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SUMMARY OF THE **1986 NORTH PACIFIC ALBACORE FISHERY DATA** 

by

Anthony P. Majors and Forrest R. Miller

ADMINISTRATIVE REPORT LJ-87-12



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# SUMMARY OF THE 1986 NORTH

# PACIFIC ALBACORE FISHERY DATA

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ADMINISTRATIVE REPORT LF-87-12

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# SUMMARY OF THE 1986 NORTH PACIFIC ALBACORE FISHERY DATA

### Anthony P. Majors and Forrest R. Miller

#### INTRODUCTION

For the 13th successive year, state and federal agencies have worked together to collect information on catch and lengthfrequency for the U.S. North Pacific albacore fishery. During the 1986 albacore fishing season, the California Department of Fish and Game, Oregon Department of Fish and Wildlife, Washington Department of Fisheries, Pacific Marine Fisheries Commission (PMFC), Western Fishboat Owners Association (WFOA) and the Honolulu Laboratory of the Southwest Fisheries Center (SWFC) distributed logbooks to fishermen and sampled size composition of albacore catches from fishing vessels when they returned to ports.

In early June, before the start of the 1986 fishing season, more than 350 albacore logbooks were sent by mail to fishermen who are members of WFOA. An additional 400 logbooks were distributed from June to September at dock sites in ports throughout California, Hawaii, Oregon and Washington by field biologists to interested fishermen. These fishermen participated voluntarily in this sampling project. They recorded daily fishing effort, numbers of fish caught, types of gear used, and environmental data during fishing activities. The completed logsheets were submitted by fishermen to state samplers assigned to the dock sites during the fishing season or sent directly to the SWFC. If the fishermen did not have access to logbooks, samplers conducted interviews for the necessary information when returning vessels unloaded their catches. These samplers also collected length-frequency samples from the unloaded vessel catches.

In this report, we present a summary of the catch and environmental data collected during the 1986 U.S. North Pacific albacore fishing season. Areas covered include the traditional fishing grounds off the North American west coast from central Baja California to British Columbia, areas in the central north Pacific, and those around Midway Island. The data are summarized and compared with those collected during the 1985 fishing season.

#### SAMPLING COVERAGE

Sampling coverage for the U.S. North Pacific albacore fishery in 1985 and 1986 was measured as the ratio of sampled

landings to total landings in weight. Sampled landings in weight by states were estimated by multiplying the numbers of fish sampled by the average weight of these fish. During the 1986 an estimated North Pacific albacore fishing season, U.S. (5,143 mt) of albacore were landed in ports 11,338,940 lbs throughout California, Oregon, and Washington. There were no albacore landings reported from Hawaii for 1986 (Tables 1a-1b). There were no Of this total, approximately 59% (6,637,770 lbs; 3,011 mt) was sampled for catch and effort (information collected from logbooks and interviews), and 2% (270,855 lbs; 123 mt) was sampled for Catch and effort coverage rates, as estimated length-frequency. from sampled landings in weight, decreased slightly from 61% in 1985 to 59% in 1986. Coverage rates for length-frequency samples also decreased from 3% in 1985 to 2% in 1986. Approximately 62% the U.S. North Pacific albacore sampled catch for 1986 was of in California, 22% in Oregon, and 16% in Washington. landed Compared with albacore landings in 1985, landings in 1986 for Oregon increased 62% and for Washington 422%; landings for California decreased 51% (Tables 1a-1b).

Table 1a.	Sampling	coverage	for	the	U.S.	North	Pacific	albacore
	fishery by	y state in	n 198	36.				

State	Total Landings (lbs)	Landings Sampled (lbs)	Percent Coverage	Number Vessel Landings	Number Vessels Sampled
		Catch and	Effort		
California	7,017,924	3,498,818	3 50%	189	165
Hawaii	(			0	0
Oregon	2,459,472			156	59
Washington	1,861,544	1,239,176	5 67%	72	36
Total	11,338,940	6,637,768	3 59%	417	260
		Length Fre	equency		
				100	2.7.4
California	7,017,924			189 0	174
Hawaii				156	0 26
Oregon	2,459,472			72	13
Washington	1,861,544	22,822	5 I 6	12	10
Total	11,338,940	270,854	1 2%	417	213

Total Landings (lbs)	Landings Sampled (lbs)	Percent Coverage	Number Vessel Landings	Number Vessels Sampled
	Catch and 1	Effort		
14,370,000 1,236,000	817,190	66%	500 9	369
1,522,183 356,637			54 28	50 26
17,484,820	10,608,068	8 61%	591	448
Ī	ength Frequ	lency		
14,370,000 1,236,000			500 9	331 6
1,522,183 356,637			54 28	38 6
17,484,820	458,534	4 3%	591	381
	Landings (lbs) 14,370,000 1,236,000 1,522,183 356,637 17,484,820 <u>I</u> 14,370,000 1,236,000 1,236,000 1,522,183 356,637	Landings Sampled (lbs) Catch and 1 (lbs) Catch and 1 14,370,000 8,642,299 1,236,000 817,190 1,522,183 869,369 356,637 279,212 17,484,820 10,608,068 Length Freque 14,370,000 330,584 1,236,000 4,524 1,522,183 114,228 356,637 9,198	Landings Sampled Coverage (lbs) (lbs) Coverage (lbs) (lbs) Coverage (lbs) (lbs) Coverage (lbs) (lbs) Coverage (lbs) (lbs) Coverage (lbs) (lbs) (lbs) (lss) (	Landings Sampled Coverage Vessel (lbs) Catch and Effort 14,370,000 8,642,295 60% 500 1,236,000 817,196 66% 9 1,522,183 869,365 57% 54 356,637 279,212 78% 28 17,484,820 10,608,068 61% 591 <u>Length Frequency</u> 14,370,000 330,584 2% 500 1,236,000 4,524 <1% 9 1,522,183 114,228 8% 54 356,637 9,198 3% 28

Table 1b. Sampling coverage for the U.S. North Pacific albacore fishery by state in 1985.

#### CATCH

Total reported commercial landings for the 1986 U.S. North Pacific albacore fishery were 11,338,940 lbs (5,143 mt). This total represents a 35% decrease from the 17,484,820 lbs (7,931 mt) recorded for 1985 (Tables 1a-1b). Total albacore catch for the entire North Pacific in 1986 is unavailable at this time; however, historical data for the four major fisheries are presented for comparison purposes (Table 3, Figure 1).

From the late 1970s until the present, the U.S. North Pacific albacore fishery operated progressively farther from the North American coast to areas in the central and western Pacific. To simplify the presentation of information discussed and compared in this report, we have arbitrarily divided the fishery for 1985 and 1986 into two longitudinal areas: (1) the inshore area, from the North American coastline to 140° W longitude, and (2) the offshore area, west of 140° W longitude.

The U.S. North Pacific albacore jigboat fleet in 1986, like the fleet in 1985, fished in areas west of 140° W longitude from May to early September (Figures 2a-2e). Fishing in these offshore areas in 1986 was fairly good during the early months, but was rather poor midway through the season, especially in early July (Figure 2c). Jigboats (>55-foot length; 16.8 meter) fishing in these offshore areas early in the season reported good fishing in a 10° quadrangle area, 30° N latitude and 165° W longitude approximately 450 nautical miles (nm) northeast of Midway Island from late May through June (Figures 2a-2b). Excellent fishing was also reported from a 10° quadrangle area 40° N and 135° W longitude approximately 650 nm west of Newport, Oregon from late July through September (Figures 2c-2e). Fishing inshore started in late June 1986, and significant catches were recorded in early July in areas between 50 and 250 nm off southern California and in areas between 50 and 900 nm west of Cape Mendocino, California.

Although the distribution of catches inshore and offshore there were for 1985 and 1986 was geographically similar, significant differences in the numbers of fish caught by areas. In 1986, the inshore sampled catch was 61% of the total landings and the offshore catch was 39%. In 1985, the inshore sampled catch was 82% of the total landings and the offshore catch was The most productive offshore fishing in 1986 was reported 18%. from areas south of 40° N latitude early in the season throughout May and June between 30° and 35° N latitude. Best fishing the season was found nearshore in a 10<sup>0</sup> quadrangle area during 40° N and 135° W longitude from late July to mid-September. Fishing in 1986 was productive in very much the same areas that were productive in 1985.

#### EFFORT

Sampled effort (days fished) for the 1986 U.S. North Pacific albacore fishery was significantly lower than in 1985. There was a decrease of 45% from the reported 7,725 days fished in 1985 to the 4,253 days fished in 1986. This dramatic decrease in fishing effort affected the total catch. In 1986, 78% of the sampled effort (3,320 days fished) spent in the inshore area yielded 61% of the sampled catch (3,932,082 lbs) and 22% (933 days fished) spent in the offshore area yielded 39% (2,537,458 lbs). In 1985, 82% of the sampled effort (6,341 days fished) spent in the inshore area yielded 80% of the sampled catch (8,490,146 lbs) and 18% (1,384 days fished) spent in the offshore area yielded 20% (3,309,918 lbs). In both years, the 55-foot jigboats expended the most effort (days fished) in the Although fishing effort by all vessels for the season fishery. decreased 45%, participation by the larger jigboats (65- and 75foot classes) was proportionally higher in 1986 than in 1985 (Figure 3). Most of the smaller fishing vessels (<55-foot class) either did not participate in the albacore fishery or they fished in the salmon fishery, which was quite successful in 1986.

## CATCH-PER-UNIT EFFORT BY JIGBOATS

Estimated annual catch-per-unit effort (CPUE), in numbers of fish caught for one day of fishing by a standard 45-foot (14 meter) jigboat, increased from 82.0 fish per day in 1985 to 117.0 fish per day in 1986 (Table 2; Figure 4). The areas approximately 450 nm northeast of Midway Island that yielded 221 to 225 fish per day (calculated in half-month periods) in May 1985, yielded 12 to 99 fish per day in May 1986. Highest CPUEs in 1986 of 149 to 183 fish per day for a standard jigboat were reported from a 10° quadrangle area 40° N latitude and 135° W longitude approximately 650 nm west of Newport from early August to mid-September (Figures 5f-5j). In this same area, CPUEs of 70 to 115 fish per day were reported for a standard jigboat during the same period in 1985 (Table 2). Monthly catch rates of 67 fish per day for July 1986 were slightly higher than the 61 fish per day recorded for the same period in 1985. The most successful fishing in 1986 was reported from nearshore areas (40° N and 135° W) in late July to early September, and in 1985 from offshore areas (35° N and 165° W) in early May to June.

Year			1986			1985	
Month	Time Period		mpled t Catch	CPUE		mpled t Catch	CPUE
April	1-15	0	0	0	1	0	0
	16-30	5	0	0	17	45	3
Мау	1-15	54	625	12	53	11,721	221
	16-31	125	12,340	99	86	19,380	225
June	1-15	147	7,838	53	147	27,269	185
	16-30	159	13,899	87	522	47,067	90
July	1-15	205	2,739	13	497	27,497	55
	16-31	407	38,545	95	735	48,275	66
August	1-15	682	124,647	183	930	100,156	107
	16-31	556	98,100	176	899	103,043	115
September	1-15	412	61,304	149	1,076	75,409	70
	16-30	222	12,245	55	578	21,550	37
October	1-15	170	1,697	10	394	14,948	38
	16-31	45	144	3	261	10,031	38
Annual		3,189	374,125	117	6,196	506,391	82

Table 2. Standardized fishing effort in days fished, catch in numbers of fish caught, and CPUEs (average number of fish caught per day) by half-month for 1986 and 1985.

In 1986, there was an increase from 1985 of 20  $1^{\circ}$  quadrangles that had CPUEs greater than 200 fish per day. Unlike 1985, when most of the  $1^{\circ}$  quadrangles with CPUEs greater than 200 were located south of  $40^{\circ}$  N latitude, most of the  $1^{\circ}$  quadrangles with CPUEs greater than 200 in 1986 were located north of  $40^{\circ}$  N latitude. In both years, the majority of  $1^{\circ}$  quadrangles with CPUEs over 200 were located offshore (Figures 5a-51).

## LENGTH FREQUENCY

During the 1986 albacore fishing season, 18,424 fork length measurements were taken of fish caught by the U.S. North Pacific albacore fleet. Of these samples, approximately 64% were taken from catches in the inshore area, 16% offshore, and 20% unclassified. Approximately 8% of the measured fish were taken from baitboats, 81% from jigboats, 3% from vessels using a combination of jig and bait, 4% gillnet, 1% purse seine and 3% unclassified (Figure 7). The average fork length (from tip of the mandible to fork of the tail) of albacore measured in 1986 was 69.8 centimeters (cm). This was slightly higher than the 69.0 cm average fork length recorded for 1985. Fish sampled inshore in both years were mostly within the range of 60 to 84 cm (Figures 6a-6c). There were more fish in the 72 to 84 cm range caught by jigboats inshore and south of 40° N latitude in 1986 than in 1985 (Figure 6b). In both years, these larger fish were especially vulnerable to baitboats and vessels using a combination of bait and jig in inshore areas (Figures 6a and 6c). In areas north of 40° N latitude, most of the fish sampled were in the range of 56 to 68 cm. The majority of albacore caught offshore and south of  $40^{\circ}$  N latitude by the larger jigboats in 1986 were in the 72 to 78 cm range; fish of the same size range were caught in these areas in 1985 (Figure 6c). Fish sampled in areas south of 40° N latitude inshore and offshore during the season were predominantly larger than those sampled north of 40° N latitude in 1986 (Figures 6a-6c).

### SEA-SURFACE TEMPERATURE

Sea-surface temperatures (SSTs) recorded by commercial transport vessels, fishing boats and research vessels were compiled into monthly means and plotted on charts with 1° quadrangle resolutions. Analyses of these charts (Figures 8a-8h) show the distribution of sea-surface isotherms and the location of surface ocean fronts.

Early in May 1986, when fishing activity began north of Midway Island, SSTs were  $15^{\circ}$  to  $18^{\circ}$  C ( $59^{\circ}$  to  $60.5^{\circ}$  F) and were  $1^{\circ}$  C ( $1.8^{\circ}$  F) below normal between  $30^{\circ}$  and  $35^{\circ}$  N latitude. The fleet was fishing in areas south of a sub-arctic ocean front and north of a fairly weak sub-tropical front (Figure 8b). Early in June, most of the fishing activities moved north of  $35^{\circ}$  N where SSTs were  $1^{\circ}$  to  $2^{\circ}$  C ( $1.8^{\circ}$  to  $3.6^{\circ}$  F) below normal. SSTs were warming at lower than seasonal rates in this area as a result of frequent storms with strong winds that caused extensive ocean mixing. During June, the fleet was fishing on the northern boundary of a rather defused, sub-tropical front (Figure 8c). In early July, fishing moved northeastward to  $40^{\circ}$  N where SSTs were beginning to warm at seasonal rates, with SSTs less than  $1^{\circ}$  C ( $1.8^{\circ}$  F) below normal. By the last half of July, SSTs were warming at greater than seasonal rates in the offshore fishing

area. This was due, in part, to lighter winds in the eastern Pacific high pressure system whose center was near the heaviest offshore fishing activity ( $10^{\circ}$  quadrangle;  $40^{\circ}$  N lat. and  $135^{\circ}$  W long.) in areas 650 nm west of Newport. During this period, the inshore fishing activity expanded northward in July along the coasts of California and Oregon as coastal upwelling developed in these areas. There were sharp frontal boundaries (edges) forming along the western periphery of the upwelling at this time in these areas (Figure 8d).

During August, SSTs offshore in areas where fishing activities occurred were  $1^{\circ}$  C  $(1.8^{\circ}$  F) or more above normal. This was the area of light winds and seas associated with a high pressure center that remained offshore from Oregon during most of August. Along the east side of the high pressure system, strong northerly winds intensified the coastal upwelling from Cape Blanco to Point Conception. As a result good sea-temperature edges developed from 60 to 150 nm nearshore and the coastal fishing activity improved (Figure 5g-5h).

In September, SSTs remained more than  $1^{\circ}$  C (1.8° F) above normal in the offshore fishing areas between 45° and 48° N. The high pressure center was located north of its normal position during most of September. This resulted in a continuation of good fishing weather (Figure 5i and 8f). Also during this period, nearshore SSTs were  $1^{\circ}$  to  $2^{\circ}$  C (1.8° to 3.6° F) below normal because of strong coastal upwelling which maintained good temperature edges for the fishing fleet between Cape Blanco and Point Conception. In early October, SSTs began to cool rapidly as frequent Pacific storms, accompanied by strong winds and rough created adverse fishing conditions frequently. Good seas, temperature edges disappeared as upwelling was reduced. By late October, fishing activity was confined to the coastal area south of Monterey where fishing weather and SSTs were more favorable (Figure 8g).

#### SUMMARY

Although albacore landings were significantly less in 1986 than in 1985, good offshore fishing was reported early in the season throughout May and June in areas 450 nm northeast of Midway Island and from late July to late September in nearshore areas 650 nm west of Newport. Fishing inshore in 1986 started late in June with significant catches reported late in July in areas between 50 and 250 nm off southern California. In contrast, fishing inshore in 1985 started early in June with significant catches reported from these same areas late in June. In both years, the offshore fishing was good from early May to late June in areas northeast of Midway Island. Fish caught earlier in the season in April 1985 and in May 1986 were taken west of Erben Bank (33° N lat. and 145° W long.) by the larger jigboats leaving for areas in the central north Pacific and Midway Island.

Favorable SSTs of  $15^{\circ}$  to  $18^{\circ}$  C  $(59^{\circ}$  to  $60.5^{\circ}$  F) offshore from May to June 1986 may have contributed to the success of the larger jigboats fishing 450 nm northeast of Midway Island early in the season. SSTs warming at greater than seasonal rates in areas 650 nm west of Newport may have created favorable conditions for best fishing of the season in these areas in 1986. Strong coastal upwelling inshore in late July to September may have contributed to the success of vessels fishing in areas inshore from Point Conception to Cape Blanco late in the season.

The average size of albacore sampled in 1986 was 69.8 cm in length (15.4 lbs), which was slightly larger than the 1985 average size of 69.0 cm (15.0 lbs). Estimated annual CPUE for a standard vessel in 1986 was 117.0 fish per day, which was much higher than the 82.0 fish per day in 1985. There was a decrease in sampled effort from a high of 7,725 days fished in 1985 to a low of 4,253 in 1986. On the average, the price paid for albacore (\$950/ton) in 1986 was significantly less than for each of the previous five years. There were also fewer buyers available in 1986 to the fleet in California, Hawaii, Oregon and Washington. The gradual decline in price paid for albacore and the diminishing numbers of buyers may have contributed to the 45% decrease in fishing effort for 1986.

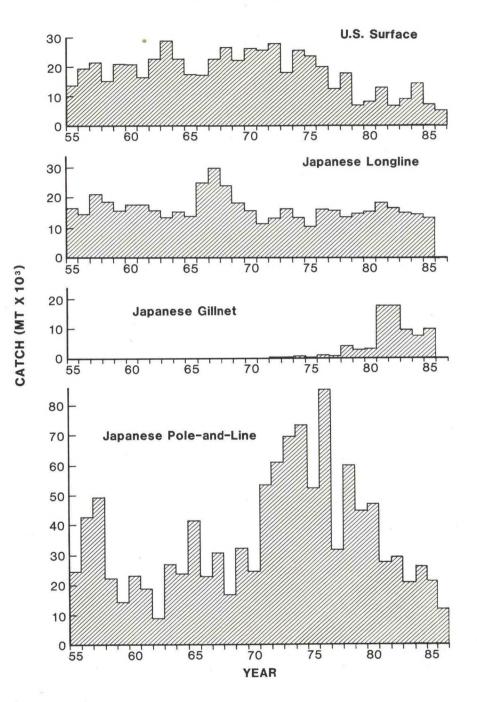
Highlights of the 1986 fishing season include: 1) the amount of catch in 1986 decreased by 35%; 2) the amount of sampled effort decreased 45%; 3) the largest number of 1° quadrangles with CPUEs greater than 200 were located north of 40° N latitude; 4) offshore fishing lasted until early September; 5) significant inshore were made throughout July in areas off southern catches and central California; 6) good catches offshore were made in May and June in areas 450 nm northeast of Midway Island; 7) best catches for the season were made in nearshore areas 650 nm west of Newport; 8) fish of 74 to 82 cm in fork length were caught in higher percentage in areas south of 40° N latitude; 9) fish of 64 to 72 cm were caught in higher percentage in areas north of  $40^{\circ}$  N latitude; 10) a weak sub-tropical front existed early in the season (May-June) in offshore areas and south of 40° N latitude; 11) SSTs were warming at greater than seasonal rates in nearshore areas and north of 40° N latitude in late July; and 12) coastal upwelling was strong in inshore areas from Point Conception to Cape Blanco late in the season.

#### ACKNOWLEDGMENTS

We thank William Perkins of WFOA, captains and crews of the U.S. North Pacific albacore fishing fleet for their cooperation and continuous support for this program. We also thank Russ Porter of PMFC, Brian Culver of WDF, Karen Worcester and Terri Palmisano of CDFG, Larry Hreha of ODFW, and members of their staffs for distributing logbooks and collecting albacore fishing information during the fishing season. Norman Bartoo, Atilio Coan, Robert Nishimoto and Gary Sakagawa of SWFC reviewed drafts of this report and provided useful comments. Jean Michalski edited the manuscript and provided technical support on the text as needed. Shirley Gray typed drafts of the manuscript. Christina Perrin and Aaron Weinfield helped in editing the data and provided programming support for the compilation of data used in this report. Kenneth Raymond, Roy Allen and Henry Orr illustrated the maps and figures. Catches in metric tons for North Pacific albacore, 1952-1986 Table 3.

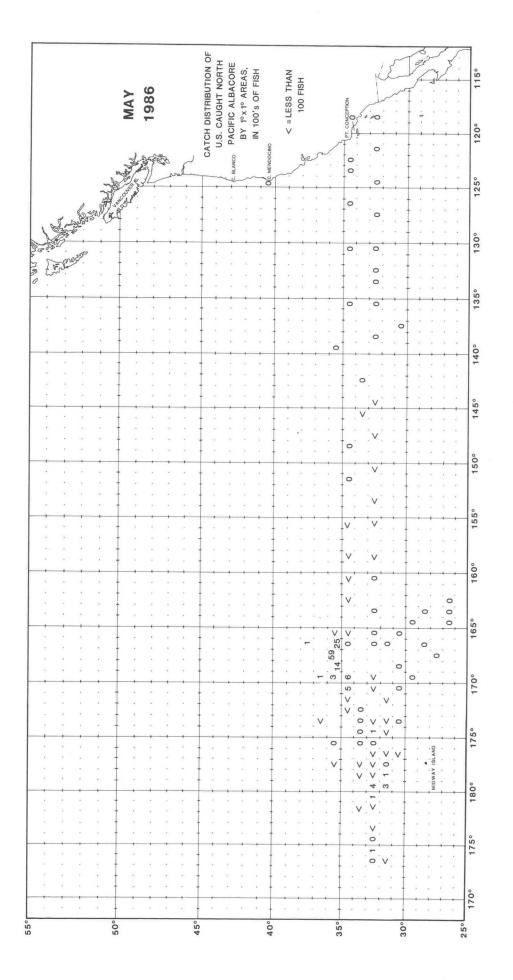
Long-   Bait-   Jig-   Log-   Total   Jig-   Gr     11   boat   boat   Sport   Total   Jig-   Gr     1   -   15,740   171   15,911   5   71   93     -   -   15,740   171   15,911   5   71   93     -   -   13,751   1482   13,841   -   61,71   93     -   -   13,764   577   12,393   17   76,94     -   -   13,764   577   12,393   17   76     -   -   -   13,764   577   19,233   17   76     -   -   -   13,764   577   19,33   17   76     -   -   -   14,903   74   55   51     15   417   1661   1,432   1663   167   71     15   4417   15545   731   1	arr   Bait- boat   Long- boat   Gill boat   Cother boat   Long- boat   Gait- boat   Jig- boat   Jig- boat <thjig- boat   Jig- boat   <th< th=""><th></th><th></th><th></th><th>Japan</th><th></th><th></th><th>iwa</th><th></th><th>United</th><th>States</th><th></th><th>anada</th><th></th></th<></thjig- 				Japan			iwa		United	States		anada	
952   11/316   56/64   71   95/21   1/373   25/216   71   95/25     955   23/765   75   76/24   171   15/246   171   15/241   171   15/241   171   15/241   171   15/241   171   15/241   171   15/241   171   15/241   171   15/241   171   15/241   171   15/241   171   15/241   171   15/241   171   15/241   176   15/244   171   15/241   176   16/242   16/242   16/242   16/242   16/242   17   15/243   176   15/243   176   15/243   176   15/243   176   15/243   176   15/243   176   17   15/243   176   15/243   176   15/243   176   15/243   176   15/243   176   15/243   176   15/243   176   15/243   176   15/243   176   15/243   176   15/243   176   15/243   176   15/2	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	ea	5 1-	ong	ilet	Other gear	Total	Lo	ai	1.19	por	ot	100	
9541 32,745 123 60,830 - - 15,740 171 15,511 5 77,733   9551 34,750 21,453 157 77,704 - - 13,724 171 15,713 17 17,753   9551 49,500 21,433 157 77,704 - - 13,724 17 15,77 17 15,77 17 15,75 17 15,75 17 15,75 16,753 18 17 15,75 17 15,75 17 15,75 16,753 17 15,75 17 15,75 16,753 17 15,75 16,753 17 17 15,75 15,75 17 15,75 15,75 17 15,75 15,75 17 17 15,75 16,753 17 17 17 17 16,15 17,75 16,15 17 17,16 17 16,15 17 16,15 17 16,13 17 16,13 17 16,13 17 16,13 17 16,13 17 16,13 17 16,13 17	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	6	1,38	6,68	1	m	8,3]	-	I	3,8	,37	5,21		50
954 28,065 20,958 - 38 49,065 - 13,754 57,734 17,754 57,734 17,754 57,734 17,754 57,734 17,754 57,734 17,754 57,734 17,754 57,734 17,754 57,745 18,755 18,455 17,455 18,455 17,456 17,754 57,749 17,754 57,749 17,755 18,455 17,456 17,755 18,455 17,456 17,755 18,455 17,456 17,756 17,755 18,455 17,476 17,757 18,456 17,476 17,479 18,473 17,476 17,479 18,473 17,473 18,476 17,479 18,476 17,476 14,471 15,757 18,472 17,473 18,474 17,473 14,471 15,757 18,476 17,476 14,471 15,757 16,757 16,757 16,757 16,757 16,757 16,757 16,757 16,757 16,757 16,757 16,757 16,757 16,757 17,756 16,757 17,755 16,757 17,755 16,757 17,747 16,777 17,7757 17,7755	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6	2,92	LL'L	I	$\mathcal{C}$	0,83	1	I	5	2	10.5		
955 24/236 [2/27] 956 24/236 [2/27] 956 22/155 [1/26] 957 23/256 [1/26] 951 24/252 [5/252 [5/25] 958 12/175 [5/26] 958 12/175 [5/26] 959 12/27 [5/26] 951 12/27 [5/26] 951 12/27 [5/26] 951 12/264 [5/27] 951 12/264 [5/26] 951 22/384 [5/27] 951 12/265 [5/26] 951 22/384 [5/27] 951 12/265 [5/26] 951 22/384 [5/27] 951 22/374 [16/27] 951 22/374 [16/27] 951 22/384 [5/27] 951 22/384 [5/27] 951 22/384 [5/27] 951 22/374 [16/27] 951 22/374 [16/27] 951 22/374 [16/27] 951 22/374 [16/27] 971 13/27 971 13/27 972 13/27 972 13/27 972 13/27 973 12/27 973 12/27 973 12/27 973 12/27 973 12/27 973 12/27 973 12/27 973 12/27 973 12/27 972 13/27 973 12/27 973 12/27 973 12/27	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6	8,06	0,95	1	$\mathcal{C}$	9,06	1	I	2.2	- 4	2.30		. 4 .
956 42.010 14.741 - 57 57.208 - 512 07.704 - 21.65 304 21.469 8 92.18 959 14.560 21.053 - 151 70.704 - 21.056 155 304 21.469 8 92.18 959 14.561 15.562 - 76 29.621 - 22.432 12.061 1.555 16.233 74 55.12 950 123.456 15.468 - 126 3.466 - 22.432 12.061 1.555 16.233 74 55.09 951 18.636 15.468 - 121 22.384 - 12.085 12.061 1.555 16.233 74 55.09 951 18.636 15.468 - 228 4.668 - 22.432 5.147 1.611 22.556 14 15.00 951 23.456 15.450 - 218 22.384 16 1.600 15.147 16.11 22.556 14 14.903 956 22.630 28.696 - 22.432 55.484 16 1.600 15.342 58.8 17.650 5 70.32 956 12.6430 28.750 - 12.09 40.767 15 14.9103 15.42 58.8 17.650 5 70.357 10.013 956 12.6430 28.769 - 12.08 37.795 15 4.416 16.47 550 44 50.73 956 12.643 23.061 - 1.209 40.767 15 14.400 15.142 28.740 161 77.650 958 15.597 23.061 - 1.209 40.767 15 14.400 15.342 58.8 17.650 30 11.028 68.11 950 13.648 3 24.965 11 10.05 54.952 15 4.416 21.041 822 2.630 11.028 68.11 951 53.430 15.469 31 1.003 55.7435 15 4.416 21.041 822 2.630 11.028 68.11 971 53.193 11.003 22.444 951 26.701 22.646 161 77.698 68.11 971 53.088 11.003 23.4416 21.041 822 2.739 13.673 17.658 67.128 47.77 971 53.194 15.777 640 15.178 53 27.7995 11.607 08 97.897 971 53.194 15.777 640 11.778 53 17.950 10.708 67.127.937 1.162.28 971 53.194 15.777 640 161.7427 530 14.477 530 11.707 08 107.08 971 53.164 161 77.745 971 13.054 15.986 11.0708 53 11.667 21.041 822 26.279 13.467 84.775 971 13.034 15.779 10.703 537 12.7039 97.599 971 13.045 17.456 17.745 15.966 17.745 15.7798 66.1 161 77.748 971 13.045 17.447 125 13.053 17.647 11.729 10.703 537 12.1039 17.508 971 13.045 17.445 14.772 15.667 84.777 15.677 84.772 15.773 99.65 971 14.725 97.931 1.0726 65.988 17.7122 12.133 1.107.08 971 14.725 17.7428 15.901 10.705 537 12.7039 17.7428 15.712 17.239 971 14.725 97.931 1.0726 65.7788 1.7280 65.773 12.7039 17.7428 15.712 1.2133 1.7158 105.711 14.727 10.7088 10.7018	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6	4,23	6,27	I	3	0,64	1	I	i m		18.5		
9571 49,500 21,503 - 123 70,704 - 21,165 304 21,465 7 8 92,17 9581 14,252 15,502 - 57 20,501 - 2,837 147 155 16,253 48 14,903 74 55,72 9511 18,636 15,764 - 191 22,334 - 10,1085 19,760 1,681 22,525 4 1 44,91 9571 8,729 13,464 - 191 22,347 16 1,003 55 20,950 0 222 51,25 9561 12,659 23,651 - 2,837 165 15 7,178 25,147 161 28,740 5 10,44 9561 21,693 23,651 - 3,316 1 - 1,008 13,593 25,147 161 28,740 5 10,44 9561 21,693 23,651 - 552 55,264 16 1,401 16,12,445 731 17,593 14,753 0 44 9561 22,633 25,264 16 1,401 16,12,445 731 17,593 14,753 16,73 9561 22,633 25,264 16 1,401 16,12,445 731 17,593 14,763 15 77,78 9561 22,633 25,264 16 1,401 16,12,445 731 17,593 14,66 16,17 9571 23,168 1,035 1,996 18,839 358 2,5,667 344 351 26,646 16,1753 16,67 9571 23,198 11,035 - 1,265 46,763 11,965 12,044 351 26,733 11,567 17,78 9581 23,591 15,073 16,059 33 11,932 44,16 21,041 26,547 394 161 17,778 9581 15,372 10,060 1,070 1,334 10,765 121 4,113 17,520 11,752 26,733 11,567 17,78 973 16,059 33 11,934 10,765 121 4,901 18,775 25,133 11,567 345 75,173 971 13,423 15,013 1,001 1,334 10,765 121 4,123 12,033 17,503 16,973 26,673 94 67,73 971 14,723 15,013 17,428 15,103 94,733 15,015 14,477 11,72 22,193 11,567 17,78 971 14,733 15,013 17,428 15,103 94,733 12,039 14,777 20,187 94 27,958 107,039 15,757 17,748 12,604 15,773 11,447 15,771 11,472 22,123 19,667 33 11,577 11,472 22,123 19,667 33 11,574 161 17,708 16,753 15,713 15,713 15,733 15	9651 149:555 15:753 15:755 15:753 15:755 15:753 15:755 15:753 15:753 15:755 15:753 15:	95	2,81	4,34	1	5	7,20	1	I	00	- a	6.23	71	AD.
958 22,175 18,552 - 124 40,751 - - 14,855 48 14,903 77 4 557 25,125 14,903 77 4 557 25,125 14,903 77 4 557 25,090 557 25,0490 22,668 34,668 - 26.83 34,668 - 20,837 25,0140 1681 22,555 1 4 44,91 57 20,990 557 25,042 16 4 56,053 4 56,053 1 4 44,91 57 70,491 57 70,491 57 70,491 57 70,491 57 70,491 56 70,491 57 70,491 56 70,491 57 70,491 56 70,491 57 70,491 56 70,491 56 70,491 56 70,491 56 70,491 56 70,491 56 70,491 56 70,491 56 70,491 70,718 70,718 70,718 70,718 70,718 70,718 70,718 70,718 70,516 116,613 75,531 </td <td><math display="block"> \begin{array}{cccccccccccccccccccccccccccccccccccc</math></td> <td>6</td> <td>9,50</td> <td>1,05</td> <td>I</td> <td>11)</td> <td>0110</td> <td>1</td> <td>1</td> <td>1,1</td> <td>0</td> <td>1,46</td> <td>a i</td> <td></td>	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6	9,50	1,05	I	11)	0110	1	1	1,1	0	1,46	a i	
9961 18/555 15/502 - 67 29/821 - 1 - 20/990 0 55 16/557 5 16/50 6601 28/55 15/764 - 268 34/668 - 2/837 12/061 1,551 22/526 1 44/91 9671 18/535 15/526 1 5 16/557 5 16/557 5 16/55 9661 22/830 28/869 - 2/85 52/284 16 1/600 15/342 28/646 16/57 3 1005 9665 22/830 28/869 - 585 52/284 16 1/600 15/342 588 17/569 44 69/67 9661 22/830 28/869 - 585 52/284 16 1/600 15/342 588 17/569 44 9661 22/830 28/869 - 586 5 17 4/13 18/342 588 17/569 144 9661 22/830 28/869 - 12/80 20.444 951 27/789 16 967 30/481 15/530 15/546 16/67 17/78 9681 16/577 18/000 15/342 588 17/560 144 69/67 971 53/198 11/035 - 1/262 65/495 21 4/116 20/444 951 22/544 11/028 68/11 970 22/646 11/070 1/980 30/765 21 4/116 20/444 951 22/399 14/86 971 53/198 11/035 - 1/262 65/495 21 4/16 20/444 951 22/399 14/86 971 53/198 11/035 - 1/262 65/495 21 4/16 20/444 951 22/399 13/857 90/89 971 53/198 11/035 - 1/262 65/495 21 4/16 20/444 951 22/399 13/857 90/89 971 53/198 11/035 - 1/262 65/495 21 4/16 20/444 951 22/399 13/857 90/89 971 53/198 11/035 - 1/262 65/495 21 4/16 20/444 951 22/399 13/857 90/89 971 53/198 11/035 - 1/262 65/495 21 4/16 20/444 951 22/399 13/857 90/89 971 53/198 11/035 - 1/262 65/495 21 0411 20/537 11/175 23/703 14/422 90/59 973 16/65 23/960 11/070 1/394 101/696 37 77/8 22/49 16/87 31 11/275 23/703 13/957 100/99 973 16/65 13/057 11/054 15/08 13/039 6/301 17/427 10/050 537 11/422 22/72 974 22/039 16/61 16/7 11/422 23/601 17/427 10/206 61 1/277 11/4/22 983 22/103 17/425 056 63/827 - 7382 05/61 12/039 77/62 983 22/103 17/425 056 63/827 - 7382 12/039 77/62 981 27/425 18/020 17/425 056 63/827 - 7382 12/039 77/62 983 22/103 17/425 0566 11/070 15/912 77/38 12/099 13/76 72/12 981 27/425 0566 11/070 15/912 17/39 12/039 77/62 981 27/425 0566 11/070 15/912 17/33 12/039 77/62 981 27/425 0566 11/071 81 17/97 10/026 61 17/427 15/5637 18/77 114/227 981 27/426 15/012 17/947 1/0518 57/918 - 425 6/661 27/9195 17/422 23/9107 11	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6	2,17	8,45	1	3	0,75	1	ı	4,8	4	4,90	1 74	12
960 [33,156 [7,369 - 766 40.60] - 10.20,203 557 20,657 5 61,253 961 [36,720 15,458 - 218 34,660 - 12,837 12,061 1,355 16,253 5 70.84 965 [24,691 25,050 - 1319 37,696 2 - 12,837 12,061 1,618 122,526 1 4 4,05 966 [241,91 25,050 - 1319 37,699 26 3,417 1,16,545 731 17,693 15 77,693 966 [22,1830 28,869 - 520 54,622 16 3,417 16,545 731 17,693 15 77,693 966 [22,1830 28,869 - 520 54,622 16 1,610 15,342 731 17,693 15 77,693 966 [22,1830 28,869 - 520 54,622 16 1,610 15,342 731 17,693 15 77,693 967 [30,481 23,061 - 1,109 40,767 15 4,4906 20,444 951 27,793 16 77,79 968 [32,097 18,006 - 1,408 51,595 24 2,701 20,537 1,175 26,401 1,028 68,11 998 [32,070 18,006 - 1,408 51,595 24 4,707 20,537 1,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 16,753 96,697 37,597 396,697 33,535 15,667 84 17,987 10,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,77,995 17,779 10,709 105,095 13,555 17,31 19,442 2,795 10,107,095 13,957 10,505 15,955 115,955 117,422 120,733 114,722 252 121,733 195,455 17,733 195,455 17,739 105,955 17,33 19,345 17,779 105,935 15,667 84 17,798 228 105,957 996 861,75 976 [85,486 1,556 63,497 16,682 13 7,470 15,932 15,933 17,563 75 114,722 121,733 19,345 15,703 95,553 114,742 2,293 105,995 105	$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	6	4,25	5,50	1	6	9,82	-	ı	10	0	0,99	1 212	0.0
951 18/536 15/764 - 268 34/668 - 2/837 12/061 1/355 16/253 4 50/53 954 23/858 13/701 - 319 32/384 - 191 22/384 1 - 1/085 19/601 1/681 22/526 1 44/4/1 956 22/830 28/869 - 218 42/096 - 2/432 25/284 16 1/610 22/526 1 44/4/1 956 22/830 28/869 - 121 56/662 15 4/113 18/392 25/147 1/563 44 66/67 957 30/481 23/961 - 1/109 40/76 15 4/113 15/545 571 33 60/53 956 32/3061 - 1/480 51/593 15 777 8 956 32/3061 - 1/480 51/593 12 17/78 23/301 1461 7777 956 32/306 15/597 22/646 1161 7778 956 32/307 18/006 - 1/480 51/593 21 2/996 18/839 358 27/93 3166 17/78 951 16/572 - 955 64/705 15 4/113 17/645 707 22/646 1161 77778 971 53/198 15/372 - 955 64/705 12 4/916 201/041 822 26/279 33/55 68/11 971 53/198 15/372 - 955 65/495 23 4/416 201/041 822 26/279 33/55 68/11 971 53/198 15/372 - 955 65/495 23 4/416 201/041 822 26/279 33/55 81/778 971 53/198 15/372 - 955 65/495 23 4/416 201/041 822 26/279 33/55 81/778 971 53/198 16/059 39 1/803 87/92 35 37/71 20/641 822 26/279 33/55 75/17 971 53/193 15/371 10/50 11/929 640 22/85 810 11/207 114/27 971 53/55 75/179 10/060 15/895 17/898 11/207 114/27 971 53/57 10/060 17/482 93/218 65/98 61 1/477 114/27 201/33 971 53/57 11/207 11/203 537 10/748 95/58 1007/08 971 4477 13/051 17/425 956 53/827 - 7748 12/694 195 11/207 114/27 986 46/743 14/743 22/986 11/280 65/888 - 32/27 27/595 710 10/708 981 27/726 18/723 12/735 711 16/25 71 10/748 98/69 971 44/72 15/603 17/425 956 53/827 - 1425 15/039 95/69 981 27/426 18/703 17/425 956 53/827 - 1748 122/637 114/27 228 981 46/743 14/743 22/98 17/926 53/877 96/61 12/070 11/2036 64 15/710 984 15/013 77/38 97/38 17/976 11/2036 16/62 17/956 71 16/756 71 114/27 12/756 982 20/14 14/23 27/38 57/10 15/646 17/48 12/694 195 10/798 64 17/756 981 27/976 11/204 471 45/833 50/106 - 4225 121/7746 98 17/756 982 20/14 14/23 27/98 17/98 2218 77/756 11/2017 18/775 986 12/000 - 5/339 55/106 - 10000 4783 55/33 - 100708 4832 456 11/2077 18/7756 986 12/000 - 5/339 55/106 - 10000 4783 16/661 26/14 17/37 15/5637 18/7756 981 20/014 14/73 97/89 97/98 17/756 11/2077 18/7756 11/2077 18/7756 971 48/7	961 18,636 15,764 - 268 34,668 - 12,837 12,061 1,355 16,253 4   965 13,458 - 191 22,384 - 1,085 15,454 731 17,630 15,5   965 13,481 23,661 1 411 18,392 82,452 13,17,630 144   966 22,830 - 55,662 17 4,113 17,630 144   966 22,431 23,961 - 1,108 57,342 58,17,530 44   967 32,451 166 1,413 17,630 145 156,45 707 22,626 16   967 32,451 166 1,413 17,630 168 17,530 44   967 32,451 166 1,413 17,630 17,653 17,653 17,653 166	96	3,15	7,36	I	-	0,60	-	i	1,0	5	0,65		. 26
8621 87.20 13.464 - 191 22.384 - 1.0085 19.760 1.681 22.526 1 44.91   864.420 15.458 - 218 42.096 - 2.433 25.1447 16 57.043 15 74.38   965 41.7 16.545 731 17.693 15 74.38   965 11.7 4.11 16.545 731 17.693 15 74.38   966 15.97 23.661 1 1.6109 46.713 16.412 16.693 15 77.78   967 130.481 23.6107 1 1.6109 47.763 13 17.768 68.11   967 130.481 15.067 15 4.4066 21.041 822 26.2193 13.673 14 69.87   971 153.437 159.4416 21.641 161 77.78 68.11 77.78 67.35 107.08 67.135 177.78 67.35 157.17 177.72 14.416 21.641 161 77.75 177.35 177.33 17	$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	96	8,63	5,76	1	9	4,66	т Т	, 83	2,0	,35	6,25	4	00.
965 25.9420 15.458 - 218 42.096   - 2.432 25.147 1.161 28.740 5 7 70.80 966 23.858 13.701 - 319 37.879 26 3.441 16.9392 82.4 22.627 3 1 60.63 966 423.869 - 528 55.2284 16 1.600 15.342 588 17.530 44 69.87 966 16.597 23.061 - 1.109 40.767 15 15.445 573 17.63 17.778 966 16.597 23.061 - 1.480 51.593 12.1793 66.1301 17.228 66.1 16.1 77.78 956 16.597 23.061 - 1.480 51.593 12.1593 13.7530 144 69.87 956 16.597 23.061 - 1.480 51.593 12.1593 17.530 144 69.87 956 16.597 23.061 - 1.709 40.767 15 14.4966 20.4441 57.182 67.05 970 24.575 13.053 - 1.262 65.495 24 2.707 20.618 33 55 27.995 17.567 17.78 971 53.198 11.035 - 1.262 65.495 24 2.707 20.5167 84 11.017 28 68.11 973 155 11.059 33 11.035 22.4 1.065 87.792 35.667 84 17.987 17.508 105.91 973 155 11.059 39 11.035 22.4 1.065 87.792 35.667 84 17.987 17.508 105.91 973 155 11.059 39 11.035 22.4 1.065 87.792 35.667 84 27.995 13.558 105.91 973 155 11.059 39 11.033 22.4 1.065 87.792 35.667 84 27.995 13.558 105.91 974 73.576 13.053 22.4 1.065 87.792 35.667 84 17.987 1.720 107.08 976 155.932 15.013 12.649 10.703 15.667 84 17.987 1.720 107.08 976 155.932 15.713 15.713 12.995 13.558 105.918 40 17.978 14.27 25.121.33 971 31.934 15.773 15.913 19.345 12.509 80.176 65 18.770 107.08 64 125.733 15.7553 15.7553 15.7553 15.7553 15.7553 15.7553 15.713 15.7553 15.713 15.7563 17.445 15.5533 15.75553 15.7553 15.7553 15.7553 15.7553	$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	96	8,72	3,46	I	S	2,38	-	,08	5.7	,68	2,52	- T	16
964 23,858 13,701 - 319 37,879 26,662 3,411 18,392 824 22,627 3 60,53   965 31,4491 25,056 - 585 52,284 16 1,417 15,545 731 17,693 15 74,78   965 30,481 23,961 - 585 52,284 16 1,410 15,530 16 17,793 15 17,793 16 16 17,778   968 15,577 18,005 20,444 951 22,646 161 17,778   970 23,378 15,737 18,006 20,444 951 20,673 13,65 75,17   971 53,198 11,035 17,783 23 4,416 21,041 822 26,703 11,365 75,17   971 15,493 12,673 13,656 87,792 335 21,273 13,455 17,778   971 16,681 37 27,336 15,667 84 17,498 116,422 13,455 12,271 14,4122 12,473	$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	96	6,42	5,45	I	-	2,09	1	, 43	1,1	,16	8,74	1	84
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	96	3,85	3,70	1	-	7,87	1 26 1	,41	8,3	82	2,62	1 3	.53
966 22.830 287.69 - 585 52.284 16 1,600 15,342 588 17,530 44 69.01 966 22.830 287.61 - 1,109 40.767 15 4,113 17.78 51 26.301 1,028 68.11 968 132.107 18,006 - 1,480 51,593 21 2,996 18,839 358 22.193 1,365 67.35 971 23.198 15,372 - 956 40,706 23 4,416 21.041 822 26.779 1,9345 67.35 973 69.781 1,025 1,743 20.489 51 2.996 18,839 358 22.793 1,365 75.77 971 53.198 11,035 - 1,262 65.4906 23 4,416 21.041 822 26.779 1,345 67.35 973 69.781 1,822 26.779 1,357 190.88 973 69.781 1,822 25.793 1,587 190.88 973 69.781 1,823 25 3.773 27.995 1,345 67 114.22 973 69.781 16.059 37 27.995 13.558 115.77 114.22 976 83.335 15,896 1,070 1,394 101.696 37 2.770 15.932 713 19.345 1.2777 114.22 976 83.335 15,896 1,070 1,394 101.696 37 2.770 15.932 713 19.345 1.2777 114.22 976 83.335 15,896 1,070 1,394 101.696 37 2.770 114.22 976 83.335 15,896 1,070 1,394 101.696 37 2.770 15.932 713 19.345 1.2777 114.22 977 31.973 15.737 0.607 1.734 101.696 37 2.770 114.22 978 15.433 15.671 4,029 3.703 80.176 153 1.447 10.563 811 14.22 978 15.433 14.743 2.2986 1.7216 751 1.447 10.682 11.4427 15.653 1.7778 2.83 6.105 984 22.698 15.103 9.166 1.752 17.943 1.677 9.512 7.343 1.7756 1.4427 15.653 1.17756 1.77	$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	96	1,49	5,05	I	$\sim$	6,66	I 16 I	41	5 2	m	7.69	115	300
967 30.481 23.961 - 520 54.962 17 4,113 17,826 707 22,646 161 77,78   9581 15,597 23.0661 - 1,109 40.767 15 4,906 20,444 951 25,17 345 67,17   9701 24,378 15,372 - 1,480 51,593 23 4,416 21,081 822 26,301 1,365 75,17   9701 24,378 15,371 - 1,266 40,706 23 4,416 21,033 1,355 13,365 1,365 75,17 345 67,35 35 75,17 345 67,35 75,17 345 67,35 35 75,17 345 67,35 35 75,17 345 67,35 35 75,117 345 67,35 35 35,165 31,756 34,77 36 87,73 10,065 1,77,78 37,995 3,558 107,08 68,177 35 34,77 36 37,556 10,206 1,20,738 10,207 81,77 36 31,757 36	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	96	2,83	8,86	ī	ω	2,28	1 16 1	,60	5,3	8	7,53	44	87
968  16,597 23,061 - 1,409 40.767 15   4,906 20,444 951 26,301   1,028   68,11 969  32,3198   15,935 - 17 971  53,198   15,735 - 17 972  53,198   15,735 - 1726 55,495   23   40,71 20,537   1,172 26,301   1,028   67,35 973  69,811   16,059 31   921 74,333   25   3,750 23,608 637 27,995   3,558   105,91 973  59,417 13,576   13,053 224   0,65 87,918   40   4,77 20,187 94 25,7995   3,558   105,92 975  51,157   10,060   1,083 87,792   35   2,730   15,657 84   25,7995   3,558   105,91 976  33,336   15,789   1,0708   37   2,700   15,932 713   19,345   1,207   114,72 977  31,334   15,789   1,0708   1,394   011,696   37   2,700   15,932 713   12,039   47,72 976  33,336   15,790   1,094   0,019   3,944   011,696   37   2,700   15,932 713   19,345   2,229   1,2173   14,72 977  31,334   15,719   10,060   1,394   011,696   37   2,700   15,932 713   19,345   2,229   102,01 977  31,334   15,719   1,039   80,176   53   3,243   16,682 810   18,442   2,212   74,32 971  31,334   15,713   13,061   4,029   3,209   80,1766   53   3,243   10,005   537   12,039   45,75 971  31,334   15,718   14,743   2,2988   51   1,497   10,005   537   12,039   45,32   0,759   70,59 980  44,662   14,743   2,998   51   1,497   10,005   537   12,039   45,32   0,716   1,427   13,031   18,422   2,212   74,32   2,212   74,32   2,212   74,32   2,212   74,32   2,121   3,331   2,7456   1,427   15,013   7,435   2,796   64   5,5637   18   71,177   12,026   64   5,610   2,716   -   2,021   2,110   2,510   10,206   64   5,610   2,716   -   2,021   1,427   15,6637   18   71,177   2,671   14,22   2,010   0,708   2,100   2,716   -   2,020   2,716   -   2,029   1,776   2,412   2,523   11,177   2,716   2,100   2,107   14,27   2,5637   18   71,177   2,716   2,412   2,5637   18   71,177   2,716   2,100   2,716   -   2,020   2,716   -   2,020   2,716   -   2,020   2,716   -   2,020   2,716   -   2,020   2,716   -   2,020   2,716   -   2,020   2,7176   2,41   2,717   2,5637   18   77,176   2,012   2,101   2,712   2,716   -   2,010   2,716   -   2,010   0,7176   2,101   2	$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	96	0,48	3,96	I	52	4,96	1 17 1	,11	7.8	0	2,64	1 161	7 8
959  32,107 18,006 - 1,480 51,593 21 2,996 18,839 358 22,193 1,365 75,17   970  54,378 15,372 - 956 40,706 23 4,4416 21,041 822 26,279 1 345 67,35   972  60,762 12,667 84 17,262 65,495 23 2,4416 21,041 822 26,279 1,345 67,35   972  60,762 12,667 84 17,987 1,795 1345 1,270 107,08   974  73,576 13,053 224 10,65 87,792 35 2,203 107,08 14,77   975  69,811 16,059 37 10,497 10,407 28 17,987 1,207 114,227   975  51,157 13,050 1,974 10,605 1,785 128 3,243 107,69   976  83,336 15,896 1,070 1,497 10,407 28 101,696 114,22 121,31 1243 1220 107,08   976  83,336 15,1361 4,077 20,186 <t< td=""><td><math display="block"> \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr</math></td><td>96</td><td>6,59</td><td>3,06</td><td>1</td><td>,10</td><td>0,76</td><td>  15  </td><td>.90</td><td>0,4</td><td>5</td><td>6,30</td><td>,02</td><td></td></t<>	$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	96	6,59	3,06	1	,10	0,76	15	.90	0,4	5	6,30	,02	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	96	2,10	8,00	1	,48	1,59	1 21 1	,99	8,8	5	2,19	,36	17
9711 53/198 11,035 - 1/262 65,495 24 2,071 20,537 1,175 23,783 1,587 90,88 972 60,762 12,649 1 921 74,333 25 3,750 23,608 637 27,995 13,558 105,91 974 73,576 13,053 224 1,065 87,918 40 4,777 20,187 94 25,058 11,207 114,22 975 51/157 10,060 166 402 61,785 28 3,243 18,975 640 22,858 11,207 114,22 976 83,336 15,896 1,070 1,394 101,696 37 2,700 15,932 713 19,345 25,058 1,207 114,22 976 83,336 15,896 1,070 1,394 101,696 37 2,700 15,932 713 19,345 25,239 15,55 979 44,662 14,249 2,856 1,209 89,176 53 950 16,682 810 18,442 252 121,33 978 59,877 13,061 4,029 3,209 89,176 53 950 16,682 810 18,442 23 98,69 979 44,662 14,249 2,856 1,516 65,988 - 1 748 12,694 195 13,637 98,124 238 77,56 980 46,743 14,743 2,986 1,516 65,988 - 1 748 12,694 195 13,637 98 77,56 982 25,103 9,166 5,7832 - 1 748 12,694 195 13,637 98 77,56 982 25,0615 16,762 17,947 1,054 65,378 - 1 425 6,661 257 7,343 1 7,756 982 25,610 98 15,103 9,166 5,988 - 1 872 7,574 168 8,124 212 77,56 984 25,010 98 15,013 7,389 3,380 55,593 - 1 8,72 7,574 195 13,637 98 77,56 984 25,015 15,013 9,166 - 1 872 7,576 1,427 15,5637 18 77,171 985 20,714 14,235 9,794 1,533 50,106 - 1 309 4,834 195 5,339 4,196 5,339 4,117 7,51 985 20,714 14,235 9,794 1,533 50,106 - 1 309 4,834 196 5,339 4,116 5,233 98 77,56	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	16	4,37	5,37	I	95	0 1 0	1 23 1	141	1,0	N	5,27	34	35
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	6	3,19	1,03	I	, 26	5,49	24 1	, 07	0.5	,17	3,78	,58	88
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	973 15,05 15,667 84 17,987 1,270   974 73,576 13,053 23 1,060 1,065 87,792 13 1,270 94 17,987 1,270   974 73,576 13,053 224 1,065 87,791 1,277 94 25,058 1,207   975 51,157 10,060 1,076 402 61,785 28 3,243 18,975 640 22,858 1,207   976 83,336 15,737 688 1,070 13,943 10,005 537 12,039 252   977 31,934 15,737 688 1,039 49,398 61 1,477 20,187 94 25   977 31,934 15,737 13,061 4,029 3,7047 81 2,770 18,975 640 22,858 1,207   978 59,877 13,061 4,029 5,3047 81 10,005 810 18,442 25 252   980 46,743 14,7743 2,728 81 10,005 81,12,03 </td <td>6</td> <td>01/0</td> <td>2,64</td> <td>г</td> <td>92</td> <td>4,33</td> <td>1 25 1</td> <td>,75</td> <td>3.6</td> <td>3</td> <td>7,99</td> <td>,55</td> <td>05,91</td>	6	01/0	2,64	г	92	4,33	1 25 1	,75	3.6	3	7,99	,55	05,91
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	16	18, 6	6,05	m	, 88	7,79	135 1	, 23	0.0	84	7,98	, 27	07,08
9751 51,115/ 10,0060 166 402 61,785 228 3,243 18,975 640 22,858 101 84,77   9761 83,3336 15,896 1,070 1,394 101,696 37 2,700 15,932 713 19,345 12,53 61,55   9771 31,934 15,737 688 1,070 1,394 101,696 53 950 16,682 810 18,442 253 61,55   9781 53,837 14,497 10,005 537 12,039 89,174 289 77,56   9801 46,743 14,749 2,856 1,280 80,176 53 61,55 98 7,432   9811 27,426 18,020 17,425 956 65,988 - 748 12,694 195 13,637 98 77,56   9821 27,426 18,020 17,425 956 65,937 - 474 212 74,32   9821 29,615 16,762 17,947 1,054 65,10 96,512 87 10,206 <t< td=""><td><math display="block">\begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td><td>66</td><td>3,57</td><td>3,05</td><td>2</td><td>,06</td><td>16.7</td><td>40 1</td><td>LL.</td><td>1,1</td><td>9</td><td>5,05</td><td>,20</td><td>14,22</td></t<>	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	66	3,57	3,05	2	,06	16.7	40 1	LL.	1,1	9	5,05	,20	14,22
9701 83,3350 15,896 1,070 1,394 101,696 37 2,700 15,932 713 19,345 1 252 121,33   9771 31,934 15,737 688 1,039 49,398 61 1,497 10,005 537 12,039 53 61,55   9771 31,934 15,737 688 1,039 49,398 61 1,497 10,005 537 12,039 1 53 61,55   9781 59,877 14,249 2,856 1,280 65,988 1 1 442 289 77,56   9801 46,743 14,743 2,986 1,516 65,988 - 1 74,32 98 77,56   981 27,426 18,020 17,427 166 8,124 212 74,32 98 77,56   9821 29,615 16,762 17,947 1,054 65,378 - 1 72,72   9821 29,615 16,762 17,947 1,054 6,661 27,756 1 1 73,43 1 <td><math display="block">\begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td> <td>2-1</td> <td>GT/T</td> <td>0,06</td> <td>16</td> <td>40</td> <td>1,78</td> <td>28</td> <td>124</td> <td>5.8</td> <td>4</td> <td>2,85</td> <td>101 1</td> <td>84,77</td>	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2-1	GT/T	0,06	16	40	1,78	28	124	5.8	4	2,85	101 1	84,77
97/1 31/94 15/194 10,005 537 12,039 49,398 61,55   97/8 59,877 13,061 4,029 3,209 80,176 53 10,005 537 12,039 1 53 61,55   97/8 59,877 13,061 4,029 3,209 80,176 53 95 61,55 98,69 76,59 12,178 233 98,69 76,59   9801 44,743 14,249 2,856 1,516 65,988 1 1 74 7,178 289 70,59   9801 27,425 16,56 153,827 - 1 74 7,178 212 74,32   9821 27,425 18,020 17,425 17,425 17,425 98 77,56   9821 29,615 16,762 17,947 1,054 6,661 257 7,343 1 77,75   9821 21,098 15,103 9,160 471 45,832 - 1 425 6,661 87 1 77,75   984 26,013 9,160 </td <td><math display="block">\begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td> <td>6</td> <td>3,33</td> <td>5,89</td> <td>10'</td> <td>,39</td> <td>1,69</td> <td>1 37 1</td> <td>,70</td> <td>5,9</td> <td>Ч</td> <td>9,34</td> <td>1 252</td> <td>,33</td>	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	6	3,33	5,89	10'	,39	1,69	1 37 1	,70	5,9	Ч	9,34	1 252	,33
970 370 370 370 370 370 370 370 370 376 370 376 370 376 370 376 370 376 370 370 376 370 370 370 370 370 370 370 370 370 370 370 370 370 370 370 370 370 370 374 77178 1 289 770 570   980 467 18/124 1516 65.988 1 1 303 6,801 74 77178 1 289 77756   981 27/425 18/124 1.516 65.378 1 1 47 2775 98 77756   982 29/615 16/762 17/425 16/54 65/378 1 425 6/661 257 7343 1 1 77756   984 26/013 7/389 3/380 55/593 1 45 56/10 98 77/17 15/5637 18 77/17 15/2637 18 77/17	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	20	1, 93	5110	90	, 03	9,39	1 19	.49	0,0	3	2,03	1 \$53	55
9801 44.702 14.249 2.856 1.280 63.047 81 303 6.801 7.4 7.178 289 70.59   9801 46.743 14.245 1.516 65.988 1 1 212 74.32   9811 27.425 18.7425 1516 65.988 1 1 1 212 74.32   9821 27.425 18.7425 17.425 65.378 1 1 425 6.661 257 7.343 1 1 72.72   9821 27.425 16.762 17.947 1.0536 65.378 1 425 6.661 257 7.343 1 1 72.72   9821 27.098 15.103 7.389 3.380 55.553 1 425 6.661 257 7.343 1 1 72.72   9841 26.015 15.013 7.389 3.380 55.5533 1 1 87 1.427 15.6637 18 71.17   9851 20.714 14.25 0.7059 1.176 9.107 1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	20	1010	0010	201	071	1110	53	n	9.0	-	8,44	1 23	69
9801 46 / 143 14 / 143 2 / 986 1 / 516 65 / 988 1 - 1 382 7 / 574 168 8 / 124 1 212 1 74 / 32 9811 27 / 426 18 / 020 17 / 425 956 63 / 827 1 - 1 748 12 / 694 195 13 / 637 1 98 1 77 / 56 9821 29 / 615 16 / 762 17 / 947 1 / 054 65 / 378 1 - 1 425 6 / 661 257 7 / 343 1 1 72 / 72 9831 21 / 098 15 / 103 9 / 160 471 45 / 832 1 - 1 607 9 / 512 87 10 / 206 1 64 1 56 / 10 9841 26 / 015 15 / 013 7 / 389 3 / 380 55 / 593 1 - 1 832 9 / 576 1 / 427 15 / 56 37 1 18 1 71 / 17 9851 20 / 714 14 / 235 9 / 794 1 / 533 50 / 106 1 - 1 872 7 / 059 1 / 176 9 / 107 1 1 59 / 21 9861 12 / 000	9801 46/143 14/143 2/986 1/516 65/988 1 - 1 382 7/574 168 8/124 1 21 9811 27/426 18/020 17/425 956 63/827 1 - 1 748 12/694 195 13/637 1 9 9821 29/615 16/762 17/947 1/054 65/378 1 - 1 425 6/661 257 7/343 1 9 9831 21/098 15/103 9/160 471 45/832 1 - 1 607 9/512 87 10/206 1 6 9841 26/015 15/013 7/389 3/380 55/593 1 - 1 832 9/576 1/427 15/5637 1 1 9851 20/714 14/235 9/794 1/533 50/106 1 - 1 872 7/059 1/176 9/107 1 2 9861 12/000 309 4/834 196 5/339 1 $<$	200	100	421	581	128	3,04	1 81	0	8	-	,17	1 289	59
3811 2/7426 18/020 1/7425 956 63/827 - 748 12/694 195 13/637 981 77/56   9821 29/615 16/762 17/947 1.054 65/378 - 1 425 6.661 257 7/343 1 1 72/72   9821 29/615 16/762 17/947 1.054 65/378 - 1 425 6.661 257 7/343 1 1 72/72   9831 21/098 15/103 9/160 471 45/832 - 1 607 9/512 87 10/206 64 56/10   9841 26/015 15/013 7/389 3/380 55/593 - 1 87 1/427 15/5637 1 18 71/17   9851 20/714 14/235 9/794 1/533 50/106 - 1 87 1/427 15/5637 1 1 59/21   9851 20/700 - - 1 872 7/059 1/176 9/107 1 59/21 <td><math display="block">\begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td> <td>200</td> <td>4/10</td> <td>41/4</td> <td>2,98</td> <td>,51</td> <td>5,98</td> <td>1</td> <td><math>\infty</math></td> <td>7,5</td> <td>9</td> <td>,12</td> <td>1 212</td> <td>,32</td>	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	200	4/10	41/4	2,98	,51	5,98	1	$\infty$	7,5	9	,12	1 212	,32
9821 297015 167762 177947 17054 657378 1 - 1 425 67661 257 77343 1 1 7277 9831 217098 157103 97160 471 457832 1 - 1 607 97512 87 107206 1 64 1 56710 9841 267015 157013 77389 37380 557593 1 - 1 832 97576 17427 1575637 1 18 71717 9851 207714 147235 97794 17533 507106 1 - 1 872 77059 17176 97107 1 1 59721 9861 127000	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	D C	771	2012	1 1 42	95	3,82	1	47	2,6	6	3,63	1 98	56
7831 21,098 15,103 9,160 471 45,832 1 - 1 607 9,512 87 10,206 1 64 56,10 9841 26,015 15,013 7,389 3,380 55,593 1 - 1 832 9,576 1,427 15,5637 1 18 71,17 9851 20,714 14,235 9,794 1,533 50,106 1 - 1 872 7,059 1,176 9,107 1 1 59,21 9861 12,000 1 309 4,834 196 5,339 1 <1	9831 21,098 15,103 9,160 471 45,832 1 - 1 607 9,512 87 10,206 1 6 9841 26,015 15,013 7,389 3,380 55,593 1 - 1 832 9,576 1,427 15,5637 1 1 9851 20,714 14,235 9,794 1,533 50,106 1 - 1 872 7,059 1,176 9,107 1 9861 12,000 309 4,834 196 5,339 1 $<$	600	1916	0110	7,94	,05	5,37	1	N	9	5	7,34	1	72
984  26,015 15,013 7,389 3,380 55,593 1 - 1 832 9,576 1,427 15,5637 1 18 71,17 985  20,714 14,235 9,794 1,533 50,106 1 - 1 872 7,059 1,176 9,107 1 1 59,21 986  12,000 1 - 1 309 4,834 196 5,339 1 <1	9841 26/015 15/013 7/389 3/380 55/593 1 - 1 832 9/576 1/427 15/5637 1 1 9851 20/714 14/235 9/794 1/533 50/106 1 - 1 872 7/059 1/176 9/107 1 9861 12/000 1 309 4/834 196 5/339 1 <	50	1,09	110	,16	47	5,83	1	0	5	87	0,20		10
785  207714 147235 97794 17533 507106   -   872 77059 17176 97107   1 59721 386  127000	985 20/714 14/235 9/794 1/533 50/106   −   872 7/059 1/176 9/107   986 12/000	80	T0' 9	T0'9	,38	,38	5,59	-	$\infty$	5	142	5,56		17
2851 12/000 309 4/834 196 5/339   <1	<u> 2861 127000 1 209 47834 196 5733</u> emarke:	80	T/10	1,23	179	, 53	0,10	-	~	0	,17	10		21
	omarke	a	2100	1		1	1	ī	$\sim$	8	5	33	1 <1	

- ч.
- Figures for 1985-86 are preliminary. Japanese longline catches for 1952-60 exclude minor amounts taken by vessels under 20 tons. Longline catches in weight are estimated by multiplying annual number of fish caught by average weight statistics. Japanese baitboat catches include catches by research vessels. U.S. Jigboat catches include catches by research vessels. U.S. Jigboat catches for years 1952-60 include baitboat catches. United States sport catch is a minimum estimate based on partial coverage. U.S. catches from 1961 to 1985 include Hawaii. United States total for 1984 include catches (3,728 mt) by purse seines.

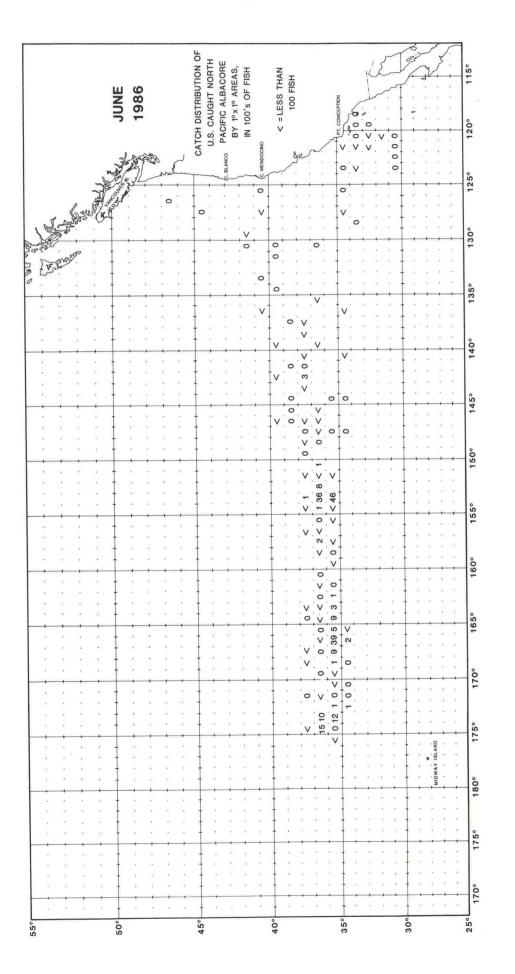


TOTAL CATCH BY FISHERY

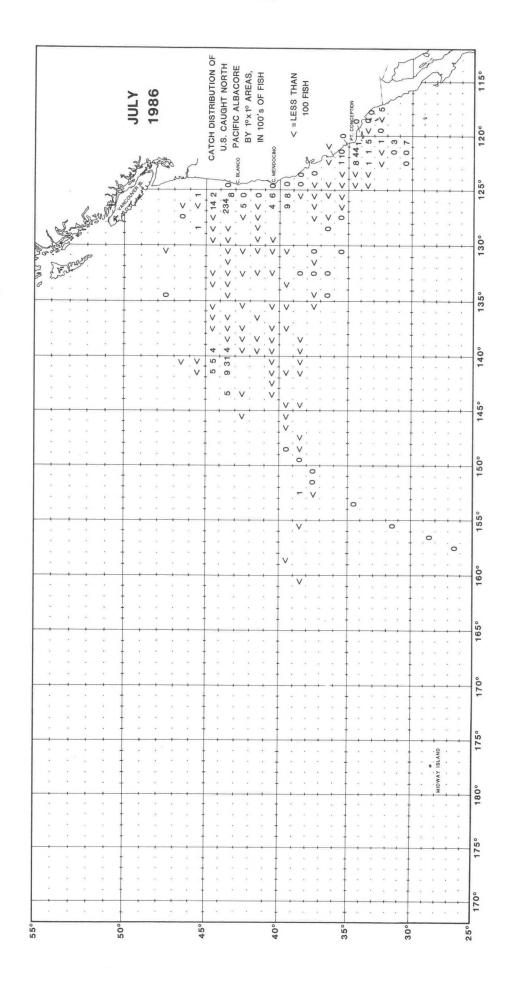
Figure 1. Total catch in metric tons by fishery and gear.



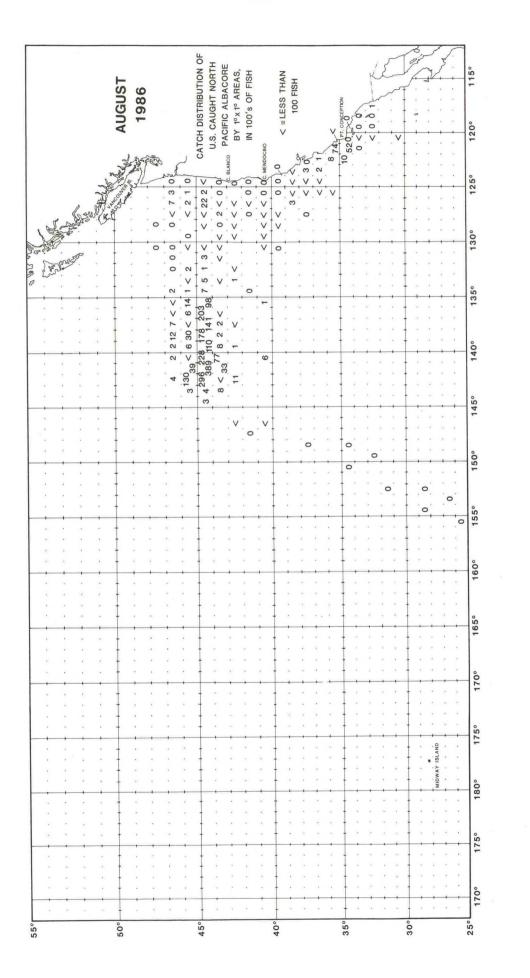




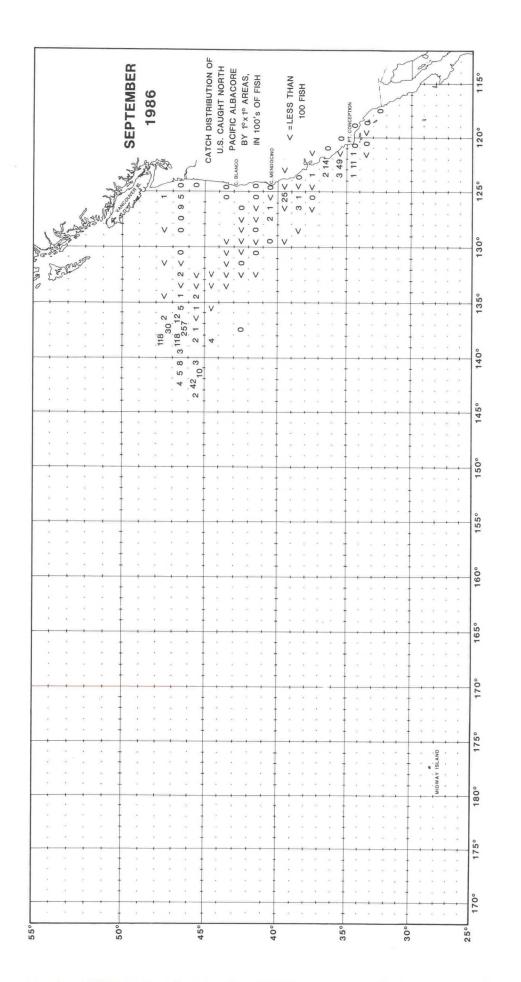


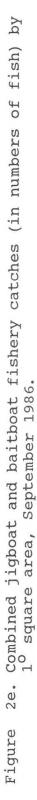


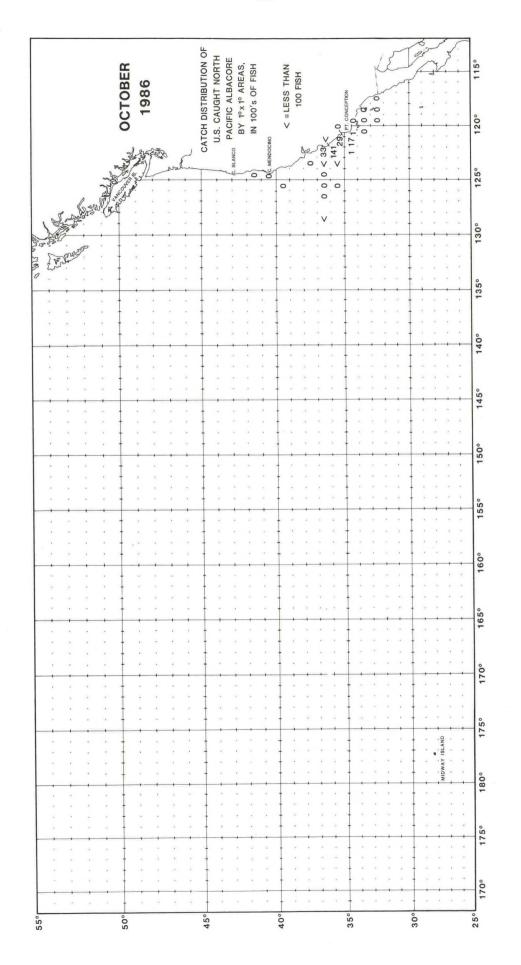




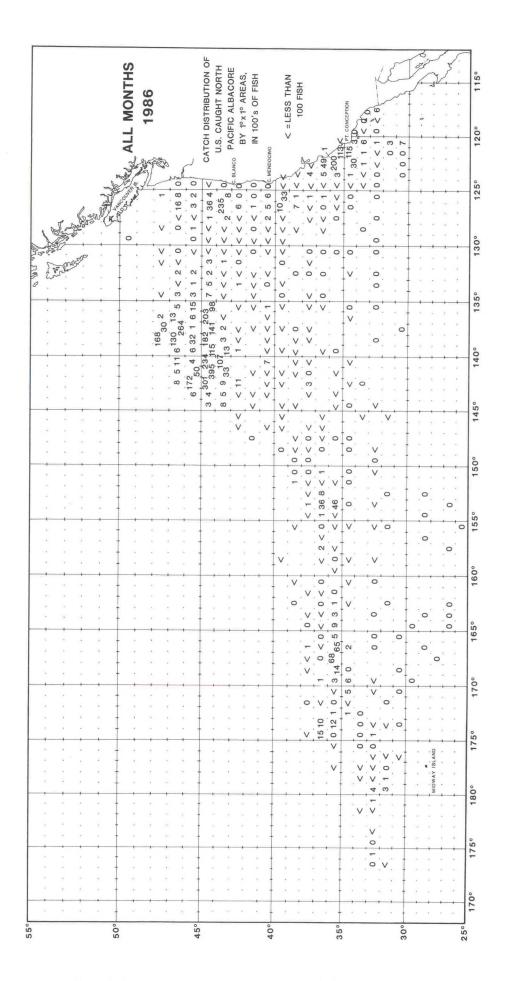




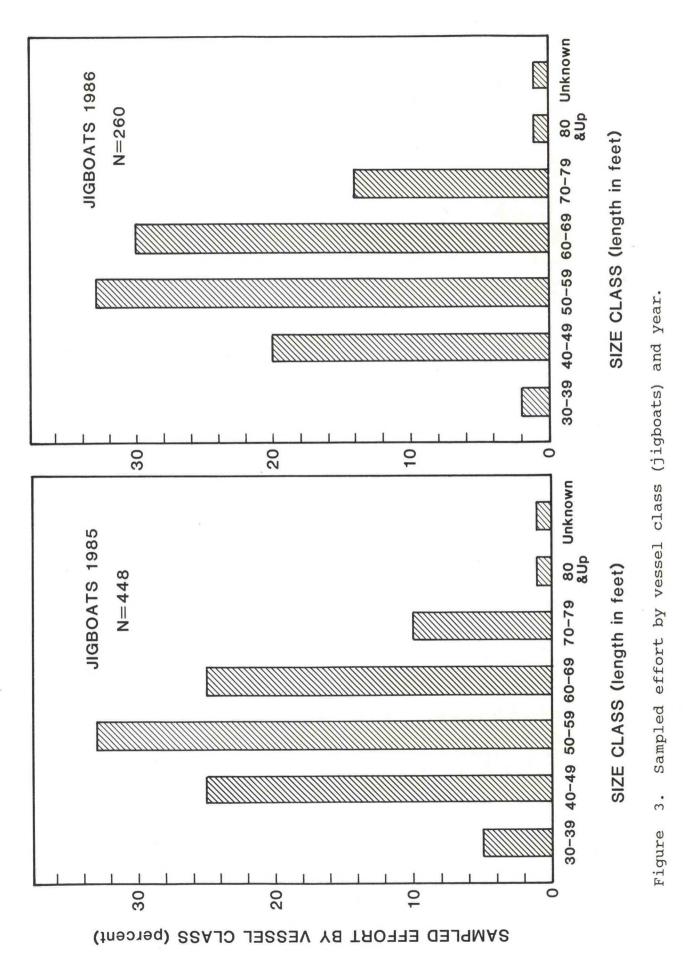












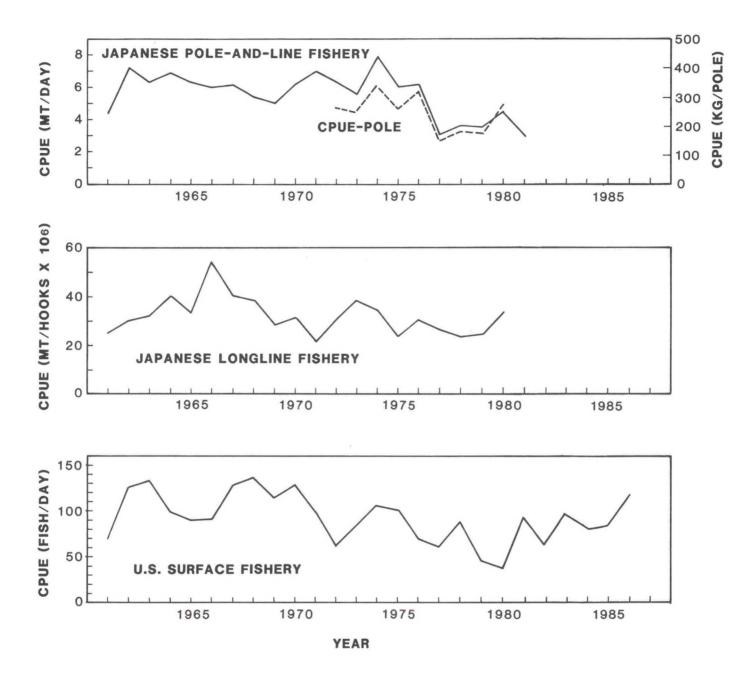
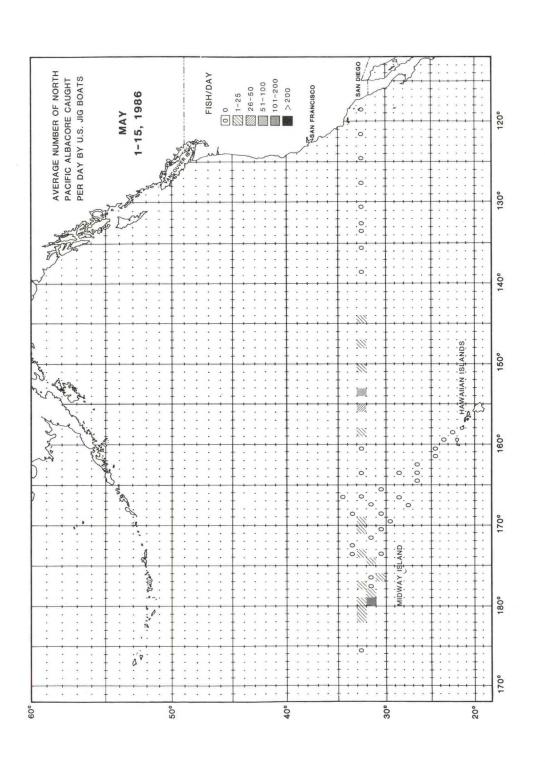
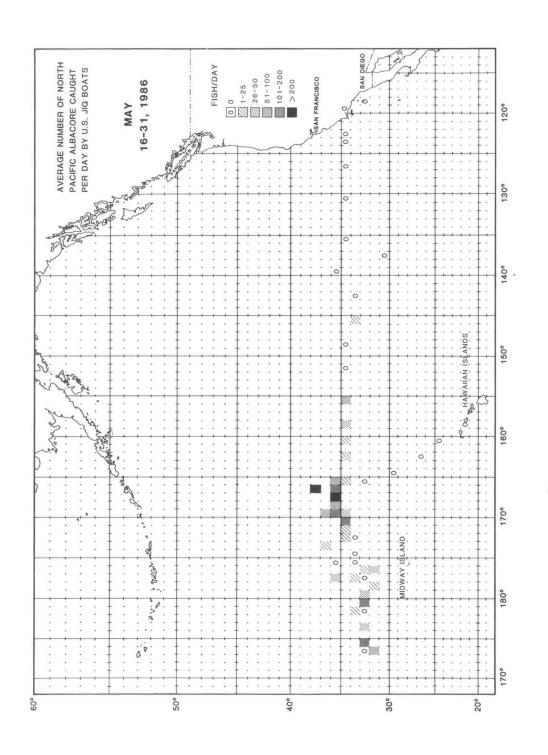


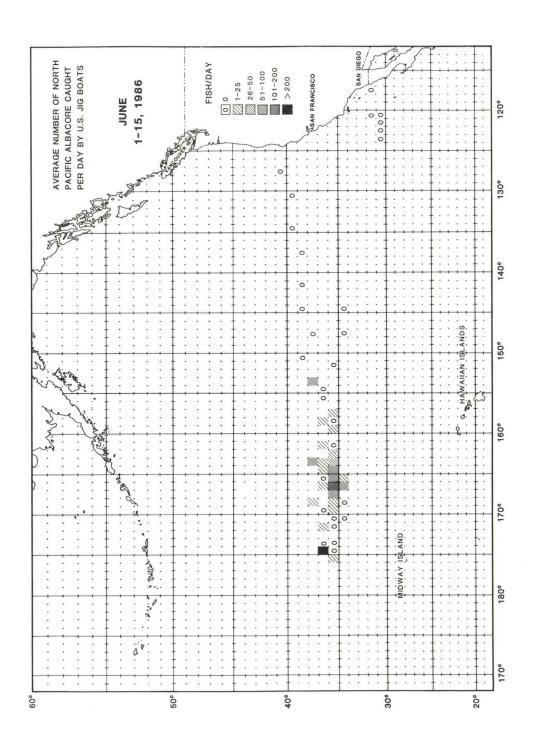
Figure 4. North Pacific albacore catch-per-unit effort (CPUE) by fishery and gear.



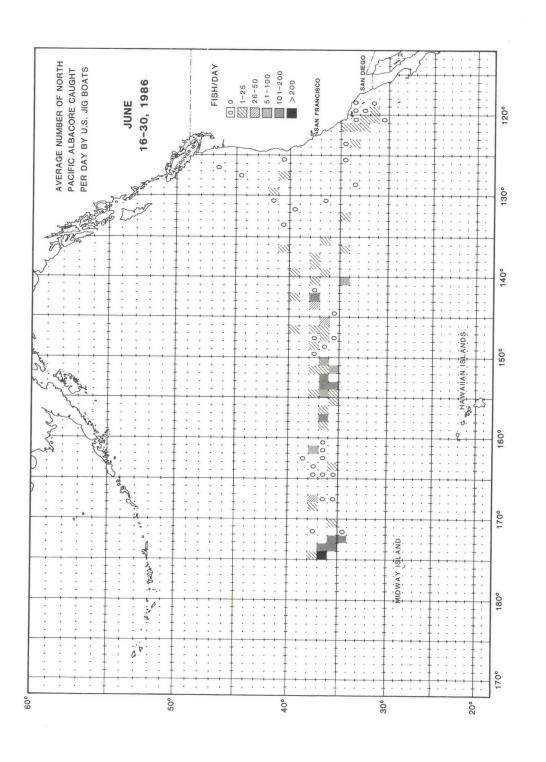




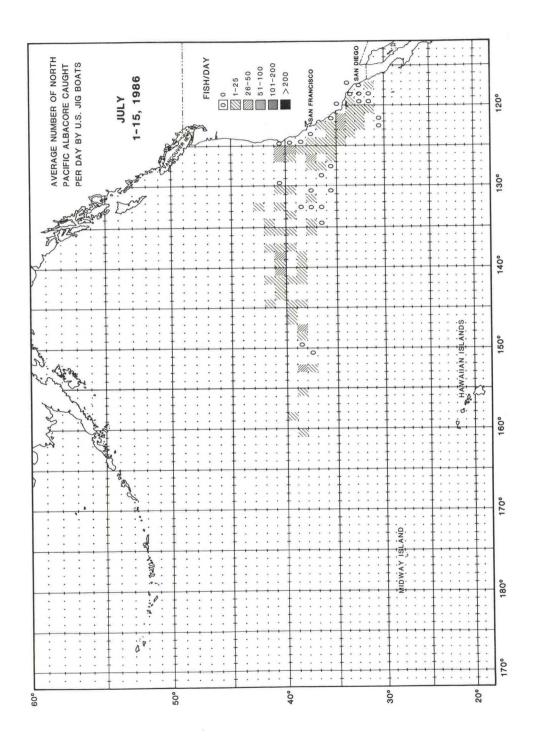




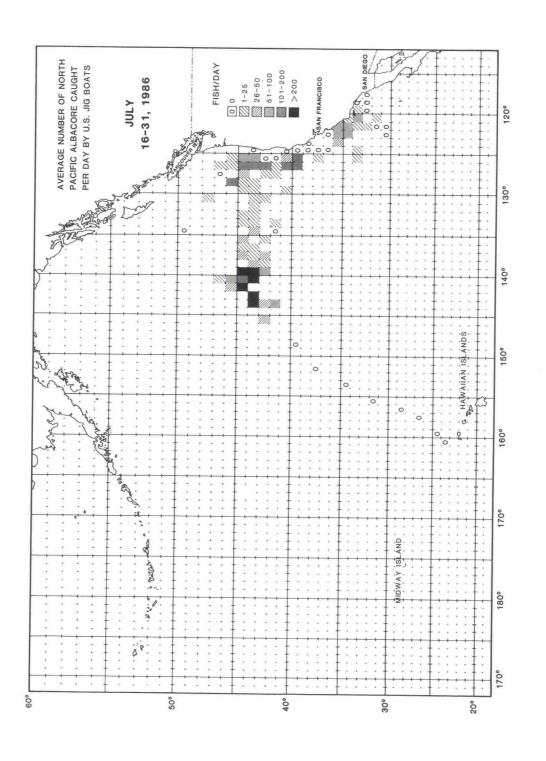
Jigboat catch-per-standard day fishing by 1° square area and halfmonth, June 1-15, 1986. 50. Figure



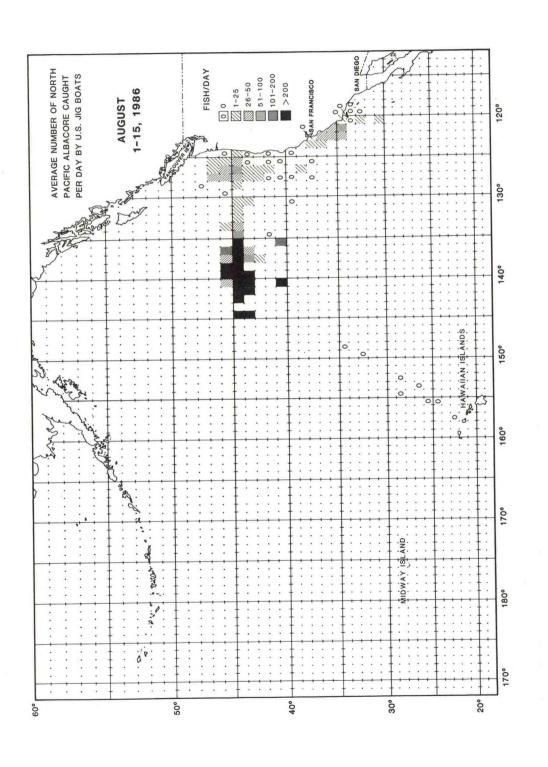
square area and half-5d. Jigboat catch-per-standard day fishing by 10 month, June 16-30, 1986. Figure



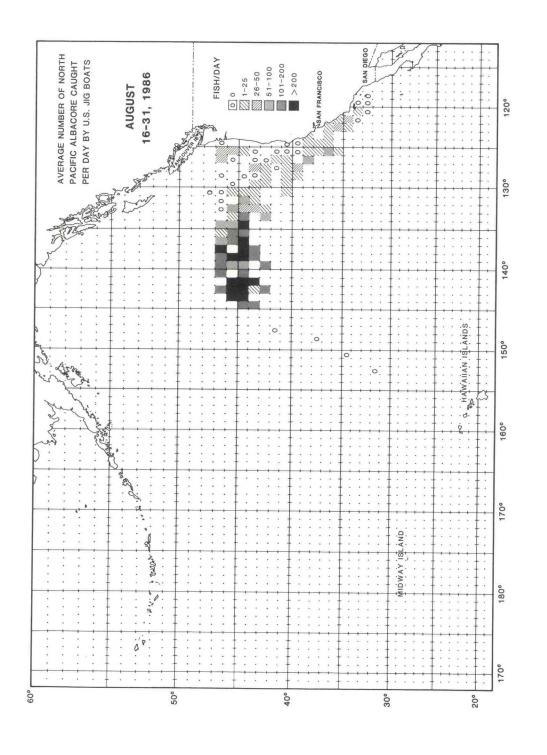
Jigboat catch-per-standard day fishing by 1<sup>0</sup> square area and half-month, July 1-15, 1986. 5e. Figure



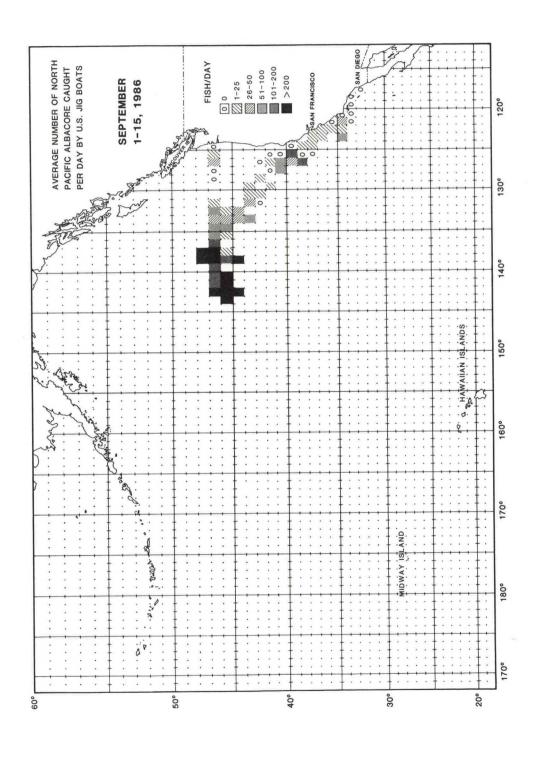
square area and half-Jigboat catch-per-standard day fishing by 1<sup>o</sup> month, July 16-31, 1986. 5f. Figure



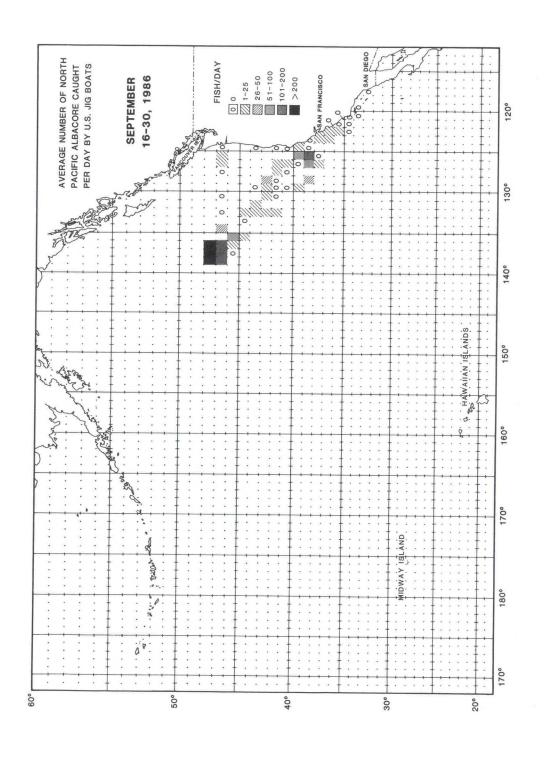
5g. Jigboat catch-per-standard day fishing by 1<sup>o</sup> square area and half-month, August 1-15, 1986. Figure



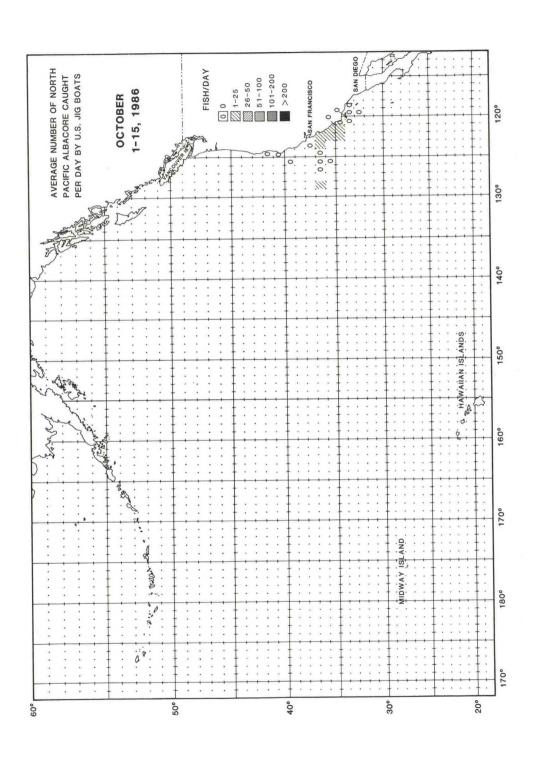


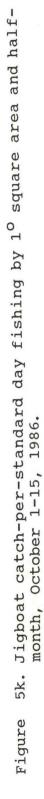


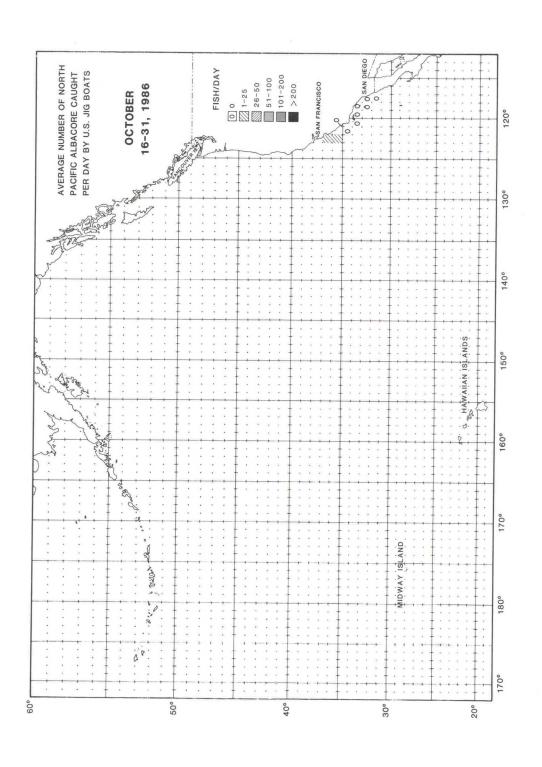




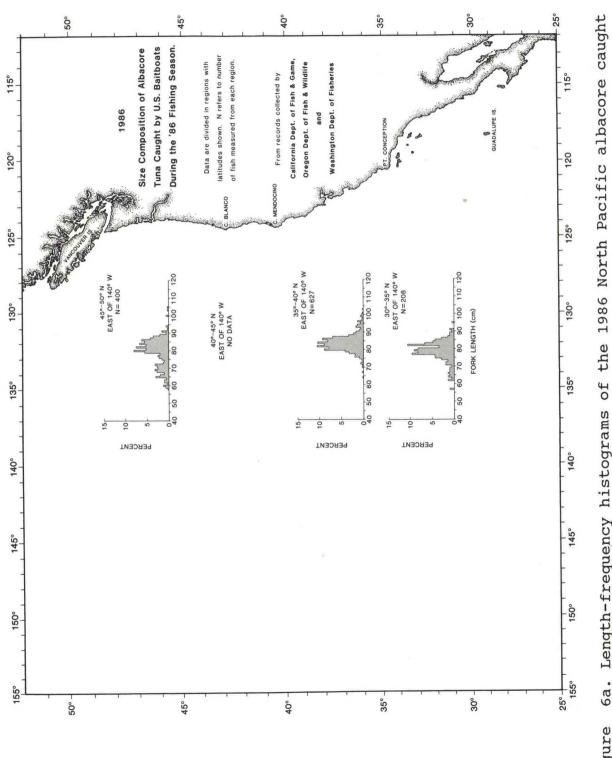




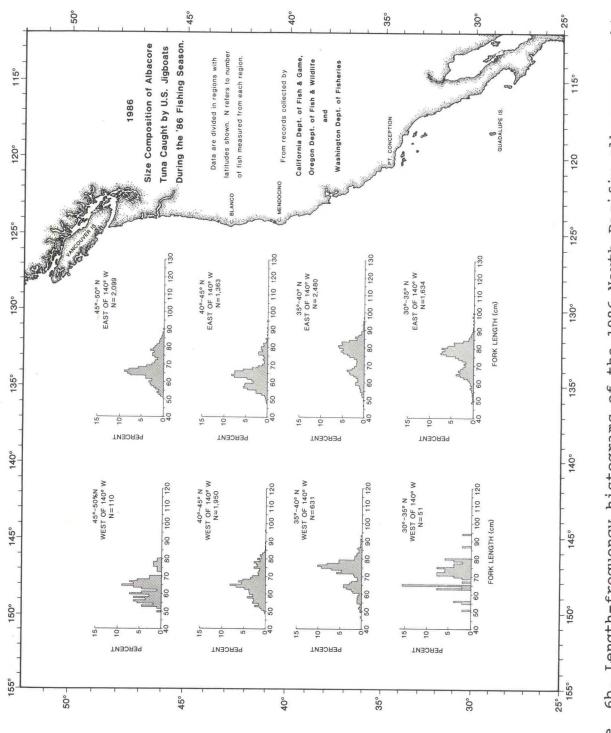


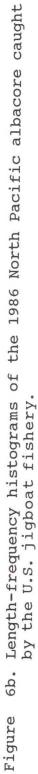


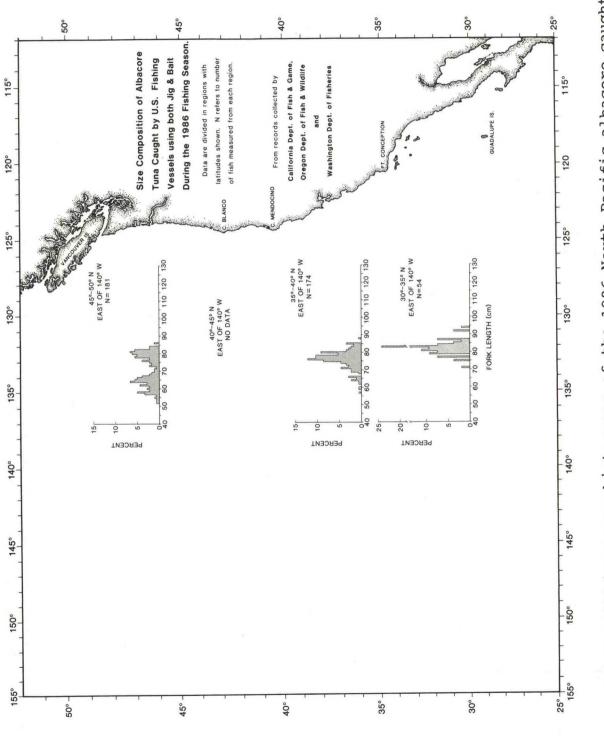
51. Jigboat catch-per-standard day fishing by 1<sup>0</sup> square area and half-month, October 16-31, 1986. Figure



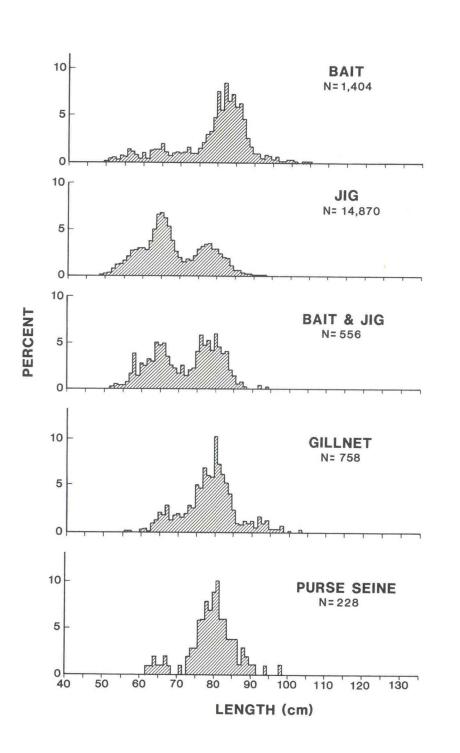












Size composition of albacore tuna caught by the U.S. fleet for 1986 by gear 7. Figure

