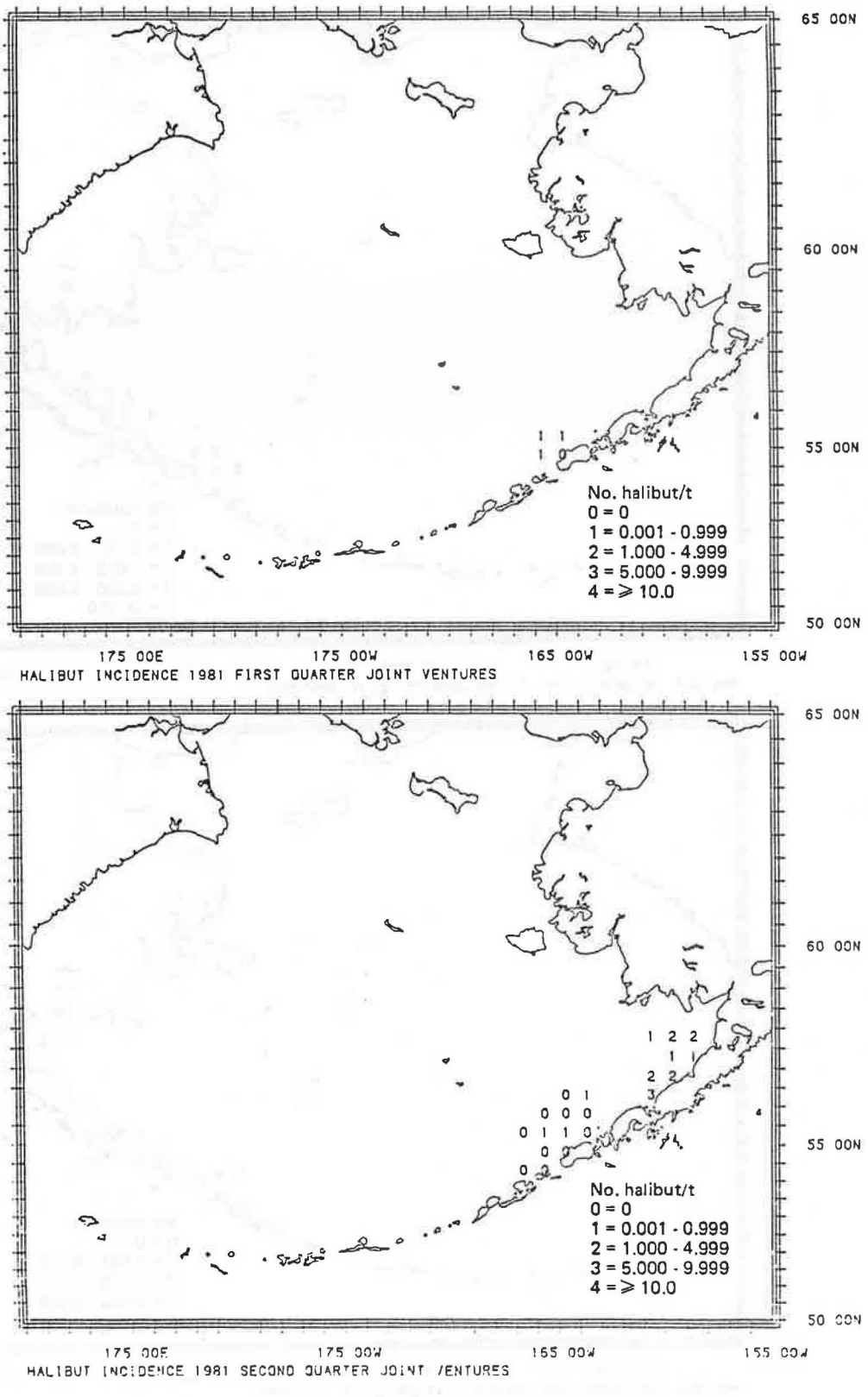
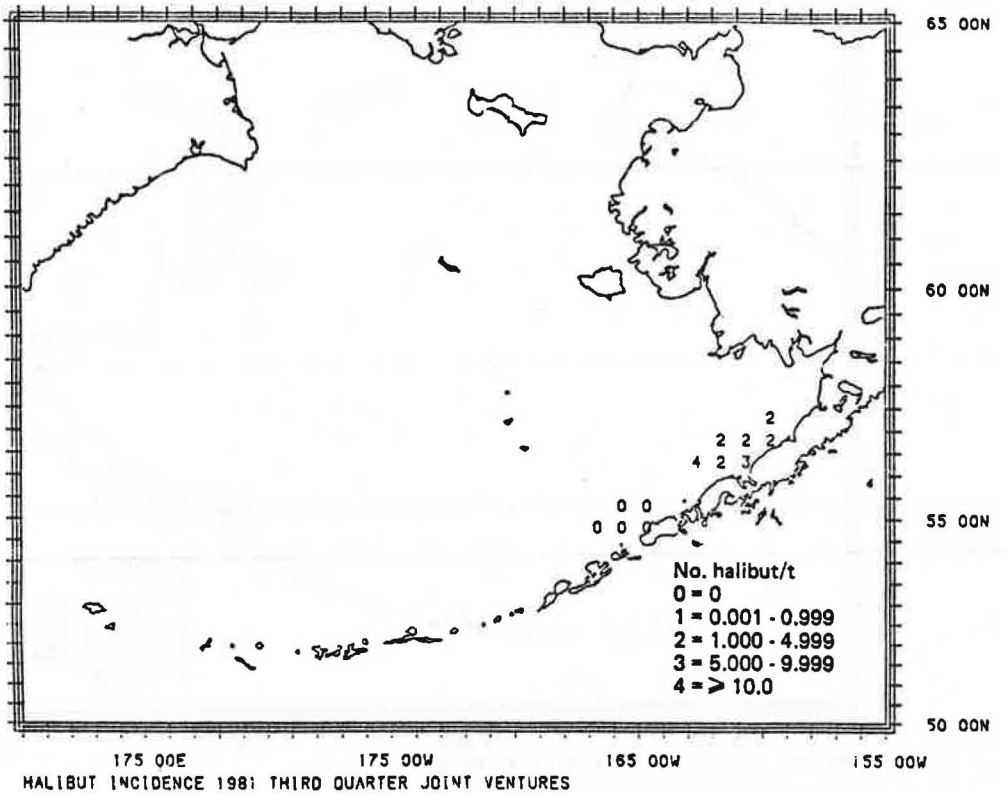
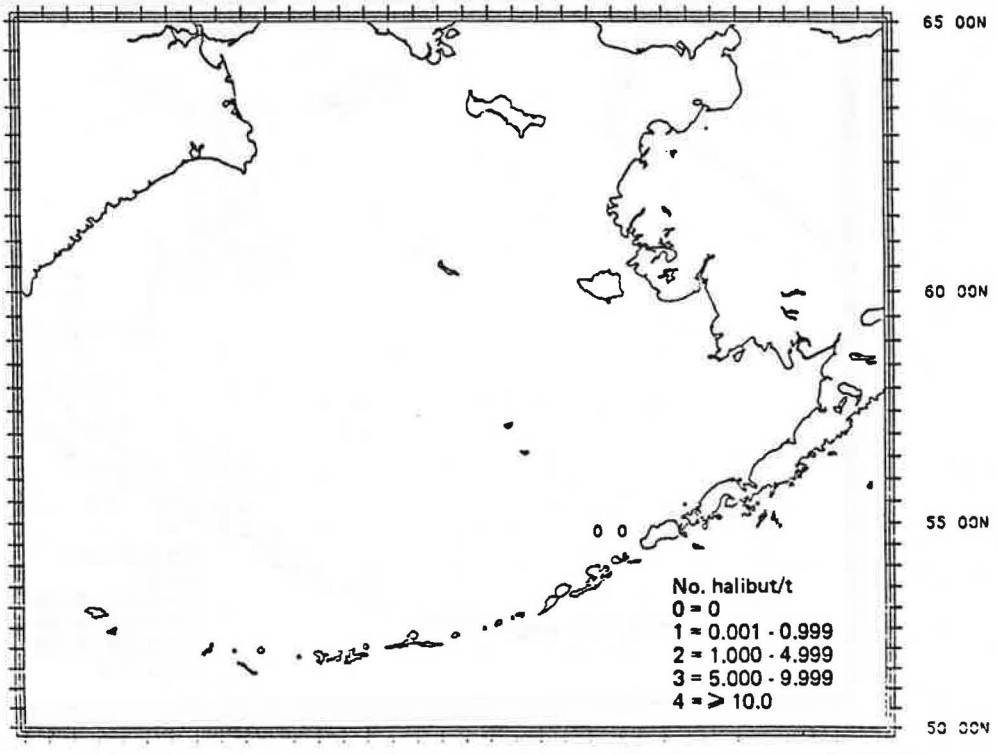


Figure 38.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) in the joint venture fishery by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1981.

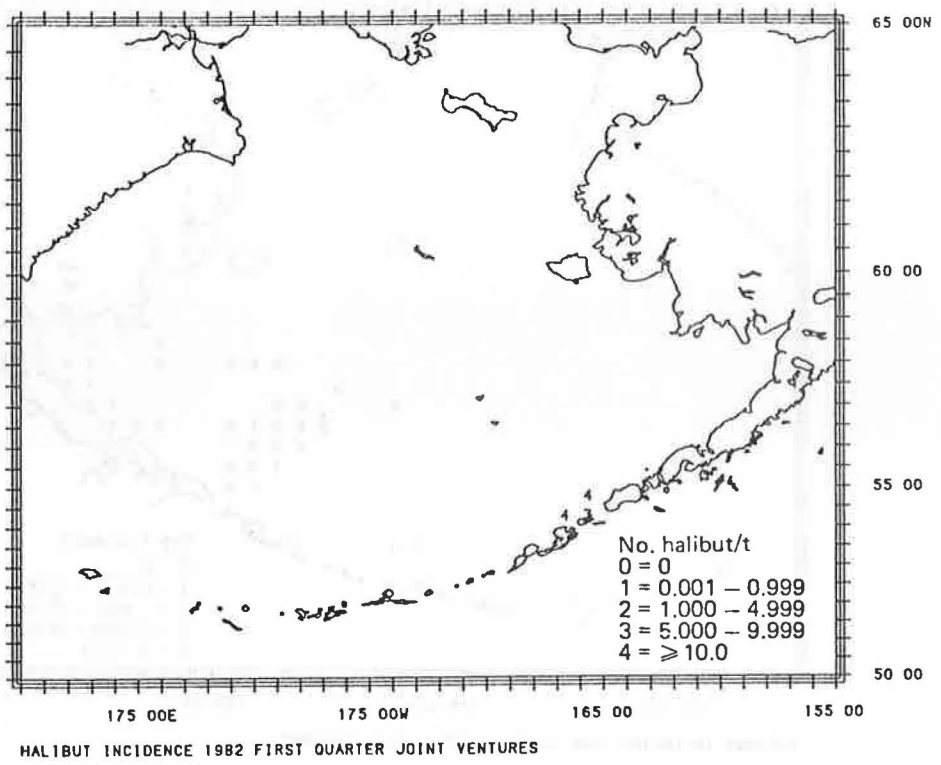


HALIBUT INCIDENCE 1981 THIRD QUARTER JOINT VENTURES



HALIBUT INCIDENCE 1981 FOURTH QUARTER JOINT VENTURES

Figure 38.--Continued.



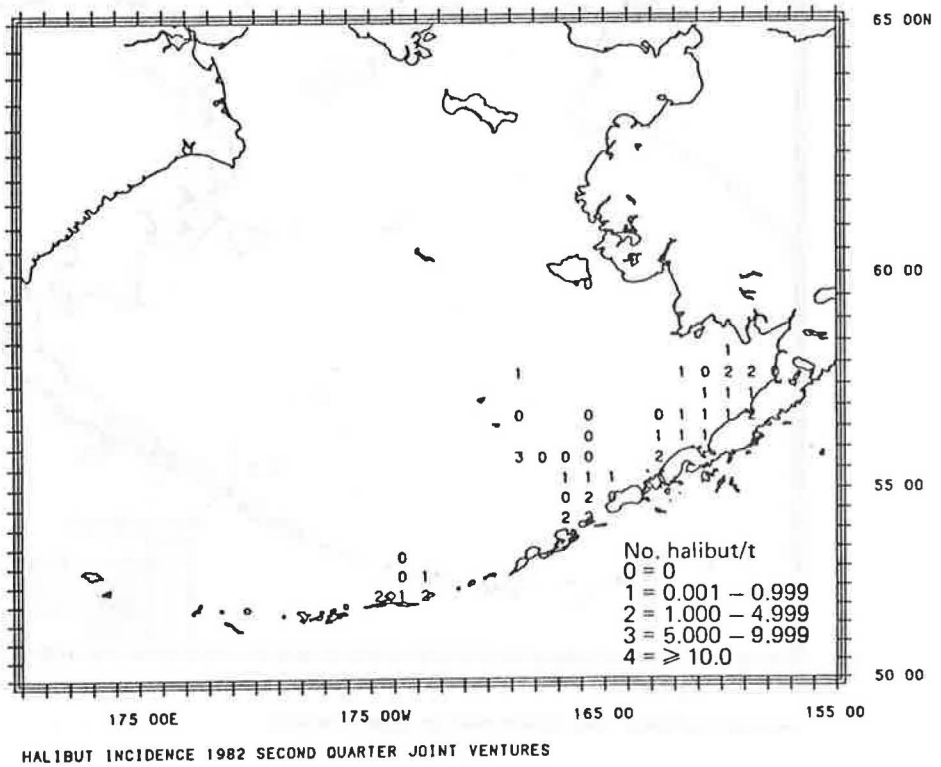
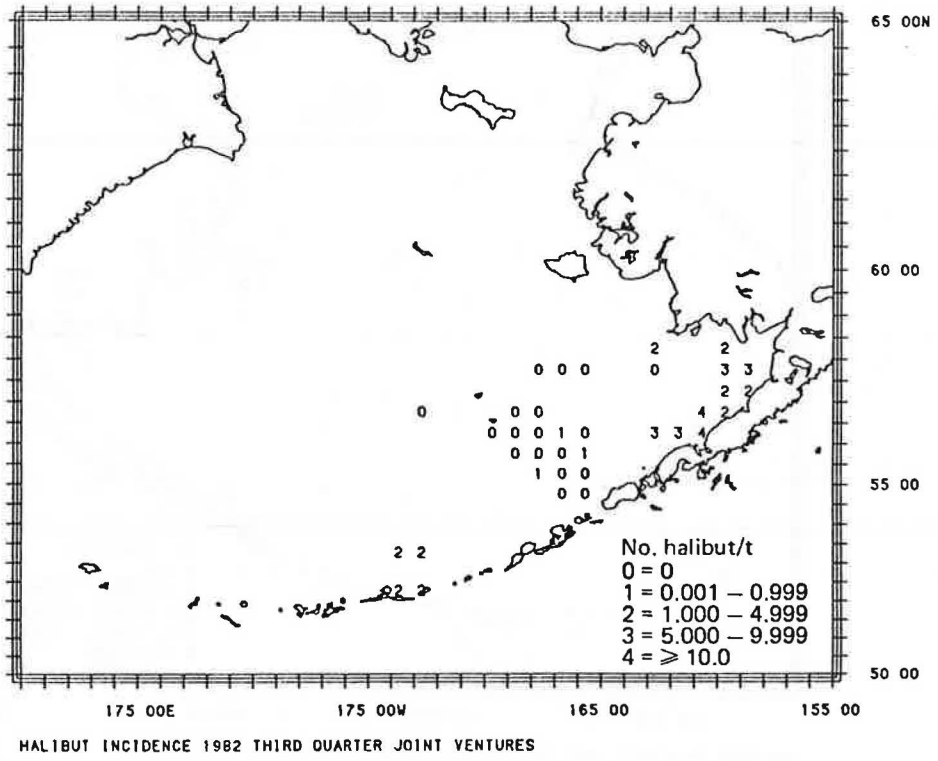
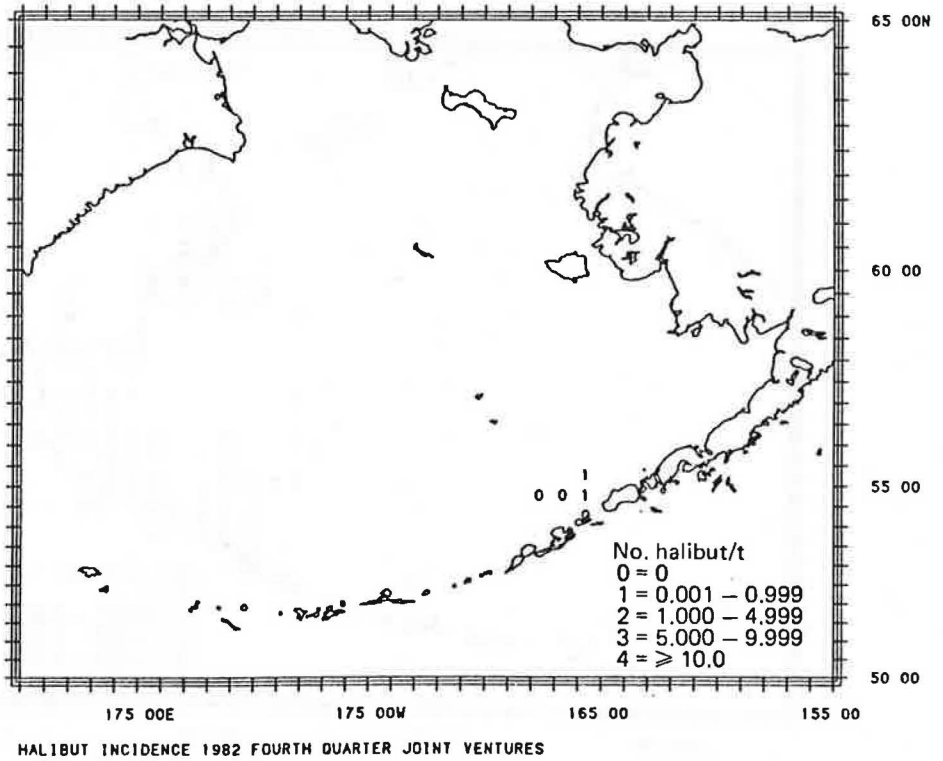


Figure 39.--Average incidence (No./ t) of Pacific halibut (Hippoglossus stenolepis) in the joint venture fishery by quarter and 1/2° lat. by 1° long. areas in the Bering Sea/Aleutian Islands region, 1982.



HALIBUT INCIDENCE 1982 THIRD QUARTER JOINT VENTURES



HALIBUT INCIDENCE 1982 FOURTH QUARTER JOINT VENTURES

Figure 39.--continued.

Table 4.--Estimated catches of groundfish (1,000s t) taken by the foreign and joint-venture fisheries in the Bering Sea/Aleutian region, 1978-82.[1/]

Fisheries/ species group	1978	1979	1980	1981	1982
FOREIGN DIRECTED FISHERY					
TOTAL	1,383.3	1,288.3	1,295.0	1,273.0	1188.1
Pollock	977.7	944.0	1,006.1	986.9	959.3
Pacific cod	46.8	41.4	37.3	39.1	28.2
Sablefish	2.0	2.2	2.4	3.0	3.8
Atka mackerel	24.2	23.3	20.2	18.0	7.4
Rockfish	7.5	7.2	8.5	7.3	4.9
Yellowfin sole	140.9	101.1	77.8	81.2	76.0
Turbots and other flatfish	94.9	89.9	88.5	91.9	79.3
Pacific herring	8.4	7.5	0.8	0.3	1.9
Other fish	71.5	64.7	47.0	39.4	22.3
Squid	9.4	7.0	6.4	5.9	5.0
JOINT-VENTURE FISHERY					
TOTAL			32.7	78.5	108.6
Pollock			10.6	42.1	54.6
Pacific cod			8.4	9.2	13.6
Sablefish			<0.1	0.2	0.1
Atka mackerel			0.3	1.6	12.5
Rockfish			0.1	<0.1	<0.1
Yellowfin sole			9.6	16.0	17.4
Turbots and other flatfish			2.8	6.0	9.2
Pacific herring			0.1	0	<0.1
Other fish			0.7	3.4	1.1
Squid			0	<0.1	<0.1

1/ Statistics for 1978 from Nelson et al., 1981a; 1979 from Nelson et al., 1980; 1980 from Nelson et al., 1981b; and 1981 from Nelson et al., 1982.

Table 5-- Catches of king crab, Tanner crab, and Pacific halibut (t) taken by domestic fisheries in the eastern Bering Sea/Aleutian region, 1978-82.[1/]

Fisheries/ species group	1978	1979	1980	1981	1982
TOTAL	73,518	86,558	98,634	57,175	21,782
Red king crab[1/]	39,743	48,910	58,944	15,237	1,361
Blue king crab[1/]	2,956	3,449	4,976	4,119	1,998
Tanner crab[1/]	30,819	33,886	34,543	37,401	18,237
Pacific halibut[2/]		314	171	418	185

1/ Eaton, 1983.
2/ IPHC, 1984.

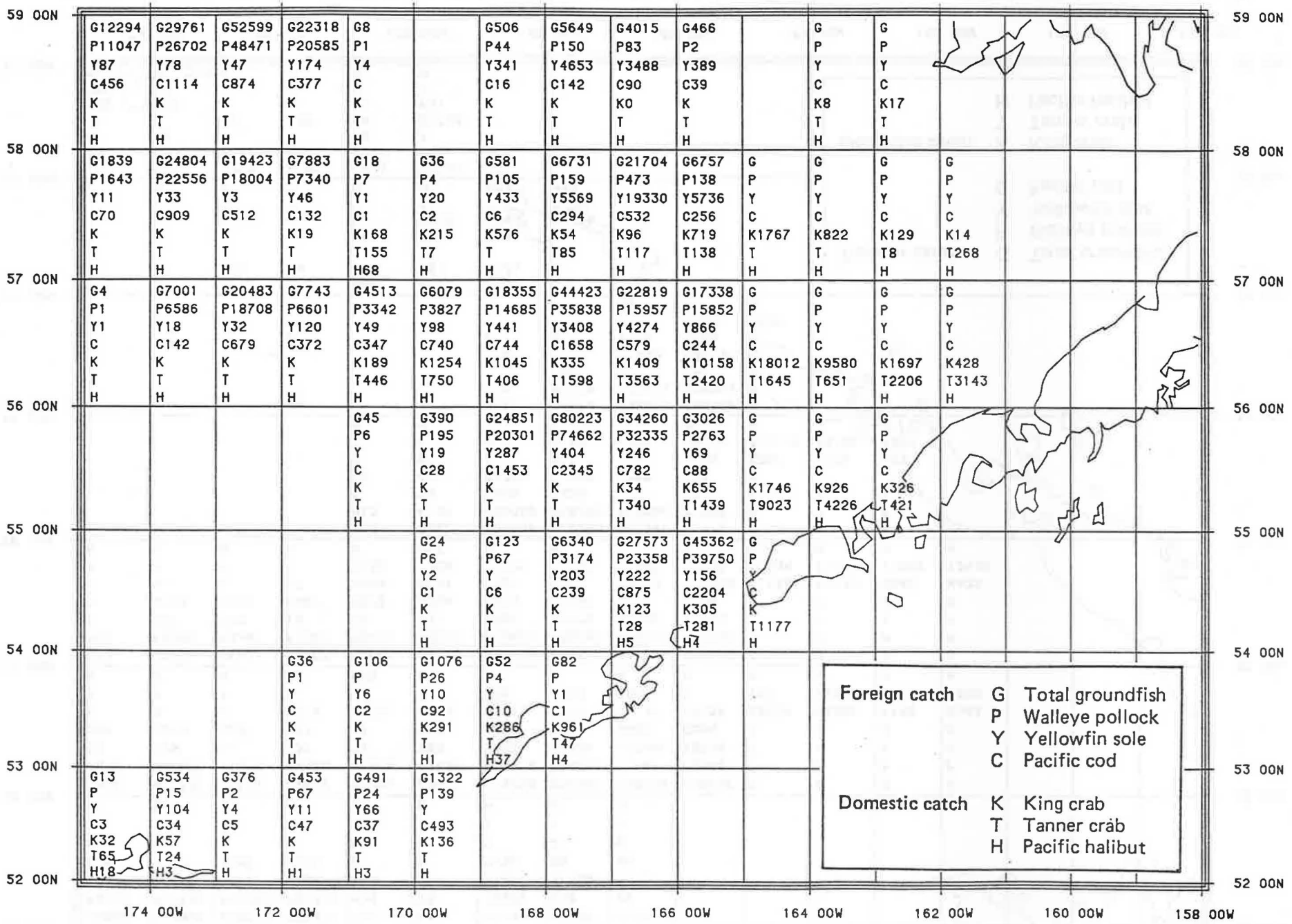


Figure 40.--Foreign groundfish catch (t) and domestic crab and Pacific halibut catches (t) by 1° lat. by 1° long. areas in the southeastern Bering Sea, 1979.

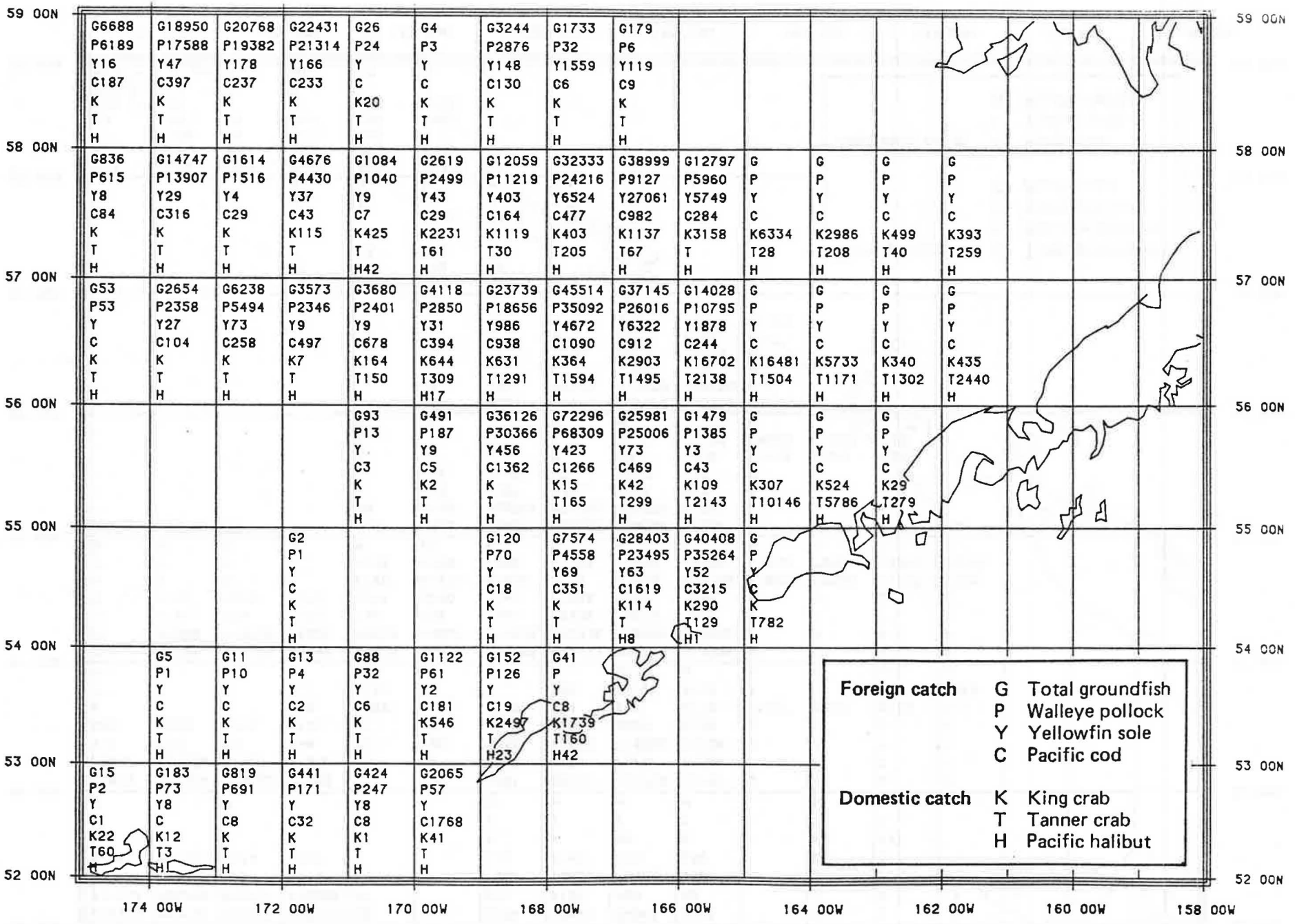


Figure 41.--Foreign groundfish catch (t) and domestic crab and Pacific halibut catches (t) by 1° lat. by 1° long. areas in the southeastern Bering Sea, 1980.

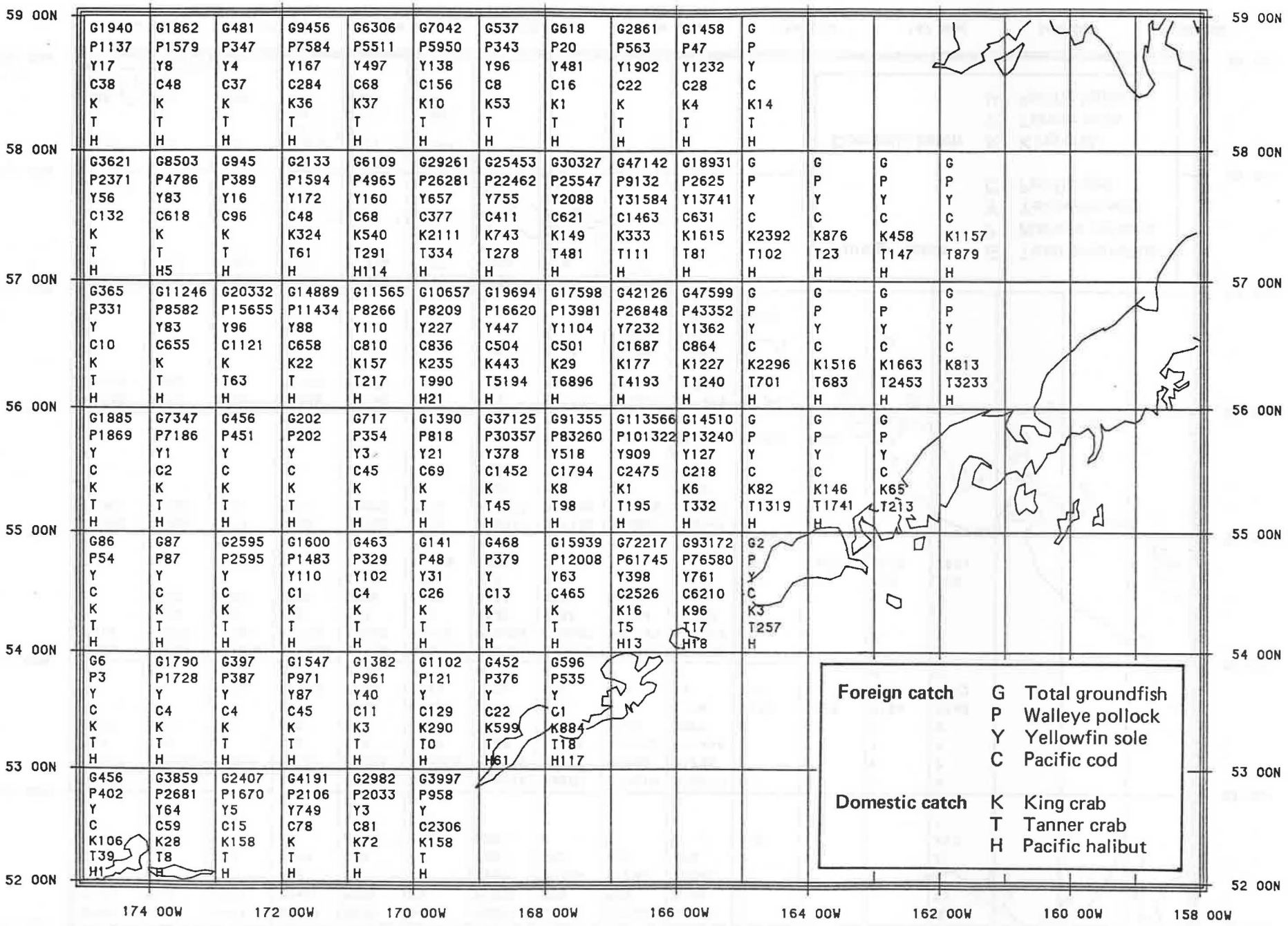


Figure 42.--Foreign groundfish catch (t) and domestic crab and Pacific halibut catches (t) by 1° lat. by 1° long. areas in the southeastern Bering Sea, 1981.

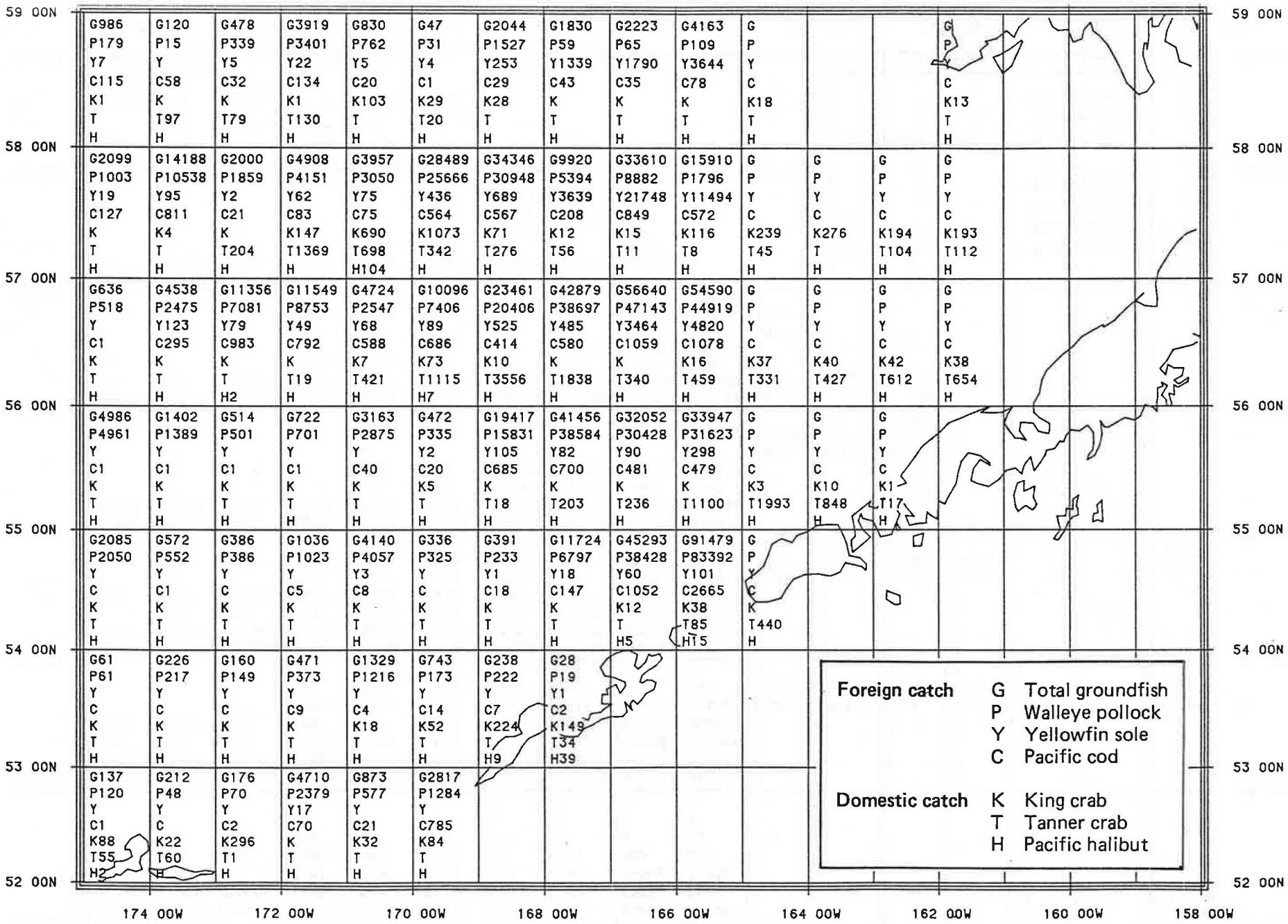


Figure 43.--Foreign groundfish catch (t) and domestic crab and Pacific halibut catches (t) by 1° lat. by 1° long. areas in the southeastern Bering Sea, 1982.

Table 6 .--Biomass estimates (t) and 95% confidence intervals for species and species groups of demersal fish on the continental shelf and slope of the eastern Bering Sea as shown by combined Japanese-U.S. demersal trawl data during the 1979 eastern Bering Sea survey.

	Shelf region (8-99 fm)			Slope region (100-600 fm)			Total survey area (8-600 fm)		
	Mean biomass	95% confidence interval		Mean biomass	95% confidence interval		Mean biomass	95% confidence interval	
		Lower	Upper		Lower	Upper		Lower	Upper
	t								
Pollock	3,482,236	3,041,554	3,922,918	69,554	47,829	91,279	3,551,790	3,110,584	3,992,996
Pacific cod	751,518	577,858	925,178	32,826	184	65,466	784,343	608,124	960,562
Other codfishes	70,061	23,699	116,424	0	0	0	70,061	23,699	116,424
Sablefish	33,230	8,290	58,171	12,217	0	55,690	45,448	0	101,455
Pacific ocean perch	2,850	0	7,158	3,538	609	6,467	6,388	1,218	11,558
Other rockfishes	241	0	554	2,974	0	6,109	3,215	63	6,366
Thornyheads	0	0	0	2,897	0	12,169	2,897	0	12,169
Yellowfin sole	1,979,215	1,758.822	2,199,609	1	0	2	1,979,216	1,758,822	2,199,609
Rock sole	175,993	134,200	217,785	364	0	729	176,356	134,562	218,150
Flathead sole	125,837	103,446	148,229	2,438	1,496	3,380	128,275	105,864	150,686
Alaska plaice	273,161	213,964	332,358	<1	0	<1	273,161	213,964	332,358
Greenland turbot	225,575	197,100	254,051	123,041	99,842	146,240	348,616	311,994	385,239
Arrowtooth flounder	34,952	27,374	42,529	36,666	26,213	47,119	71,618	58,747	84,489
Pacific halibut	64,891	49,238	80,544	2,328	1,189	3,468	67,220	51,530	82,909
Other flatfish	49,577	38,287	60,867	913	259	1,568	50,490	39,183	61,798
Pacific herring	27,445	15,405	39,486	5	0	12	27,450	15,409	39,491
Smelts	14,198	10,667	17,729	56	23	109	14,253	10,722	17,785
Sculpins	377,230	303,430	451,032	17,263	13,182	21,345	394,494	320,583	468,405
Snailfishes	45,986	32,264	59,707	2,445	1,712	3,178	48,430	34,697	62,163
Poachers	28,330	23,915	32,745	243	151	335	28,573	24,157	32,989
Eelpouts	715,665	459,252	972,078	4,920	3,240	6,600	720,585	464,166	977,004
Skates	75,049	62,279	87,819	19,931	12,302	27,559	94,980	80,105	109,854
Atka mackerel	118	30	205	6	0	14	124	36	212
Other greenlings	6,802	4,777	8,827	0	0	0	6,802	4,777	8,827
Rattails	25	0	74	92,389	0	197,167	92,414	0	197,192
Pacific sandfish	3,057	1,655	4,459	0	0	0	3,057	1,655	4,459
Searcher	5,720	3,469	7,971	861	163	1,560	6,581	4,228	8,934
Spiny dogfish	244	0	492	0	0	0	244	0	492
Pacific sand lance	597	0	1,216	0	0	0	597	0	1,216
Pricklebacks	2,174	1,454	2,894	167	20	313	2,341	1,607	3,075
Codlings	0	0	0	109	49	169	109	49	169
Gunnels	3	0	9	0	0	0	3	0	9
Other fishes	1,799	374	3,225	1,462	536	2,388	3,261	1,566	4,956
Total fish[1/]	8,573,780	7,943,518	9,204,042	429,614	303,802	555,426	9,003,392	8,362,372	9,644,416
Squids	592	7	1,176	21,976	14,298	29,654	22,568	14,869	30,267
Octopuses	78,534	51,389	105,678	10,471	7.017	13,925	89,005	61,681	116,329
Shrimps	21,690	15,564	27,817	7,811	5,161	10,461	29,501	22,834	36,168
Total invertebrates[1/]	100,816	73,006	128,626	40,258	30,971	49,545	141,074	111,858	170,291

1/ Differences in totals and sums of biomasses by species groups are due to rounding.

Table 7.--Biomass estimates (t) and 95% confidence intervals for species and species groups of demersal fish on the continental shelf and slope of the eastern Bering Sea as shown by Japanese-U.S. demersal trawl data during the 1981 eastern Bering Sea survey.

	Shelf region			Slope region			Total survey area		
	Mean biomass	95% confidence interval		Mean biomass	95% confidence interval		Mean biomass	95% confidence interval	
		Lower	Upper		Lower	Upper		Lower	Upper
Pollock	2,697,910	2,093,625	3,302,196	273,444	210,001	336,887	2,971,354	2,363,767	3,578,941
Pacific cod	923,599	760,232	1,086,966	23,821	18,192	29,449	947,420	783,956	1,110,884
Other gadids	1,397	162	2,632	43	22	64	1,440	204	2,675
Sablefish	7,740	4,400	11,079	39,435	23,799	55,072	47,175	31,202	63,149
Pacific ocean perch	0	0	0	9,821	5,567	14,074	9,821	5,567	14,074
Other rockfish	587	0	1,775	4,417	2,726	6,108	5,004	2,959	7,048
Thornyheads	0	0	0	4,969	3,486	6,452	4,969	3,486	6,452
Yellowfin sole	2,112,913	1,830,529	2,395,297	0	0	0	2,112,913	1,830,529	2,395,297
Rock sole	289,255	226,210	352,301	82	7	157	289,337	226,292	352,383
Flathead sole	163,215	119,876	206,554	3,919	2,174	5,664	167,134	123,759	210,510
Alaska plaice	465,629	357,750	573,508	0	0	0	465,629	357,750	573,508
Greenland turbot	86,835	67,013	106,656	99,606	74,073	125,140	186,441	154,199	218,683
Arrowtooth flounder	49,482	39,102	59,863	34,874	26,978	42,771	84,357	71,347	97,366
Pacific halibut	49,542	37,117	61,966	2,386	1,189	3,583	51,928	39,448	64,407
Other flounder	73,936	48,643	99,229	376	217	536	74,313	49,019	99,606
Herring	1,676	250	3,102	0	0	0	1,676	250	3,102
Smelts	4,259	2,771	5,747	12	2	23	4,271	2,783	5,759
Sculpins	176,686	135,743	217,630	7,493	5,832	9,153	184,179	143,201	225,156
Snailfishes	952	228	1,675	381	287	476	1,333	604	2,062
Poachers	11,701	6,182	17,220	16	7	24	11,716	6,197	17,235
Eelpouts	159,175	119,248	199,102	1,334	890	1,778	160,509	120,579	200,438
Skates	151,827	124,791	178,862	4,032	2,945	5,119	155,859	128,802	182,916
Greenlings	1,769	369	3,196	0	0	0	1,796	396	3,196
Rattails	0	0	0	90,476	64,533	116,419	90,476	64,533	116,419
Other fish	7,622	3,769	11,475	1,782	651	2,913	9,404	5,391	13,417
Total fish	7,437,733[1]/	6,713,123	8,162,343	602,719	531,546	673,892	8,040,452	7,312,356	8,768,549
Squid	32	6	58	8,534	4,398	12,669	8,566	4,430	12,701
Octopus	10,361	4,691	16,031	248	140	355	10,609	4,938	16,280
Shrimps	2,093	1,376	2,810	447	271	623	2,540	1,802	3,278
Total invertebrates	12,486[1]/	?	?	9,228	5,076	13,380	21,714	?	?

1/ Differences in totals of biomasses are due to rounding.

Table 8.--Estimated biomass, MSY, and EY (1000s t), and views on abundance trends of groundfish in the eastern Bering Sea/Aleutian Islands Region from assessments in 1979.

Species	Estimated biomass	MSY	EY	Abundance trend
Pollock				
(Eastern Bering Sea	6,200	1,100-1,600	1,200	increasing
(Aleutians)	--	----	100	--
Pacific cod	792	55	120	increasing
Yellowfin sole	1,669-2,196	169-260	>169	increasing
Turbots	--	90	71	stable
(Arrowtooth flounder)				
(Greenland turbot)				
Other flatfish	232-334	42.9-76.8	60	stable
(Alaska plaice)				
(Rock sole-flathead sole-other flatfish)				
Sablefish	--	15.1	3.7	expected to increase
(Eastern Bering Sea)	--	(13.0)	(2.6)	from low level of abundance in
(Aleutians)	--	(2.1)	(1.1)	both areas
Pacific ocean perch	--	107	18	
(Eastern Bering Sea)	--	(32)	(5)	decreasing
(Aleutians)	--	(75)	(13)	decreasing
Other rockfish	--	--	14.5	------
(Eastern Bering Sea)	--	--	(7.0)	stable at low level
(Aleutians)	--	--	(7.3)	------
Atka mackerel	--	33	24.8	------
Squid	--	--	>10	------

Table 9.--Estimated biomass, MSY, and EY (1,000s t), and views on abundance trends of groundfish in the eastern Bering Sea/Aleutian Islands Region from assessments in 1980.

Species	Estimated biomass	MSY	EY	Abundance trend
Pollock				
(Eastern Bering Sea)	6,200	1,100-1,600	1200	stable
(Aleutians)	--	--	100	--
Pacific cod	913	58.7	160	increasing
Yellowfin sole	1,966	169-260	214	increasing
Turbots	421	74-99	76	stable
(Arrowtooth flounder)				
(Greenland turbot)				
Other flatfish	567-788	65.8-119.1	92.5	stable
(Alaska plaice)				
(Rock sole-flathead sole-other flatfish)				
Sablefish	--	15.1	2.9	
(Eastern Bering Sea)	--	(13.0)	(2.0)	decreasing
(Aleutians)	--	(2.1)	(0.9)	decreasing
Pacific ocean perch	--	107	18	
(Eastern Bering Sea)	--	(32)	(5)	decreasing
(Aleutians)	--	(75)	(13)	decreasing
Other rockfish	--	--	21.3	
(Eastern Bering Sea)	--	7-15	(11.0)	--
(Aleutians)	--	--	(10.3)	--
Atka mackerel	--	33	24.8	--

Table 10.--Estimated biomass, MSY, and EY (1,000s t), and views on abundance trends of groundfish in the eastern Bering Sea/Aleutian Islands Region from assessments in 1981.

Species	Estimated biomass	MSY	EY	Abundance trend
Pollock				
(Eastern Bering Sea)	9,900	1,100-1,600	1,200	stable
(Aleutians)	--	--	100	--
Pacific cod	840	58.7	168	decreasing
Yellowfin sole	2,000	169-260	214	stable
Turbots	419	86	76	stable
(Arrowtooth flounder)				
(Greenland turbot)				
Other flatfish	876	65.8-119.1	92.5	
(Alaska plaice)	(433)	(22.8-42.3)	(32.5)	increasing
(Rock sole-flathead sole-other flatfish)	(443)	(43.0-76.8)	(60)	increasing
Sablefish	--	15.1	2.9	
(Eastern Bering Sea)	--	(13.0)	(2.0)	stable at low level
(Aleutians)	--	(2.1)	(0.9)	stable at low level
Pacific ocean perch	--	109	18	
(Eastern Bering Sea)	--	(32)	(5)	decreasing
(Aleutians)	--	(75)	(13)	decreasing
Other rockfish	--	30-60	22	
(Eastern Bering Sea)	--	(7-15)	(11)	--
(Aleutians)	--	(23-45)	(11)	--
Atka mackerel	158	33	24.8	increasing
Squid	--	>10	>10	--

Table 11.--Estimated biomass, MSY, and EY (1,000s t), and views on abundance trends of groundfish in the eastern Bering Sea/Aleutian Islands Region from assessments in 1982.

Species	Estimated biomass	MSY	EY	Abundance trend
Pollock				
(Eastern Bering Sea	9,900	1,100-1,600	1,200	stable but may decrease
(Aleutians)	--	--	100	from poor recruitment
Pacific cod	1,313	--	298	high, but decreasing
Yellowfin sole	>2,000	150-175	>200	stable at high levels
Turbots	558	107	85	stable
(Arrowtooth flounder)				
(Greenland turbot)				
Other flatfish	1,081	88-150	119	increasing
(Alaska plaice)				
(Rock sole-flathead sole-other flatfish)				
Sablefish	--	15.1	2.9	
(Eastern Bering Sea)	--	(13.0)	(2.0)	increasing but not fully
(Aleutians)	19.5	(2.1)	(0.9)	recovered in both areas
Pacific ocean perch	--	12-17	11.8	
(Eastern Bering Sea)	--	a/	(1.7)	stable at low level
(Aleutians)	100.1	a/	(10.1)	stable at low level
Other rockfish	--	30-60	14.1	
(Eastern Bering Sea)	--	(7-15)	(3.1)	--
(Aleutians)	>55	(23-45)	(11.0)	--
Atka mackerel	183	23-28	25.5	decreasing
Squid	--	>10	>10	--
Other species	482	61	61	stable

a/ Estimates for eastern Bering Sea and Aleutians combined

Table 12.--Estimated biomass, MSY, and EY (1,000s t), and views on abundance trends of groundfish in the eastern Bering Sea/Aleutian Islands Region from assessments in 1983.

Species	Estimated biomass	MSY	EY	Stock condition	Abundance trend
Pollock					
(Eastern Bering Sea)	>7,800	1,500	1,200	Good	Average abundance but weaker 1979-81 year classes recruiting to fishable stock
(Aleutians)	1,000	100	100	Good	
Pacific cod	1,126	--	291.3	Very good	Abundance at historic high, but expected to decline rapidly
Yellowfin sole	3,952	150-175	310	Very good	Abundance at historic high and stable
Turbots	352	96.2	67.5		
(Arrowtooth flounder)	(152)	(24.2)	(20.0)	Good	Abundance average and stable
(Greenland turbot)	(200)	(72.0)	(47.5)	Fair	Abundance below average
Other flatfish	2,964	88-150	150		
(Alaska plaice)	(745)	(45-70)	(70)	Very good	Abundance above average and stable
(Rock sole-flathead sole-other flatfish)	(1,219)	(43-80)	(80)	Very good	Abundance above average and stable
Sablefish	68.7	15.1	6.2	Both areas	
(Eastern Bering Sea)	(49.2)	(13.0)	(4.4)	poor but	Abundance low with some
(Aleutians)	(19.5)	(2.1)	(1.8)	improving	improvement
Pacific ocean perch	121.4	12-17	12.2		
(Eastern Bering Sea)	(13.6)	--	(1.4)	Poor	Abundance low and stable
(Aleutians)	(107.8)	--	(10.8)	Poor	Abundance low and stable
Other rockfish	63.3	30-60	14.1		
(Eastern Bering Sea)	(11.2)	(7-15)	(3.1)	Fair	Unknown
(Aleutians)	(52.1)	(23-45)	(11.0)	Fair	Unknown
Atka mackerel	182.8	23-28	26	Good	Abundance above average and stable
Squid	--	>10	10	--	Unknown
Other species	532	61	61	Good	Abundance average and stable
TOTAL GROUNDFISH	17,162	2,085-2,212	2,248		

Table 13.--Annual abundance estimates (millions of crabs) for red king crab (P. camtschatica) in the Pribilof and Bristol Bay Districts from NMFS surveys.

	Males					Females			Grand
Size:[1]	<110	110-134	>134	120-134	Total	<90	>89	Total	Total
1969	41.0	20.3	9.8	9.6	71.1	18.3	28.5	46.8	117.9
1970	9.5	8.4	5.3	5.2	23.2	4.9	13.0	17.9	41.1
1972[2]	14.1	8.0	5.4	4.7	27.5	7.0	12.1	19.1	46.6
1973	50.0	25.9	10.8	14.2	86.7	24.8	76.8	101.6	188.3
1974	59.0	31.2	20.9	20.0	111.1	37.7	72.0	109.7	220.8
1975	84.9	31.7	21.0	18.6	137.6	70.8	58.9	129.7	267.3
1976	70.2	49.3	32.7	30.7	152.2	35.9	71.8	107.7	259.9
1977	80.2	63.9	37.6	35.3	181.7	33.5	150.1	183.6	365.3
1978	62.9	47.9	46.6	30.9	157.4	38.2	128.4	166.6	324.0
1979	48.1	37.2	43.9	27.4	129.2	45.1	110.9	156.0	285.2
1980	56.8	23.9	36.1	15.3	116.8	44.8	67.6	112.5	229.3
1981	56.6	18.4	11.3	8.9	86.3	36.3	67.3	103.6	189.9
1982	107.2	17.4	4.7	8.5	129.3	77.2	54.8	132.0	261.3
1983[3]	43.3	10.4	1.5	4.9	55.2	24.3	9.7	34.0	89.2
Limits[4]									
Lower	34.0	8.8	1.1	4.1	45.8	17.4	7.6	26.8	77.3
Uppper	52.6	12.0	1.9	5.8	64.7	31.2	11.8	41.2	101.4
±	21	15	27	17	17	28	22	21	13

[1]Carapace length (mm).
[2]Limited survey in 1971, not used for population estimate.
[3]1983 data includes small numbers of crab from the Northern District.
[4]With 95% confidence.

Table 14.--Annual abundance estimates (millions of crabs) for blue king crab, (*P. platypus*) in the Pribilof and Northern Districts from NMFS surveys.

Pribilof District

	Males						Females			Grand
Size:[1]	<120	>119	<110	110-134	>134	Total	<90	>89	Total	Total
1974	5.9	3.5	4.4	3.1	1.9	9.4	0.6	10.9	11.5	20.9
1975	6.9	12.7	4.1	8.0	7.5	19.6	0.0	8.8	8.8	28.4
1976	11.3	5.0	10.3	2.1	3.9	16.3	0.4	17.7	18.1	34.4
1977	4.3	10.5	3.2	2.2	9.4	14.8	2.2	17.5	19.7	34.5
1978	3.7	7.6	1.2	5.8	4.3	11.3	0.3	35.5	35.8	47.1
1979	6.6	5.9	6.4	1.5	4.6	12.5	5.2	2.9	8.1	20.6
1980	2.2	5.2	1.9	1.4	4.2	7.5	0.8	101.9	102.7[3]	110.2
1981	5.4	5.0	4.8	1.4	4.2	10.4	3.4	11.6	15.0	25.4
1982	1.6	2.5	1.2	0.7	2.2	4.1	0.7	8.6	9.3	13.4
1983	1.0	1.8	0.6	0.8	1.3	2.8	0.2	9.2	9.4	12.2
Limits[2]										
Lower	0.6	1.4	0.3	0.5	0.9	2.2	0.0	3.6	3.8	6.6
Upper	1.3	2.2	0.9	1.1	1.6	3.3	0.4	14.8	15.0	17.8
±%	38	23	48	37	26	20	94	60	59	46

Northern District

	Males				Females			Grand
Size:[4]	<105	105-119	>119	Total	<80	>79	Total	Total
1978	5.6	2.4	1.8	9.8	0.8	0.4	1.2	11.0
1979	4.9	2.3	2.2	9.4	1.7	0.9	2.6	12.0
1980	3.4	2.2	2.5	8.1	0.8	2.2	3.0	11.1
1981	1.2	1.8	3.1	6.3	0.0	0.5	0.5	6.8
1982	3.2	2.6	6.8	12.5	0.4	0.7	1.1	13.7
1983	1.8	1.6	3.5	6.9	0.2	2.4	2.7	9.6
Limits[2]								
Lower	1.0	0.8	2.7	5.5	0.0	0.9	1.1	7.4
Upper	2.5	2.4	4.3	8.2	0.5	4.0	4.2	11.8
±%	42	51	23	20	109	63	58	23

[1]Carapace length (mm).
[2]With 95% confidence.
[3]Estimates for females and grand total considered unreliable in 1980.
[4]Categories reflect smaller average size in the Northern District; 80 mm is the median size at maturity for females.

Table 15.--Annual abundance estimates (millions of crabs) for Tanner crabs(*Chionoecetes bairdi* and *C. opilio*), in the Pribilof and Bristol Bay Districts from NMFS surveys.

C. bairdi

Size:[1]	MALES <85	MALES 85-129	MALES >129	MALES Total	FEMALES <85	FEMALES >84	FEMALES Total	GRAND TOTAL
1973	62.8	140.5	66.9	270.2	47.9	90.3	138.2	408.4
1974	200.7	255.0	130.5	586.2	210.5	175.7	386.2	972.4
1975	116.3	207.5	209.6	533.4	120.8	102.2	223.0	756.4
1976	136.8	131.7	157.8	426.3	174.7	220.4	395.1	821.4
1977	192.7	159.6	111.1	463.4	328.4	215.8	544.2	1,007.6
1978	103.1	90.1	57.9	251.0	116.1	73.3	189.4	440.4
1979	106.4	67.6	38.2	212.3	122.6	42.1	164.7	377.0
1980	310.3	198.3	40.7	549.3	326.9	106.8	433.7	983.0
1981	106.0	213.2	22.7	341.8	324.2	79.1	403.3	745.1
1982	28.7	99.7	17.4	145.8	126.4	83.6	210.0	355.8
1983	116.0	57.1	11.9	185.0	180.1	45.4	225.5	410.5
Limits[2]								
Lower	85.1	49.9	9.8	153.2	139.0	34.5	182.9	357.3
Upper	146.9	64.4	14.0	216.8	221.3	56.2	268.1	463.6
±%	27	13	18	17	23	24	19	13

C. bairdi

Size:[1]	MALES <110	MALES >109	MALES Total	FEMALES <65	FEMALES >64	FEMALES Total	GRAND TOTAL
1973	115.2	84.7	199.9	26.4	26.8	53.2	253.1
1974	1,480.3	246.7	1,727.0	1,415.3	195.9	1,611.4	3,338.4
1975	1,916.7	274.8	2,191.5	3,213.1	194.3	3,407.4	5,598.9
1976	2,221.1	181.6	2,402.7	4,867.1	697.3	5,564.4	7,967.1
1977	1,850.9	137.3	1,988.2	5,855.0	535.5	6,390.5	8,378.7
1978	830.2	78.4	908.6	1,233.1	111.4	1,344.5	2,253.1
1979	769.9	105.9	875.8	2,232.5	156.6	2,389.1	3,264.9
1980	570.5	53.6	624.0	2,867.2	92.5	2,959.6	3,583.7
1981	987.0	15.7	1,002.7	1,962.1	129.7	2,091.8	3,094.5
1982	759.4	10.8	770.1	1,433.9	91.4	1,525.3	3,295.5
1983	562.0	12.9	574.9	683.1	41.6	724.8	1,299.7
Limits[2]							
Lower	512.8	9.7	525.6	449.0	23.1	489.9	1,059.7
Upper	611.2	16.2	624.3	917.3	60.2	959.7	1,539.7
±%	9	25	9	34	45	32	18

Table 15.--(continued)

C. bairdi x C. opilio

Size:[1]	MALES <110	MALES >109	MALES Total	FEMALES <65	FEMALES >64	FEMALES Total	GRAND TOTAL
1973	--	--	--	--	--	--	--
1974	--	--	--	--	--	--	--
1975	47.5	33.8	81.3	190.8	28.9	219.7	301.0
1976	27.8	16.5	44.3	1.1	13.9	15.0	59.3
1977	141.2	15.4	156.6	141.2	53.7	194.9	351.5
1978	11.8	5.6	17.5	7.5	8.7	16.2	33.8
1979	9.8	4.9	14.7	25.9	20.4	46.3	61.0
1980	1.9	1.7	3.7	.2	4.8	5.0	8.7
1981	1.4	0.8	2.1	3.4	4.5	7.9	10.0
1982	2.9	0.5	3.4	16.5	11.7	28.1	31.5
1983	1.1	0.0	1.2	1.4	0.8	2.2	3.4
Limits[2]							
Lower	0.6	0.0	0.6	0.0	0.3	0.7	1.8
Upper	1.7	0.1	1.7	2.9	1.2	3.7	4.9
±%	45	200	45	99	56	67	47

[1]Carapace width (mm).
[2]With 95% confidence.

Table 16.--Annual abundance estimates (t) for Pacific halibut (Hippoglossus stenolepis) in the IPHC regulatory area 4, 1967-83.

Year	Biomass
1967	10,367
1968	8,772
1969	7,270
1970	6,166
1971	5,473
1972	5,459
1973	5,654
1974	5,952
1975	6,745
1976	7,169
1977	7,201
1978	6,959
1979	6,082
1980	6,056
1981	6,716
1982	7,939
1983	8,661

These biomass estimates are derived from commercial catch statistics and represent the population recruited to the fishery (starting at age eight). The values in Tables 6 and 7 are biomass estimates extrapolated from trawl surveys and include the juvenile portion of the population. Additionally, the two types of biomass estimates may be for somewhat different production units, since some halibut are known to migrate from the Bering Sea as they age.