SUMMARY OF THE 2005 U.S. NORTH AND SOUTH PACIFIC ALBACORE TROLL FISHERIES

John Childers

and

Scott Aalbers

Southwest Fisheries Science Center
National Marine Fisheries Service, NOAA
La Jolla, CA 92037

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The collection of catch, effort, and length-frequency data from the U.S. North Pacific albacore troll fishery began in the early 1950's (Laurs et al., 1975a). The agencies currently involved in the collection of these data are the Southwest Fisheries Science Center (SWFSC), Pacific Islands Fisheries Science Center (PIFSC), and Pacific Islands Regional Office (PIRO, Pago Pago, American Samoa) of NMFS, Western Fishboat Owners Association (WFOA), AFRF, Pacific States Marine Fisheries Commission (PSMFC), and the state fisheries agencies of California, Oregon, and Washington.

The U.S. West Coast Highly Migratory Species Fisheries Management Plan (HMS FMP) was implemented in April, 2005. The new HMS FMP requires all U.S. fishing vessels targeting highly migratory species (such as albacore) in the Pacific to obtain a federal permit and submit copies of their daily fishing logbook to NMFS for each trip. The collection of catch and effort data from the South Pacific fishery began in 1986. Length-frequency data has been collected from this fishery since 1987. PIRO in American Samoa collects these data from U.S. troll vessels.

This report presents summaries of the catch, effort, and size composition information collected from the U.S. albacore troll fleet during the 2005 North Pacific and the 2004-2005 South Pacific albacore seasons. Data from previous North and South Pacific seasons, and from other fisheries (where available) are included for comparison. Electronic copies of summary reports from 1995 to 2005 are available on the World Wide Web at http://swfsc.nmfs.noaa.gov/frd/HMS/Large%20Pelagics/Albacore/albie01.htm.

DATA COLLECTED

Total annual catch data from the various fisheries that harvest albacore in the Pacific Ocean are available from 1952 to 2005. Total catch estimates from U.S. troll vessels are provided by WFOA, the state fisheries agencies of California, Oregon, Washington, Hawaii, and the Pacific Coast Fisheries Information Network (PacFIN). Daily catch and effort data are obtained directly from the U.S. albacore fishermen through mandatory logbook submissions for each trip.

Approximately 1,500 logbooks were distributed to fishermen prior to the 2005 North Pacific and 2004-2005 South Pacific albacore seasons. Samplers in the ports of Ilwaco, Washington; Newport, Astoria, and Charleston, Oregon; Terminal Island, California; and Pago Pago, American Samoa collected logbook, length-frequency, and landings (catch) data during the 2005 North Pacific season. Samplers in Pago Pago and Honolulu also collected logbook, length-frequency, and catch data during the 2004-2005 South Pacific season.

Sea surface temperature (SST) data for the North Pacific are collected by the National Weather Service's National Centers for Environmental Prediction (NCEP) from weather buoys, commercial transport ships, fishing vessels, and research vessels. These data are summarized by month and archived at the Climate Diagnostics Center (http://www.cdc.noaa.gov/index.html). The SST data were analyzed at SWFSC to obtain monthly isotherms at 2° resolution and displayed with the general catch areas for each month of the North Pacific albacore troll season (Figures 2a-2f). Currently, there is insufficient SST information available from the areas of the South Pacific albacore troll fishery to make a similar analysis possible.

Catch-Per-Unit Effort (CPUE) is used as an indication of relative abundance of albacore or a measure of fishing success. It is expressed in numbers of fish caught per day of effort for the U.S. troll fishery. Catch (in numbers of fish) and effort (in days fished) were summarized from logbook data by 10-day and 1°-square strata in which there was at least one day of fishing effort (Kleiber and Perrin, 1991). Average CPUE is calculated as follows:

$$Average\ CPUE = \frac{\sum_{i=1}^{n} \frac{C_i}{E_i}}{n}$$

Where C_i is the total sampled catch in the i^{th} stratum, E_i is the total sampled effort in the i^{th} stratum, and n is the total number of strata. The stratified CPUEs were averaged for each 1° square of latitude and longitude for the 2005 North Pacific season. The stratified CPUEs from the 2004-2005 South Pacific season were averaged for each 5° square of latitude and longitude. Total fishing effort is estimated by the following equation:

$$Effort(days) = Catch(pounds) \div [CPUE(^{fish}/_{day}) \times AverageWeight(^{pounds}/_{fish})]$$

Logbook sampling coverage is expressed as the ratio of catches from sampled trips (those trips from which logbook data were received) to total catches. Not all catches from sampled trips are available from past seasons. For consistent comparison of sampling coverage between seasons, sampled catches are estimated by multiplying numbers of fish caught (recorded in logbooks) by the average weight of those fish and summing these estimates from sampled logbooks.

Length-frequency sampling coverage is expressed as the ratio of the number of fish sampled (measured) to the total estimated number of fish caught during the season. The total number of fish caught during the season was estimated by dividing the total weight of the catch by the average weight of individual fish. The length-weight relationship for North Pacific albacore from Bartoo and Foreman (1993) was used to estimate weights from fork lengths.

TOTAL CATCH AND EFFORT

Total catch from the 2005 U.S. North Pacific albacore troll fishery decreased 32% to 9,122 metric tons from 13,346 metric tons in 2004 (Table 1). An estimated 652 U.S. troll vessels fished in the 2005 North Pacific fishery (Table 3), an 11% decrease from 734 troll vessels that fished in 2004. U.S. troll vessels fished an estimated 25,252 days during the 2005 North Pacific albacore season, an increase from the 23,979 days fished in 2004. The average price paid for albacore caught by troll vessels in 2005 was $2,324 per metric ton ($1.05 per pound). This is an 11% increase from the average price of $2,096 per metric ton (96 cents per pound) paid in 2004.

The South Pacific albacore troll fishery begins in November or December and can continue into April of the following year, therefore total annual landings (Table 2) differ from seasonal landings (Table 4). The annual U.S. catch of South Pacific albacore by troll gear decreased from 1,108 metric tons in 2004 to 579 metric tons in 2005 (this value does not include catches made in December, 2005). The U.S. catch of South Pacific albacore for the 2004-2005

season decreased 27% to 725 metric tons (the lowest level since this fishery's inception) from 995 metric tons in the 2003-2004 season. Eight U.S. troll vessels participated in the 2004-2005 South Pacific season compared to eleven vessels that fished in the 2003-2004 season. Total fishing effort for the 2004-2005 South Pacific albacore season is estimated at 1,478 days fished, a slight decrease from the 1,487 days fished in the 2003-2004 season. The average price paid for albacore caught by troll vessels in the South Pacific in the 2004-2005 season was $2,342 per metric ton ($1.06 per pound), a 6% increase from the average price of $2,216 per metric ton ($1.00 per pound) paid in the 2003-2004 season.

Albacore may be discarded during a fishing trip because they are undersized (less than 58 cm fork length or 9 pounds), damaged, or have spoiled due to refrigeration problems. During the 2005 North Pacific troll season, 74 trips (of 1,178 sampled trips) recorded a total of 5,172 albacore discarded. No albacore discards were reported during the 2004-2005 South Pacific troll season. Albacore troll vessels catch minor amounts of other pelagic fish species that are usually caught during transit to or from the fishing grounds. The most common species that are incidentally caught include skipjack tuna (*Katsuwonus pelamis*), mahi mahi (*Coryphaena hippurus*), yellowtail (*Seriola lalandi*), Eastern Pacific bonito (*Sarda chiliensis*), bigeye tuna (*Thunnus obesus*), and Pacific bluefin tuna (*Thunnus orientalis*).

DISTRIBUTION OF CATCHES AND SEA-SURFACE TEMPERATURES

Based on 2005 logbook data, North Pacific albacore catches were distributed from 150°E to the west coasts of the U.S. and Canada, between approximately 30°N and 55°N (Figure 1). The offshore troll fishery was relatively unproductive in 2005; however, the highest offshore catch areas were distributed between 150°E and 170°E from 32°N to 38°N. The highest catch areas along the west coast were off Northern California, Oregon, and Washington from 40°N to 47°N, between 125°W and 128°W.

Figures 2a through 2f illustrate monthly distributions of sea-surface temperatures and the locations of temperature fronts (areas of closely-spaced isotherms) in relation to catch areas. The areas of highest catch in May were in SSTs ranging from 14°C to 19°C (57°F to 66°F; Figure 2a) between 150°E and 170°E, from 33°N to 37°N. High catch areas in June were along the coast of Oregon, between 125°E and 128°E from 42°N to 47°N in SSTs between 14°C and 18°C (57°F and 64.5°F; Figure 2b). During July, high catches occurred along the west coast out to 129°W, between 42°N and 47°N, in SSTs that ranged from 13°C to 18°C (55.5°F to 64.5°F; Figure 2c). High catch areas in August were distributed along the west coast from Vancouver Island to Cape Blanco and out to 137°W in SSTs ranging from 12°C to 17°C (54°F to 63°F; Figure 2d). In September, high catch areas were patchily distributed between the U.S. west coast and 144°W, from 39°N to 53°N in SSTs ranging from 12°C and 17°C (54°F and 63°F; Figure 2e). High catch areas in October were narrowly distributed along the U.S. west coast out to 129°W from 39°N to 48°N in SSTs between 12°C and 17°C (54°F and 63°F; Figure 2f).

Albacore catches recorded during the 2004-2005 South Pacific season were summarized by 5° squares of latitude and longitude for the season (Figure 3a) and for each month (Figure 3b through 3e). The highest albacore catches of the season were made between 155°W and 165°W, from 35°S to 45°S (Figure 3a). The highest catches in December were distributed between

155°W and 160°W from 35°S to 40°S (Figure 3b). January's highest catch areas ranged between 155°W and 165°W from 35°S to 45°S (Figure 3c). Catches in February were highest between 160°W and 170°W from 40°S to 45°S (Figure 3d). The highest catches in March occurred between 125°W and 130°W, from 40°S to 45°S (Figure 3e).

CATCH-PER-UNIT EFFORT

The CPUE for the North Pacific albacore troll fishery declined by approximately 68% between 1962 and 1977, then remained relatively stable between 1978 and 1991 (Figure 4). The CPUE increased from 1992 to 1998 with large fluctuations between 1995 and 1999. CPUE gradually increased up to 87 fish per day between 2000 and 2004, but dropped considerably in 2005 to 51 fish per day (Table 3). The ten-year average from 1996 through 2005 is 66 fish per day. The highest CPUEs for the 2005 North Pacific season were scattered throughout the coastal and offshore areas (Figure 5). High CPUE values summarized by 1° squares of latitude and longitude for the 2005 North Pacific season ranged from 111 to 500 fish per day and were widely spread between 163°E and 125°W, from 32°N to 52°N.

The CPUE for the U.S. South Pacific albacore troll fishery declined between the 1986-1987 season and the 1992-1993 season (Figure 4), followed by a peak of 147 fish per day in the 1994-1995 season. The CPUE remained relatively stable at 70 fish per day through the 1999-2000 season, and then decreased to 45 and 46 fish per day in the 2000-2001 and 2001-2002 South Pacific seasons, respectively. The CPUE then increased to 115 fish per day in the 2003-2004 season, but again decreased considerably to 65 fish per day during the 2004-2005 season. The ten-year average for CPUE in the South Pacific from 1996 through 2005 is 71 fish per day. The highest values of CPUEs summarized by 5° squares of latitude and longitude for the 2004-2005 South Pacific season ranged from 166 fish per day to 400 fish per day and were located between 125°W and 130°W, from 35°S to 45°S and between 160°W and 165°W, from 35°S to 40°S (Figure 6).

LOGBOOK SAMPLING COVERAGE

Despite the new logbook submission requirements established under the HMS FMP, not all of the logbooks were received from trips that were completed by U.S. troll vessels in 2005. Logbook information was collected from a total of 1,178 trips (of an estimated 1,628 total trips) during the 2005 North Pacific albacore troll season. Sampled catches totaled 6,256 metric tons, resulting in a logbook sampling coverage rate of 69% (Table 3). Logbook data from the 2004-2005 South Pacific albacore troll season were collected from all ten trips made by U.S. vessels. (Table 4).

LENGTH FREQUENCIES

Port samplers measured 21,362 albacore of an estimated 1,287,854 albacore landed during the 2005 North Pacific season, resulting in a length-frequency sampling coverage of 1.7%. This is a slight increase over the 2004 sampling coverage of 1.5% (Table 3). Fork lengths of albacore measured during the 2005 North Pacific season ranged from 48 cm (5 lb or 2.3 kg; 2.5 years old) to 98 cm (42 lb or 19.2 kg; 7 years old) and averaged 70 cm (16 lb or 7.0 kg; 4

years old; Table 3). The histogram of length-frequency samples is bimodal with modes centered at 65 cm (12 lb or 5.6 kg; 3.5 years old) and 80 cm (23 lb or 10.5 kg; 5 years old; Figure 7). The majority of albacore that are taken in both the North and South Pacific troll fisheries range from two to five years old. Small albacore (less than 58 cm fork length) may not be adequately represented in the length-frequency data because small fish are often discarded at sea.

Port samplers measured 102 of the estimated 95,605 albacore landed during the 2004-2005 South Pacific troll season. The length-frequency sampling coverage rate for this season was 0.1%, compared to 0.5% in the 2003-2004 season (Table 4). Fork lengths of sampled albacore ranged from 55 cm (7.5 lb or 3.4 kg; 2.5 years old) to 84 cm (27 lb or 12.1kg; 7 years old) and averaged 72 cm (17 lb or 7.6 kg; 5 years old; Table 4). The histogram of fish sampled in the 2004-2005 season shows a single mode at 70 cm (15.5 lb or 7.0 kg; 4.5 years old; Figure 8).

SUMMARY

Total catch from the 2005 U.S. North Pacific albacore troll fishery decreased by 32% from the 2004 season. Approximately 652 vessels landed 9,122 metric tons during the 2005 season compared to 734 vessels that landed 13,346 metric tons in 2004. Total effort increased to 25,252 days in 2005. The highest catches of albacore in the North Pacific generally were distributed between the 13°C (55°F) and 18°C (70°F) isotherms. The average CPUE for the 2005 North Pacific season decreased from 87 fish per day in 2004 to 51 fish per day. The most successful catch areas were distributed along the west coast between 40°N and 48°N, and out to 128°W. Logbook sampling coverage for the North Pacific albacore fishery increased from 36% in the 2004 season to 69% in 2005. The average fork length of albacore measured during the 2005 North Pacific season was 70 cm (16 lb or 7 kg; 4.5 years old). Length-frequency sampling coverage increased to 1.7% during 2005 compared to 1.5% in 2004.

Total catch from the 2004-2005 South Pacific season decreased from 995 metric tons in the 2003-2004 season to an all-time low of 725 metric tons. The annual catch also decreased from 1,108 metric tons in 2004 to 579 metric tons in 2005. Eight U.S. troll vessels fished 1,478 days in the 2004-2005 season compared to 11 vessels that fished 1,487 days in the 2003-2004 season. The areas of highest catch for the 2004-2005 South Pacific season ranged between 155°W and 165°W, from 35°S to 45°S. The CPUE for the 2004-2005 season decreased 43% from 115 fish per day in the 2003-2004 season to 65 fish per day. Logbook sampling coverage for the 2004-2005 South Pacific albacore troll fishery remained at 100%. The average fork length of albacore measured during the 2004-2005 season was 72 cm (17 lb or 7.6 kg; 5 years old). Length-frequency sampling coverage decreased from 0.7% in the 2003-2004 season to 0.1% in the 2004-2005 season.

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Table 1. North Pacific albacore catches (in metric tons) by fisheries, 1986-2005[1]. Blank indicates no effort. -- indicates data not available. 0 indicates less than 1 metric ton. Provisional estimates are in parentheses.

YEAR	CANADA	JAPAN						KOREA		MEXICO	TAIWAN		U.S.							OTHERS		GRAND TOTAL
	TROLL	GILL NET	LONG LINE	POLE & LINE	PURSE SEINE	TROLL	UNSP. GEAR	GILL NET	LONG LINE	UNSP. GEAR	GILL NET	LONG LINE[2]	POLE & LINE	GILL NET	LONG LINE	PURSE SEINE	SPORT	TROLL	UNSP. GEAR	LONG LINE[3]	TROLL	
1986	30	7,813	12,928	16,096	1,542		626	726	241	3	--	--	432	3			196	4,708	0			45,344
1987	104	6,698	14,702	19,082	1,205		155	817	549	7	2,514	--	158	5	150		74	2,766	0			48,986
1988	155	9,074	14,731	6,216	1,208		134	1,016	409	15	7,389	--	598	15	308		64	4,212	10			45,554
1989	140	7,437	13,104	8,629	2,521		393	1,023	150	2	8,350	40	54	4	249		160	1,860	23			44,140
1990	302	6,064	15,789	8,532	1,995		249	1,016	6	2	16,701	4	115	29	177	71	24	2,603	4			53,683
1991	139	3,401	17,046	7,103	2,652		392	852	3	2	3,398	12	0	17	313	0	6	1,845	71			37,253
1992	363	2,721	19,049	13,888	4,104		1,527	271	(15)	10	7,866	--	0	0	337	0	2	4,572	72			(54,796)
1993	494	287	29,966	12,797	2,889		867		(32)	11		5	0	0	440		25	6,254	0			(54,067)
1994	1,998	263	29,600	26,389	2,026		799		(45)	6		83	0	38	546		106	10,978	213		158	(73,248)
1995	1,720	282	29,075	20,981	1,177	856	81		440	5		4,280	80	52	883		102	8,045	1		137	68,197
1996	3,591	116	32,493	20,272	581	815	117		333	21		7,596	24	83	1,187	11	88	16,938	0	1,735	505	86,506
1997	2,433	359	38,950	32,238	1,068	1,585	123		319	53		9,119	73	60	1,652	2	1,018	14,252	1	2,824	404	106,533
1998	4,188	206	35,813	22,926	1,554	1,190	88		(288)	8		8,617	79	80	1,120	33	1,208	14,410	2	5,871	286	(97,967)
1999	2,641	289	33,365	50,369	6,872	891	127		107	23		8,186	60	149	1,540	48	3,621	10,060	1	6,307	261	124,917
2000	4,465	67	30,046	21,549	2,408	645	171		414	79		8,842	69	55	940	4	1,798	9,645	3	3,654	490	85,343
2001	4,985	117	28,819	29,430	974	416	96		82	22		8,684	139	94	1,295	51	1,635	11,210	0	1,471	127	89,648
2002	5,022	332	23,640	48,454	3,303	787	135		(113)	28		7,965	381	30	525	4	2,357	10,387		700	(127)	(104,291)
2003	6,735	(126)	(20,915)	(36,121)	(627)	(922)	(106)	(0)	(144)	29		(7,166)	59	16	524	44	2,214	14,102	0	(2,400)	(127)	(92,378)
2004	(7,842)	(126)	(15,593)	(34,727)	(6,046)	(922)	(106)	(0)	(68)	(106)		(4,988)	(126)	(12)	(356)	(1)	(1,506)	(13,346)	(0)	(2,400)	(127)	(88,399)
2005	(4,963)	(126)	(15,593)	(17,000)	(6,046)	(922)	(106)	(0)	(520)	(0)		(4,900)	(66)	(20)	(277)	(2)	(1,719)	(9,122)	(0)	(2,400)	(127)	(63,909)

[1] Data are from the 1st ISC Albacore Working Group, November 28 - December 2, 2005 except as noted.
[2] Catches for 2000-2004 contain estimates of offshore longline catches from vessels landing at domestic ports.
[3] Other longline catches from vessels flying flags of convenience being called back to Taiwan. The catches may be duplicated in Taiwan longline catches (November 2005).

Table 2. South Pacific albacore catches (in metric tons) by fisheries, 1986-2005[1]. Blank indicates no effort. -- indicates data not available. 0 indicates less than 1 metric ton. Provisional estimates are in parentheses.

YEAR	JAPAN		TAIWAN	KOREA	U.S.		CANADA	NEW ZEALAND			FRENCH POLYNESIA		AUSTRALIA		NEW CALEDONIA	TONGA	FIJI	WESTERN SAMOA	SOLOMON ISLANDS	VANUATU	CHINA	OTHER		GRAND TOTAL
	LONG[2] LINE	POLE & LINE	LONG LINE	LONG LINE	LONG[3] LINE	TROLL	TROLL	LONG LINE	POLE & LINE	TROLL[4]	LONG LINE	TROLL[5]	LONG LINE	TROLL[6]	LONG LINE	LONG LINE	LONG LINE	LONG LINE	LONG LINE	LONG LINE	LONG LINE	LONG[7] LINE	TROLL[8]	
1986	4,466	0	11,913	15,877		92				1,911			0	10	179	206								36,590
1987	4,103	9	15,009	1,914		838				1,256			129	11	563	252								25,003
1988	6,914	0	17,120	3,316	1	3,656	235			405			107	12	584	242					0			37,863
1989	5,353	0	10,867	1,178		3,672	235	9		4,361		102	93	13	566	195	3				0			48,602
1990	5,466	0	11,621	690		3,886	235	170	242	2,599	20	355	124	15	1,053	152	68				4			34,126
1991	4,700	0	16,517	536	1	4,894	235	85	9	2,365	100	391	158	20	909	171	208				0		4	32,697
1992	5,268	0	22,229	1,343		2,956	235	209	6	3,272	195	115	214	70	692	199	243				0			37,246
1993	8,294	12	18,469	558	0	1,010	235	345	60	2,982	714	86	186	55	755	231	463	213			1			34,669
1994	8,883	2	19,726	1,073	1	2,270	235	635	62	4,620	913	61	357	70	840	343	842	641			8	23	46	41,651
1995	7,350	0	15,316	1,184	1	1,951	235	810	136	5,349	772	255	438	25	332	379	702	1,883	24	109	5	38	47	37,356
1996	4,538	0	10,858	1,020	86	1,947	136	1,079	26	5,241	1,463	153	408	50	414	431	1,446	1,775	100	192	8	43	186	31,621
1997	4,797	12	10,156	1,144	309	1,739	149	847	0	2,781	2,595	102	302	50	277	493	1,842	4,108	109	95	2	101	327	32,336
1998	7,830	38	10,532	4,484	446	1,618	167	2,057	1	4,468	3,189	38	460	60	860	616	2,121	4,742	370	10	1	104		44,212
1999	3,872	100	10,418	733	338	1,339	253	2,103	0	1,800	2,580	61	359	50	690	801	2,279	4,027	136	--	3,473	129	95	35,636
2000	3,004	22	10,235	589	624	2,433	351	1,344	72	3,084	3,473	97	381	50	895	862	6,065	4,067	224	--	2,056	159	372	40,459
2001	4,929	18	12,330	2,101	3,253	2,107	207	2,093	4	3,256	4,261	155	570	59	1,020	1,268	7,971	4,820	54	--	2,711	125	187	53,498
2002	5,425	11	12,796	3,742	5,944	1,337	144	2,105	0	3,458	4,557	106	53	52	1,165	1,042	8,026	4,223	127	513	2,920	1,037	70	58,853
2003	4,895	7	(14,105)	1,606	(3,925)	1,573	(144)	(3,175)	(0)	(3,979)	3,846	(84)	487	51	1,111	660	6,881	2,253	122	(1,823)	(6,222)	2,314	54	59,318
2004	(4,798)	(7)	(13,307)	(804)	(2,471)	(1,108)	(63)	(1,360)	(0)	(3,979)	(2,164)	(84)	487	51	1,111	80	6,881	2,253	122	(1,823)	(6,222)	613	54	49,841
2005	(4,798)	(7)	(13,307)	(804)	(2,471)	(579)	(63)	(1,360)	(0)	(3,979)	(2,164)	(84)	(487)	(51)	(1,111)	(80)	(6,881)	(2,253)	(122)	(1,823)	(6,222)	(613)	(54)	49,313

[1] Data are from the Seventeenth Meeting of the Standing Committee on Tuna and Billfish and SPC Tuna Fishery Yearbook 2005, except as noted. All catches are from areas within the SPAR statistical area except as noted.

[2] Japan longline catches include catches from Australia-Japan joint venture vessels.

[3] 1982 - 1993 U. S. longline catches are from Pelagic Fisheries of the Western Pacific Region 1996 and 1998 Annual Reports. 2004 catches are from the Western Pacific Fishery Information Network.

[4] 1990 - 2001 New Zealand troll include unclassified vessels.

[5] French Polynesia troll catches include catches from Bonitier and Poti Marara vessels.

[6] Australia troll catches from 1970 to 1980 are incidental catches from pole-and-line vessels targeting southern bluefin tuna. 1981-2002 catches include recreational catches.

[7] "Other" includes Cook Islands and Papua New Guinea.

[8] "Other" includes Fiji, Cook Islands, Belize, Sweden, Tonga, and Ecuador.

Table 3. Fishery statistics for the U.S. North Pacific albacore troll fishery.

FISHING SEASON	NO. TRIPS		CATCH (Metric Tons)		NO. FISH LANDED		AVG FL (cm)	AVG WT (lb)	EFFORT		CPUE (fish/day)	SAMPLING COVERAGE	
	TOTAL	SAMPLED	TOTAL	SAMPLED	TOTAL	MEASURED			NO. DAYS	NO. VESSELS		LOG	L-F
1996	1,816	413	16,938	7,049	2,918,060	32,144	66	12.8	32,717	640	89	42%	1.1%
1997	4,000	493	14,252	5,437	2,050,302	31,223	70	15.3	45,572	1,121	45	38%	1.5%
1998	2,358	267	14,410	5,061	2,217,166	15,603	68	14.3	21,445	755	103	35%	0.7%
1999	2,555	393	10,060	3,549	1,246,107	14,263	73	17.8	34,643	705	36	35%	1.1%
2000	2,306	424	9,645	3,967	1,444,331	11,636	69	14.7	37,331	649	39	41%	0.8%
2001	3,554	473	11,210	5,493	1,739,301	13,907	68	14.2	26,566	870	65	49%	0.8%
2002	2,508	346	10,387	3,953	1,687,542	11,766	67	13.6	25,350	641	67	38%	0.7%
2003	2,932	339	14,102	4,683	1,758,146	9,156	73	17.7	23,442	836	75	33%	0.5%
2004	2,413	502	13,346	4,847	2,086,184	30,892	68	14.1	23,979	734	87	36%	1.5%
2005	1,628	1,178	9,122	6,256	1,287,854	21,362	70	15.6	25,252	652	51	69%	1.7%

Table 4. Fishery statistics for the U.S. South Pacific albacore troll fishery.

FISHING SEASON	NO. TRIPS		CATCH[1] (Metric Tons)		NO. FISH LANDED		AVG FL (cm)	AVG WT (lb)	EFFORT		CPUE (fish/day)	SAMPLING COVERAGE	
	TOTAL	SAMPLED	TOTAL	SAMPLED	TOTAL	MEASURED			NO. DAYS	NO. VESSELS		LOG	L-F
1995-96	55	31	1,964	1,119	285,075	2,069	70	15.2	4,145	53	69	57%	0.7%
1996-97	26	18	1,617	956	252,422	1,215	68	14.1	3,063	26	82	59%	0.5%
1997-98	38	31	1,701	1,100	277,050	200	67	13.5	5,384	36	51	65%	0.1%
1998-99	24	12	1,241	516	173,549	689	70	15.8	2,505	21	69	42%	0.4%
1999-2000	39	26	2,562	1,578	339,768	1,255	72	16.6	4,957	36	69	62%	0.4%
2000-2001	39	30	2,128	1,449	289,517	3,416	71	16.2	6,377	33	45	68%	1.2%
2001-2002	12	10	1,218	426	166,338	513	71	16.1	3,602	12	46	35%	0.3%
2002-2003	14	11	1,678	911	230,849	1,229	71	16.0	2,286	14	101	54%	0.5%
2003-2004	12	12	995	840	171,061	811	66	12.8	1,487	11	115	100%	0.5%
2004-2005	10	10	725	508	95,605	102	72	16.7	1,478	8	65	100%	0.1%

[1] Total catches for U.S. South Pacific albacore troll fishery may include catch from November and December of the previous year. Total catches for seasons before 1996-97 may contain catch from non-U.S. vessels.

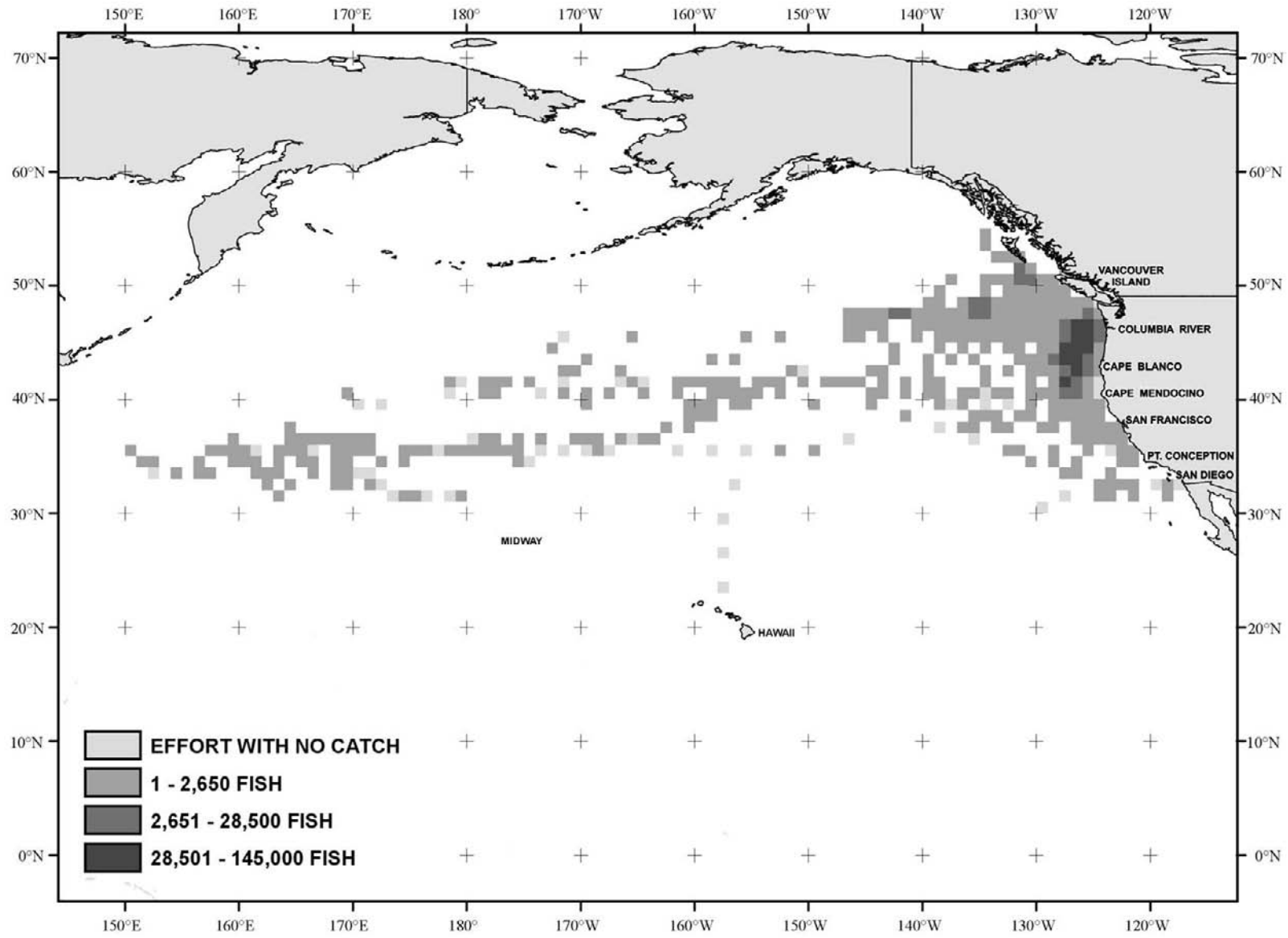

Figure 1. Distribution of albacore catches by U.S. troll vessels in the 2005 North Pacific season.

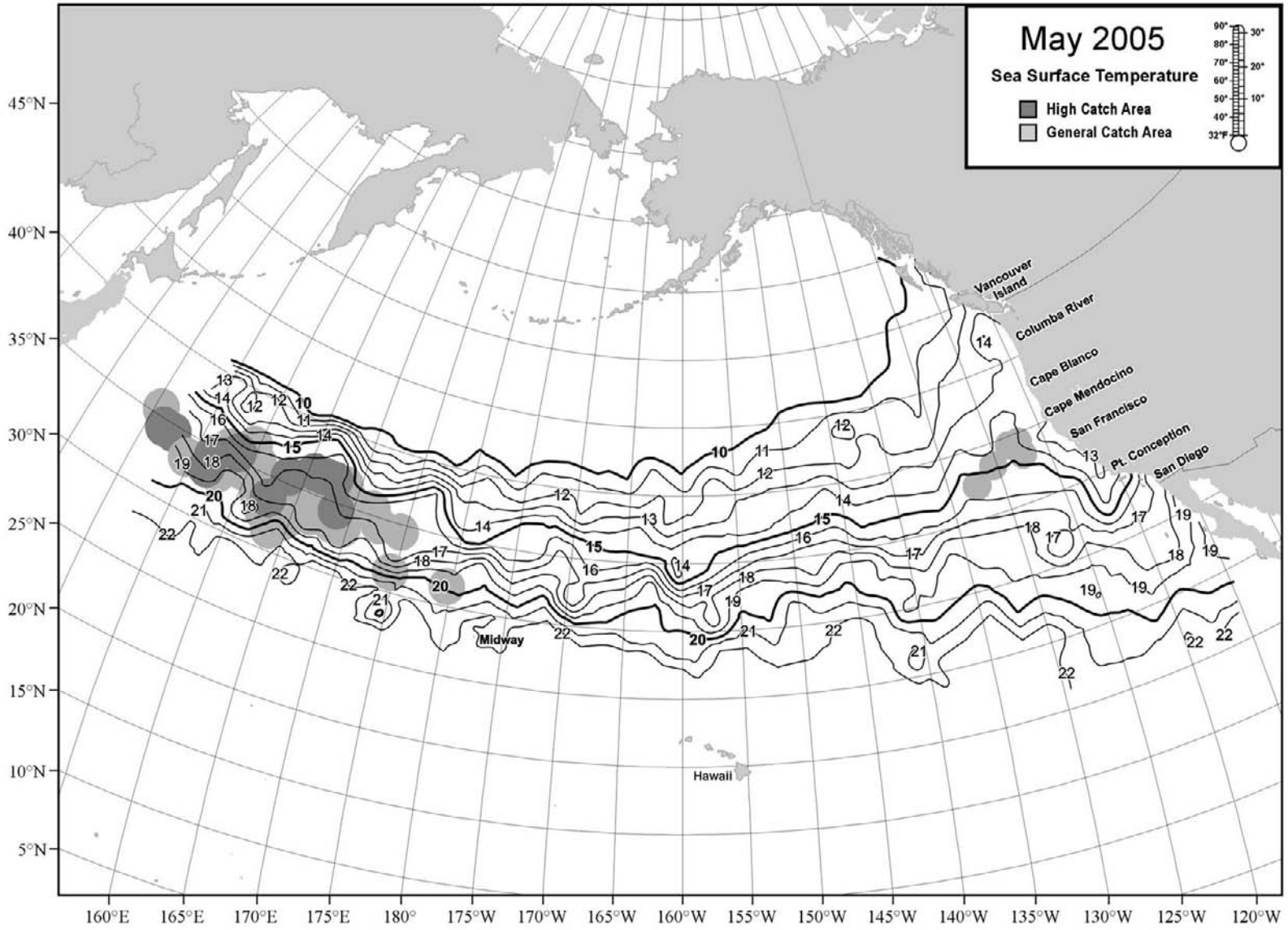

Figure 2a. Distribution of albacore catches and sea surface temperatures in the North Pacific, May 2005.

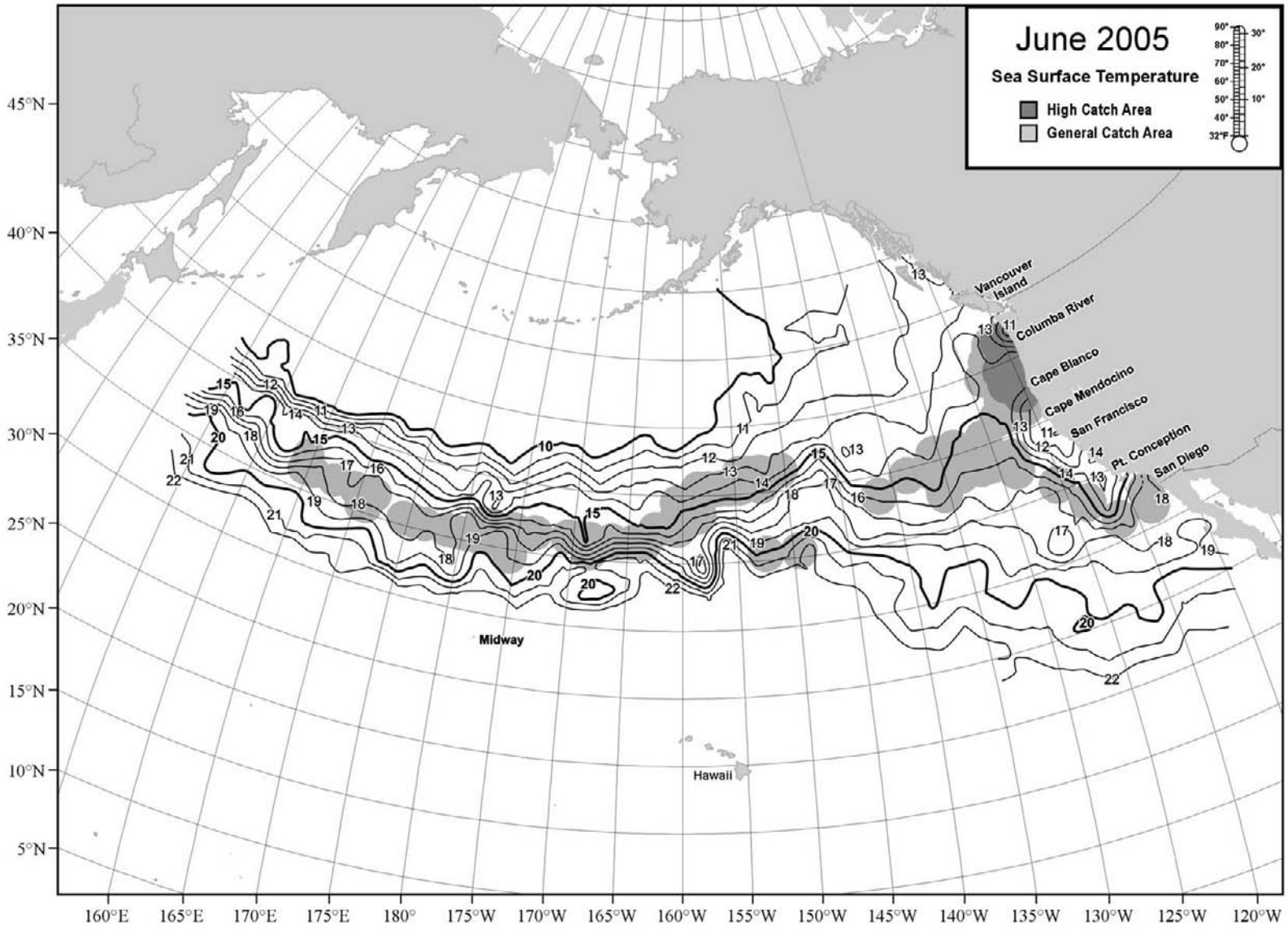

Figure 2b. Distribution of albacore catches and sea surface temperatures in the North Pacific, June 2005.

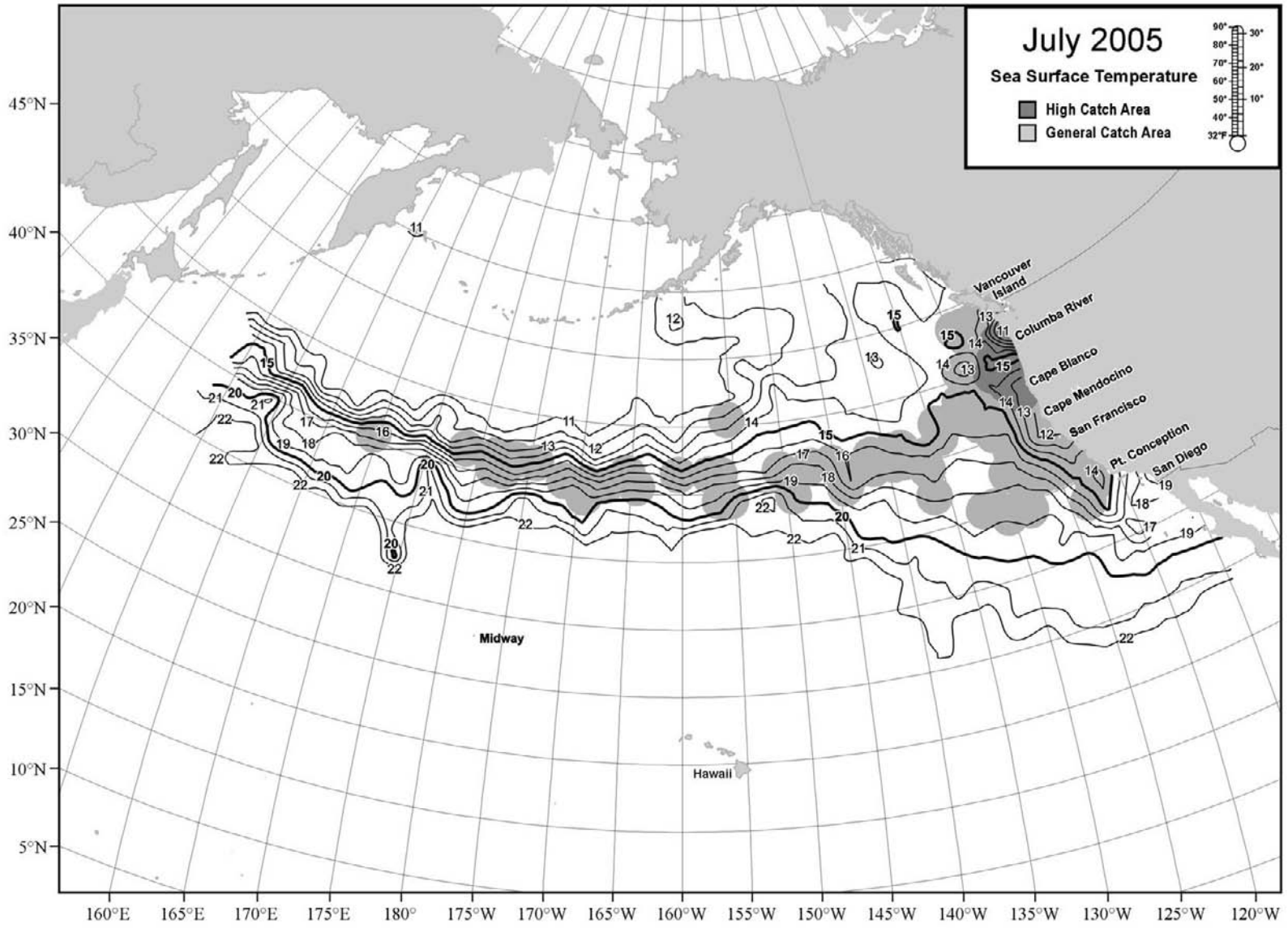

Figure 2c. Distribution of albacore catches and sea surface temperatures in the North Pacific, July 2005.

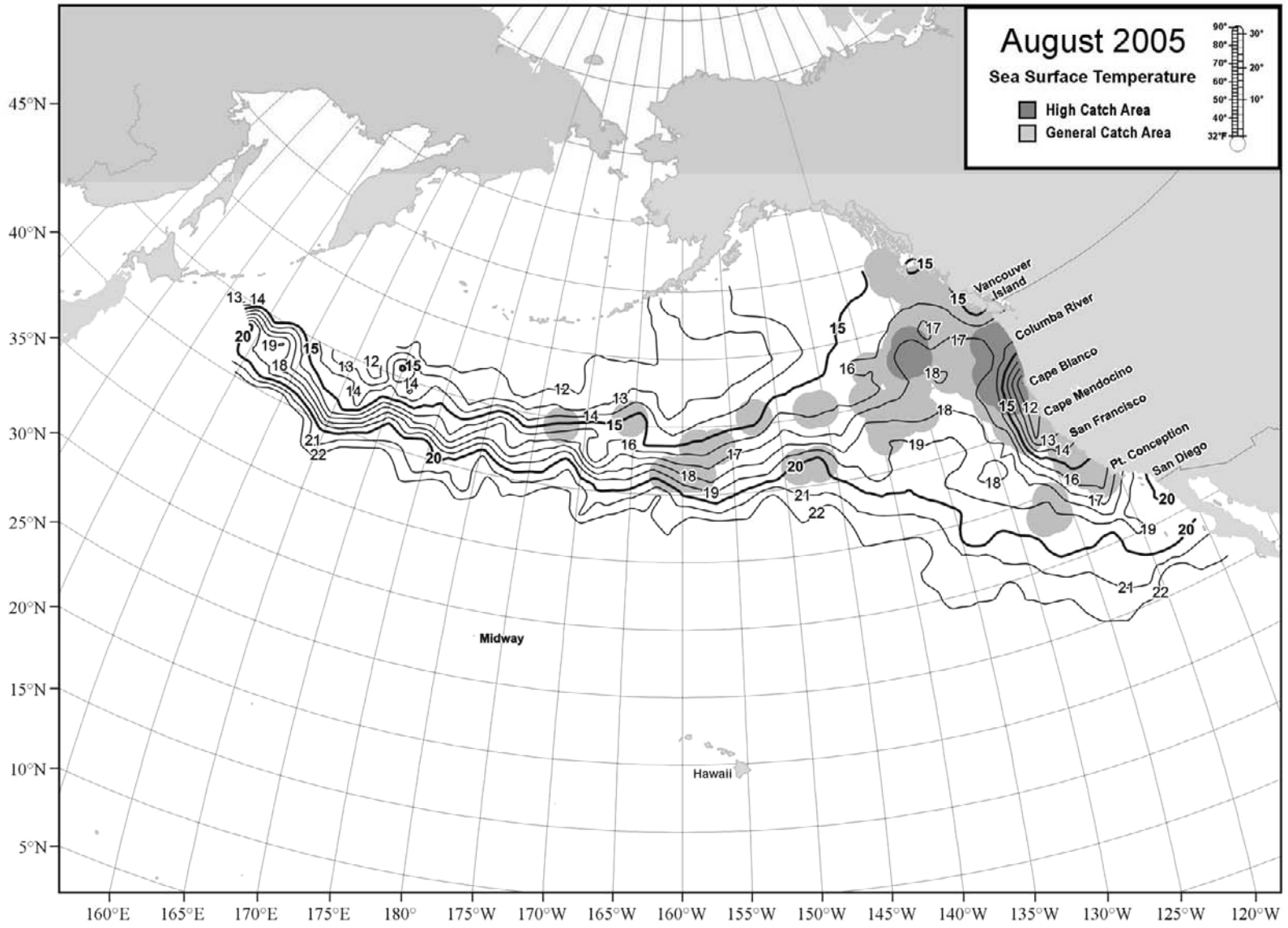

Figure 2d. Distribution of albacore catches and sea surface temperatures in the North Pacific, August 2005.

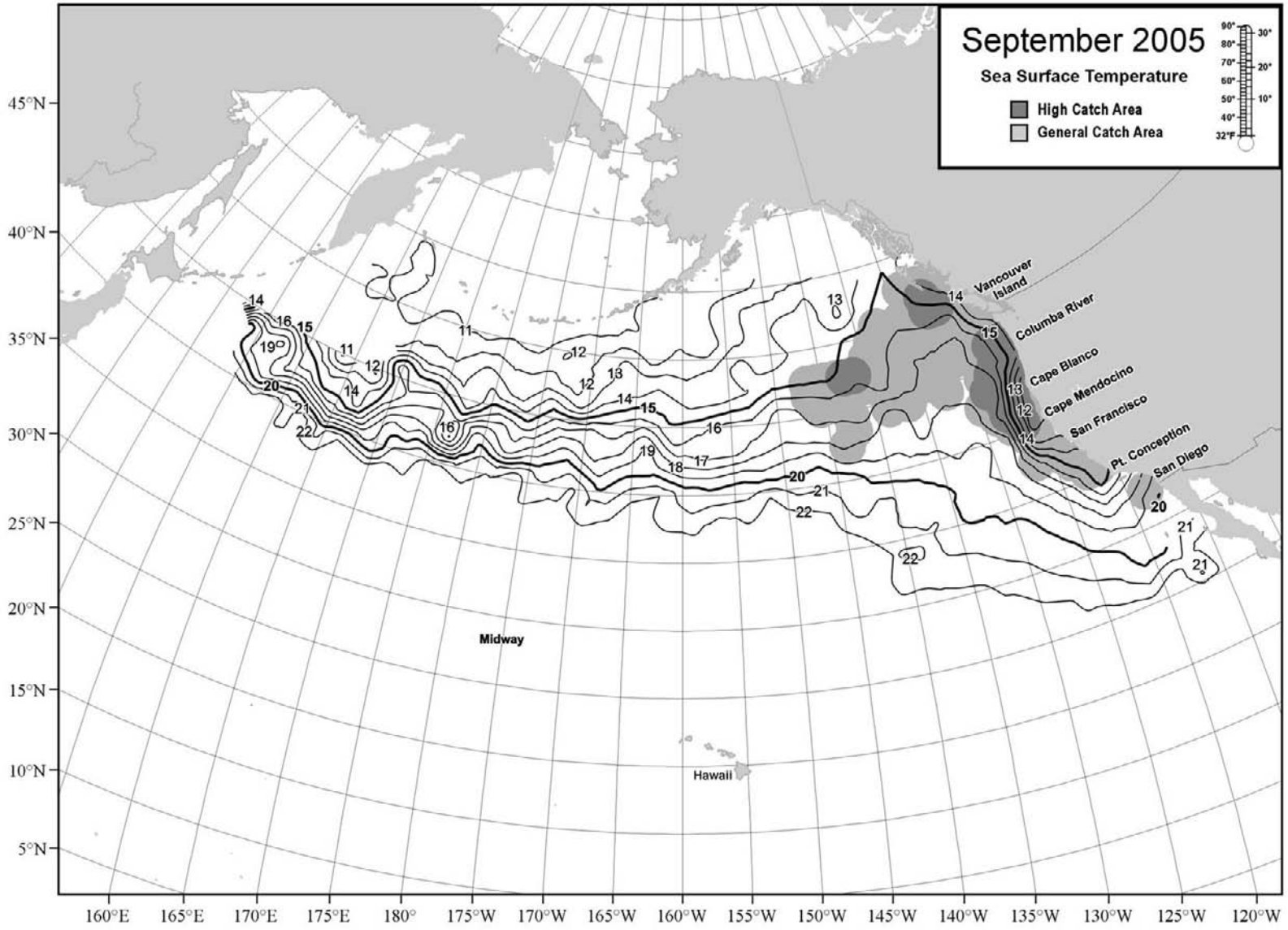

Figure 2e. Distribution of albacore catches and sea surface temperatures in the North Pacific, September 2005.

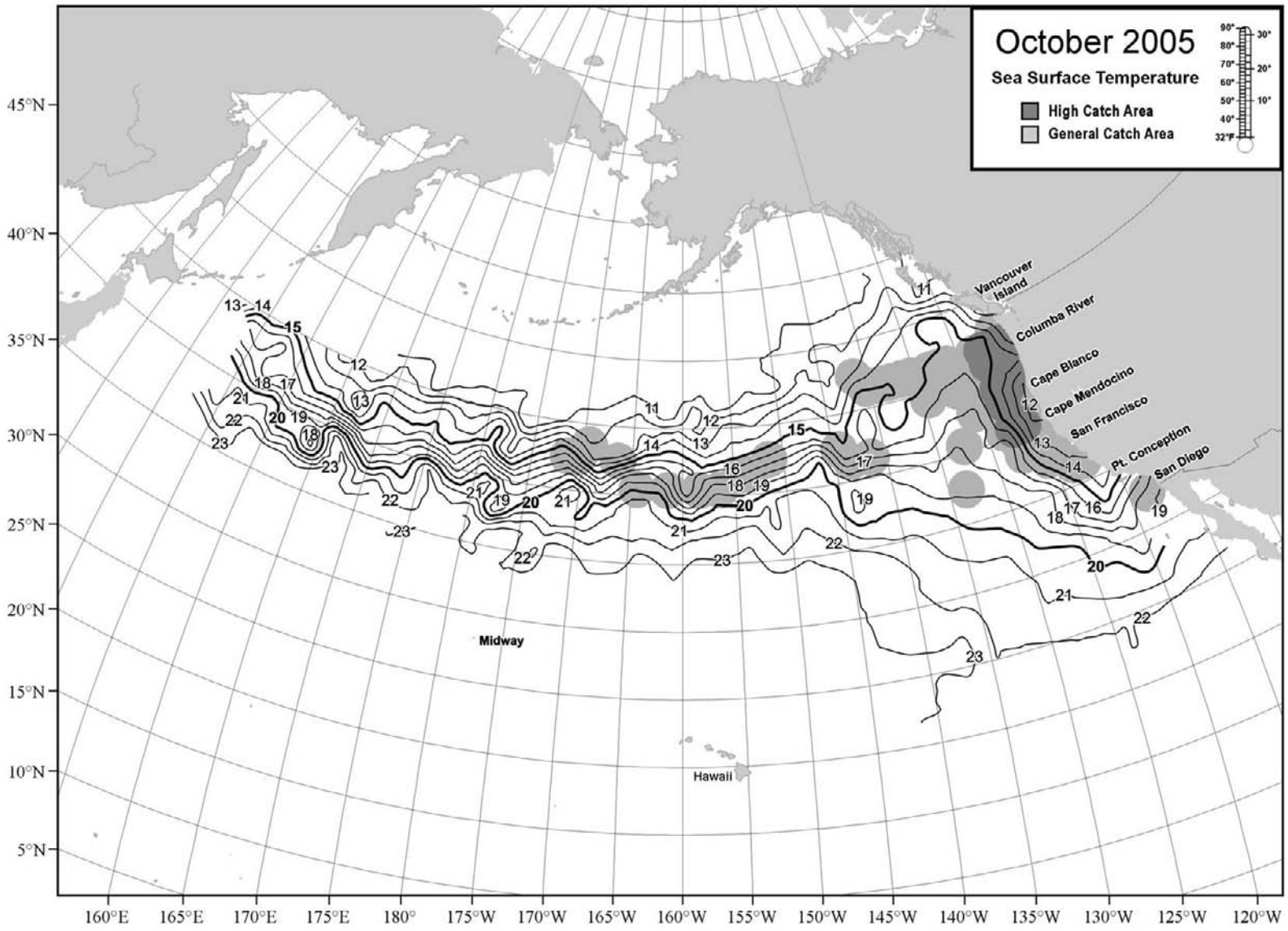

Figure 2f. Distribution of albacore catches and sea surface temperatures in the North Pacific, October 2005.

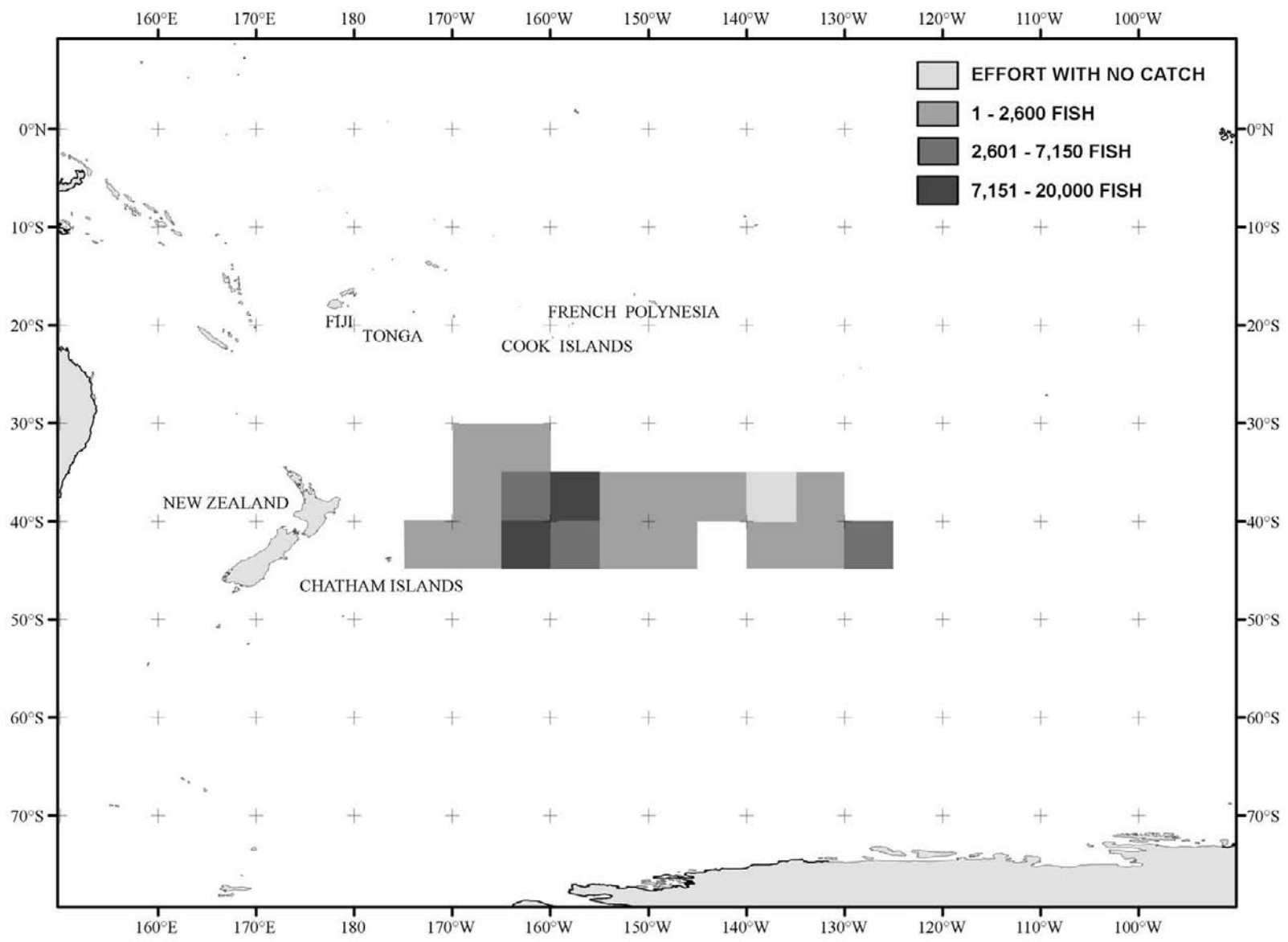

Figure 3a. Distribution of albacore catches by U.S. troll vessels in the 2004-2005 South Pacific season.

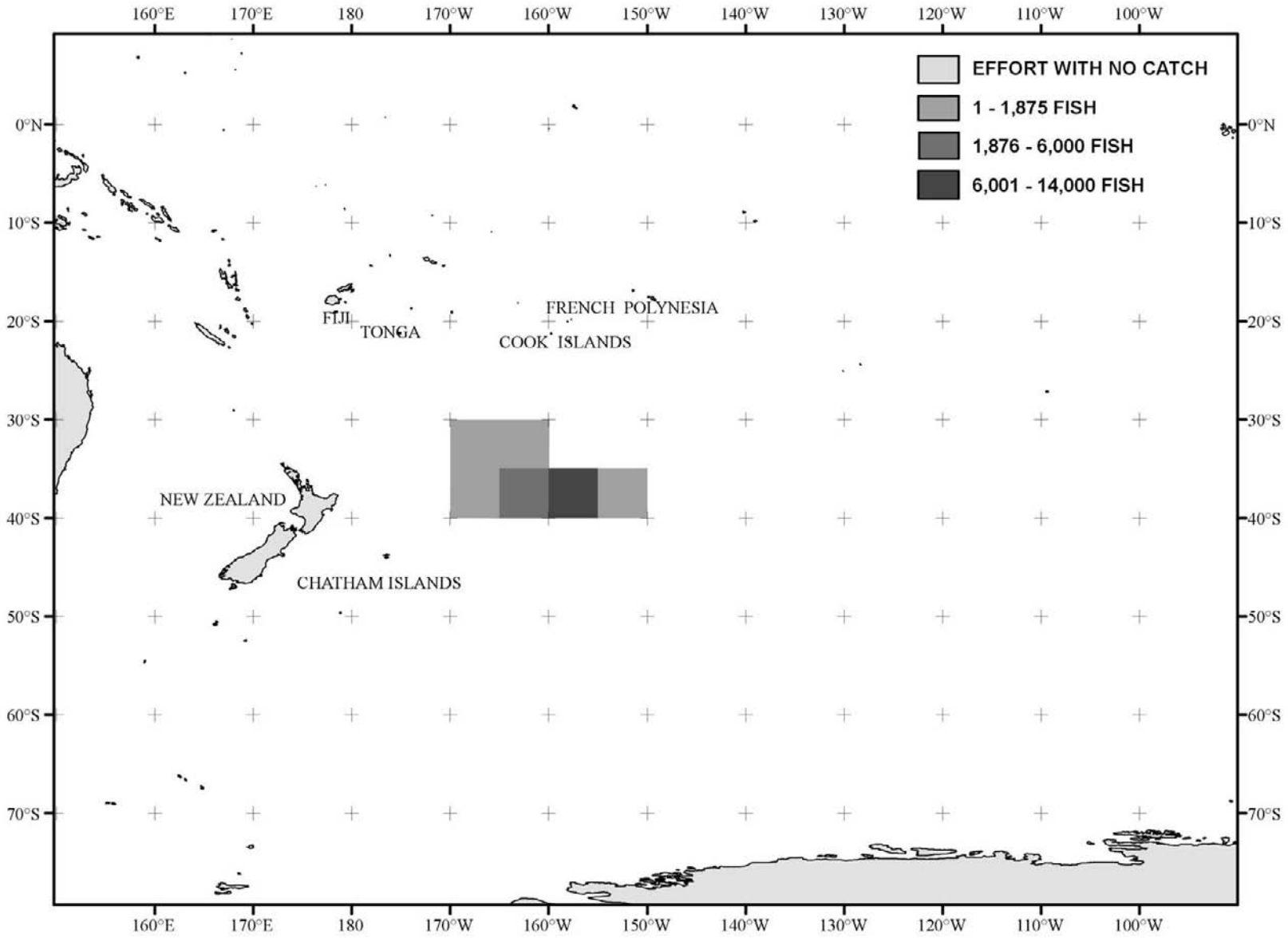

Figure 3b. Distribution of albacore catches by U.S. troll vessels in the South Pacific, December 2004.

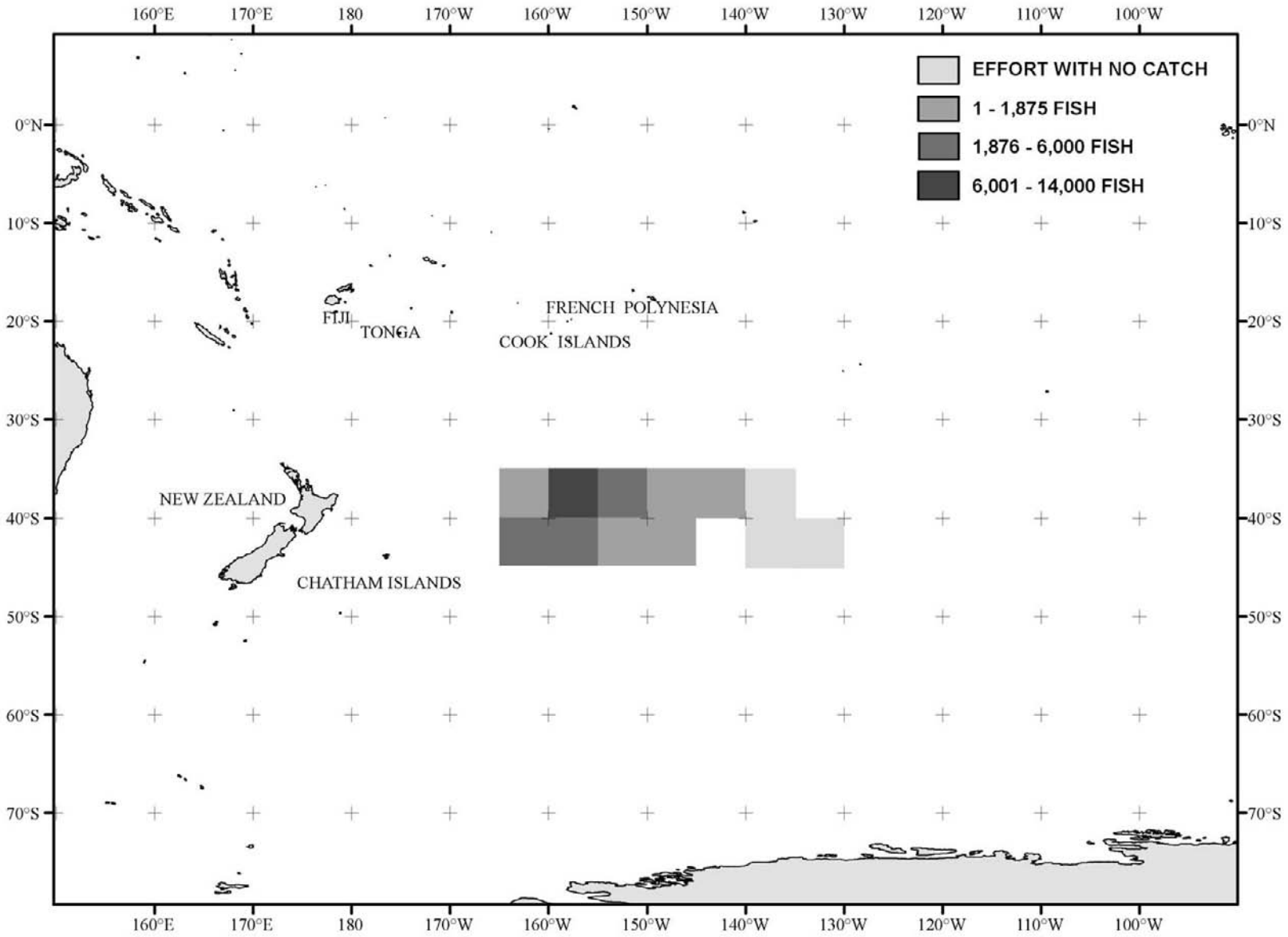

Figure 3c. Distribution of albacore catches by U.S. troll vessels in the South Pacific, January 2005.

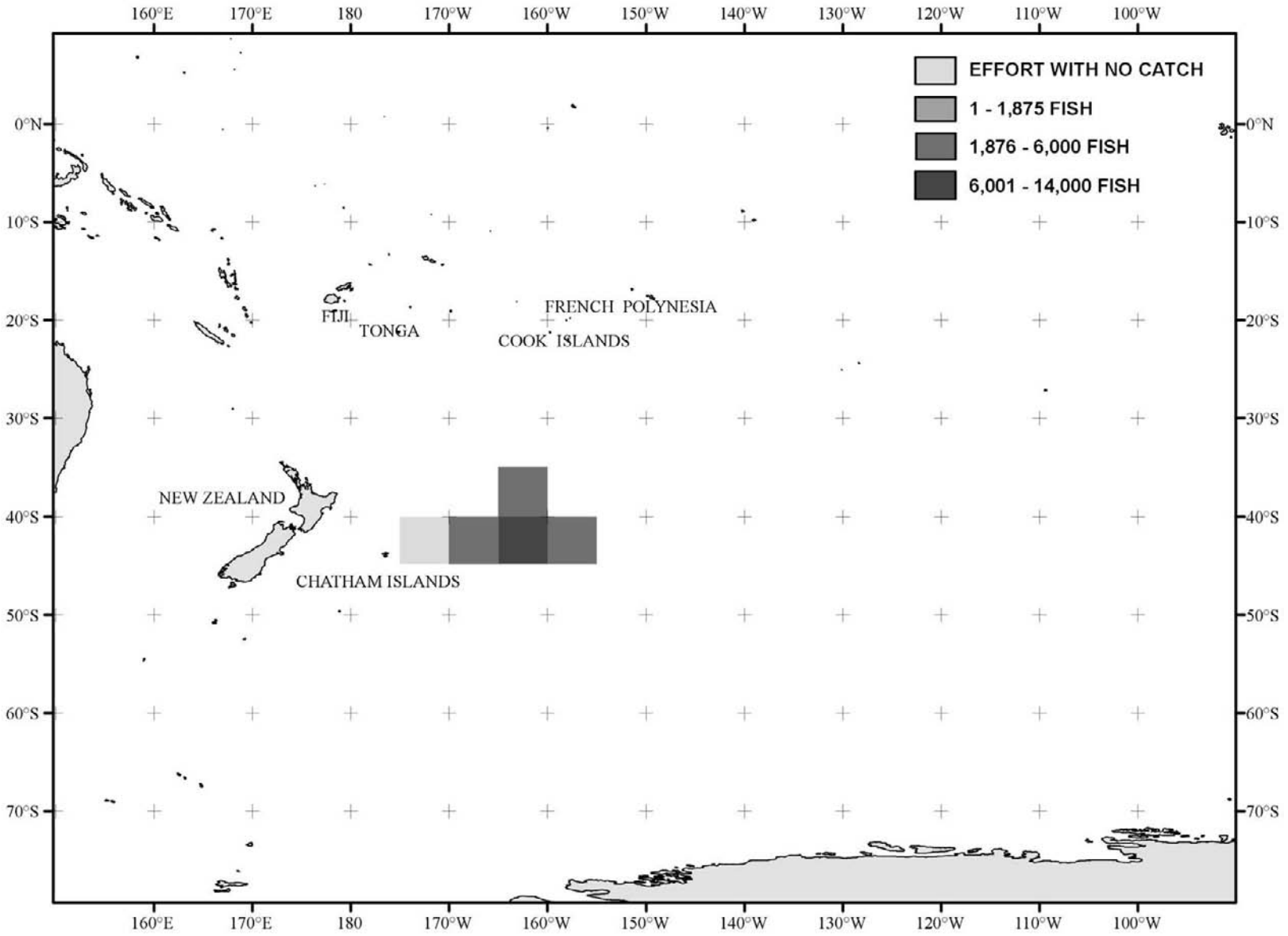

Figure 3d. Distribution of albacore catches by U.S. troll vessels in the South Pacific, February 2005.

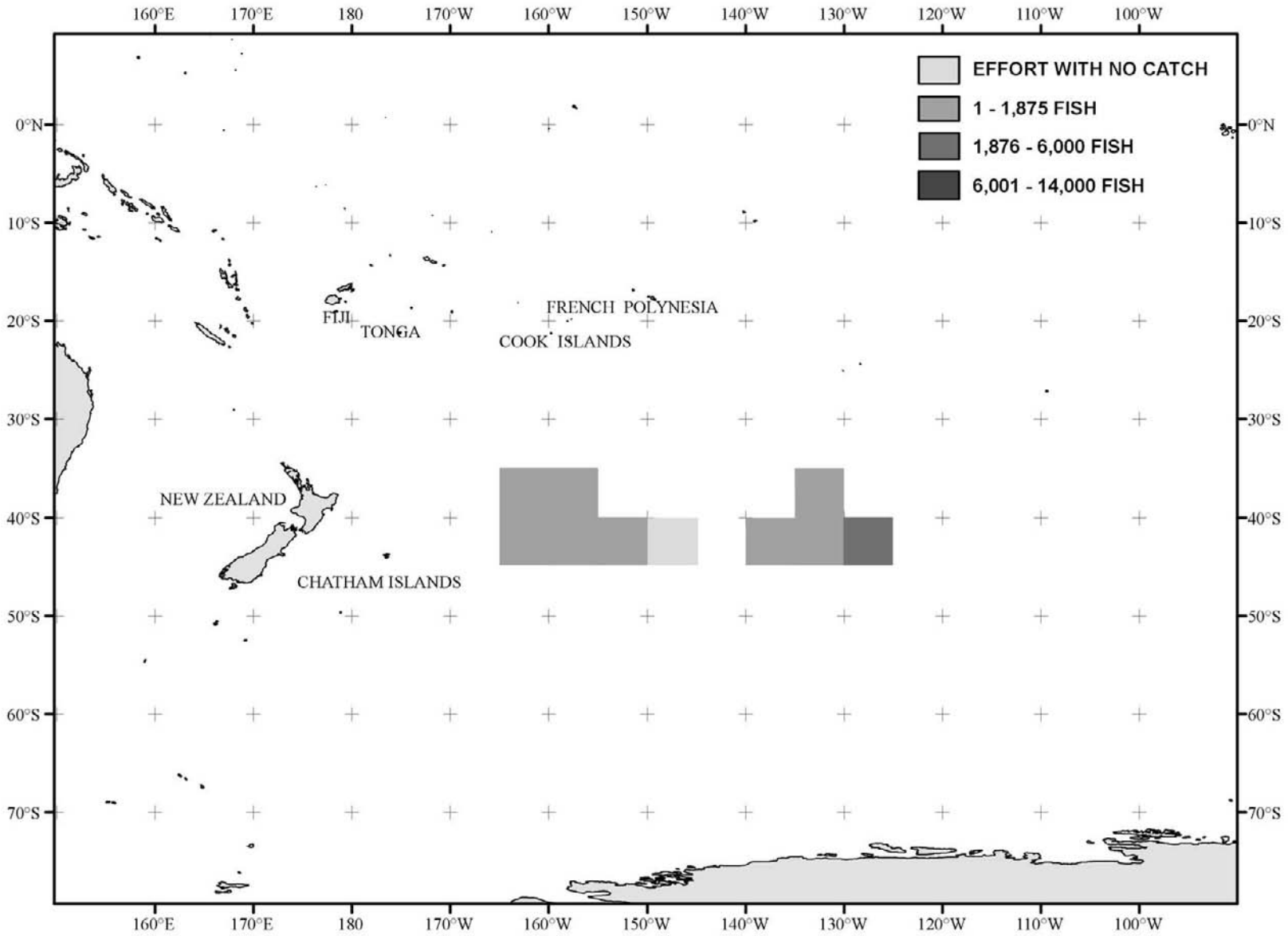

Figure 3e. Distribution of albacore catches by U.S. troll vessels in the South Pacific, March 2005.

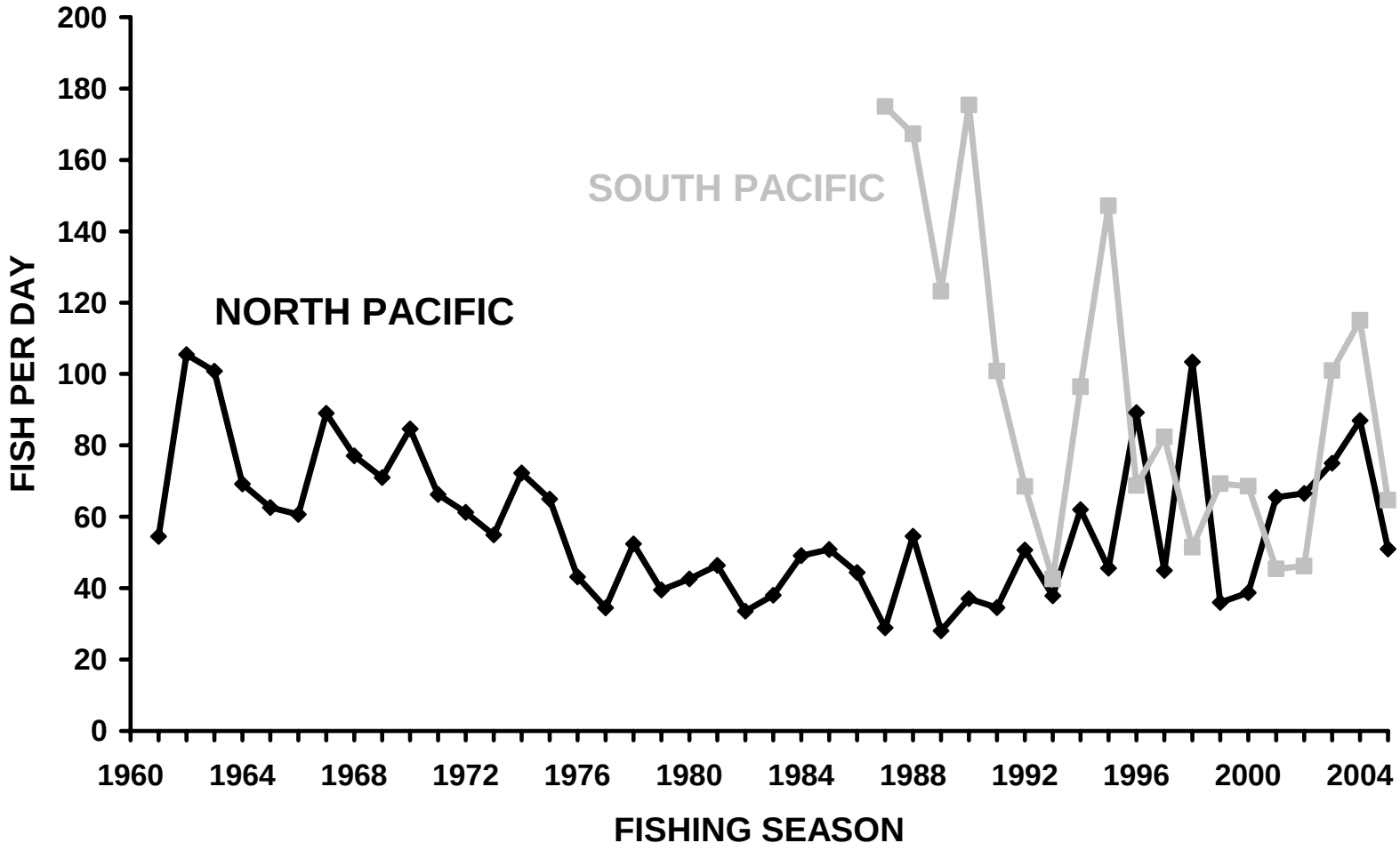

Figure 4. North and South Pacific albacore CPUEs by U.S. troll vessels from 1961 through 2005.

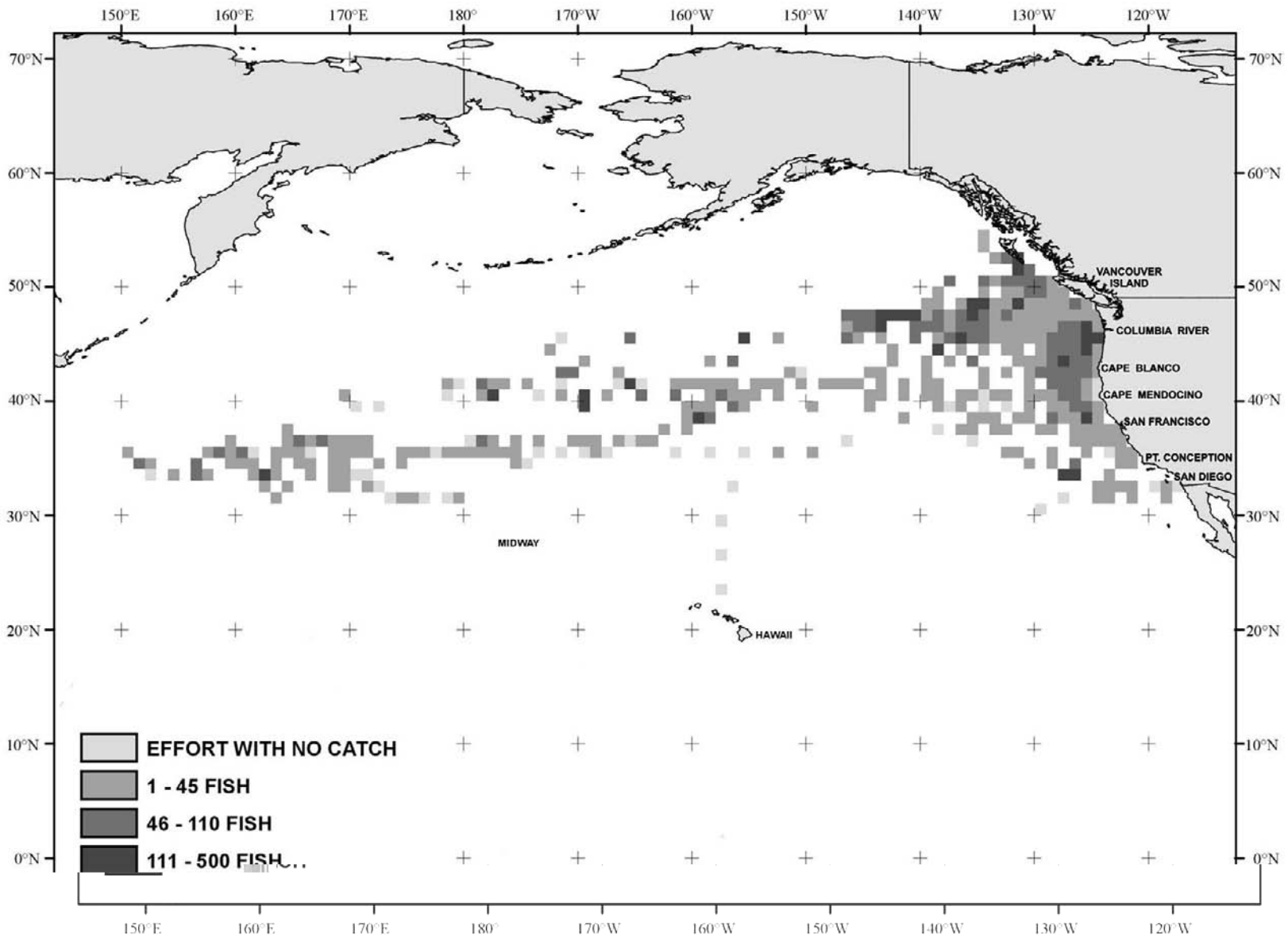

Figure 5. Distribution of albacore CPUEs by U.S. troll vessels in the 2005 North Pacific season.

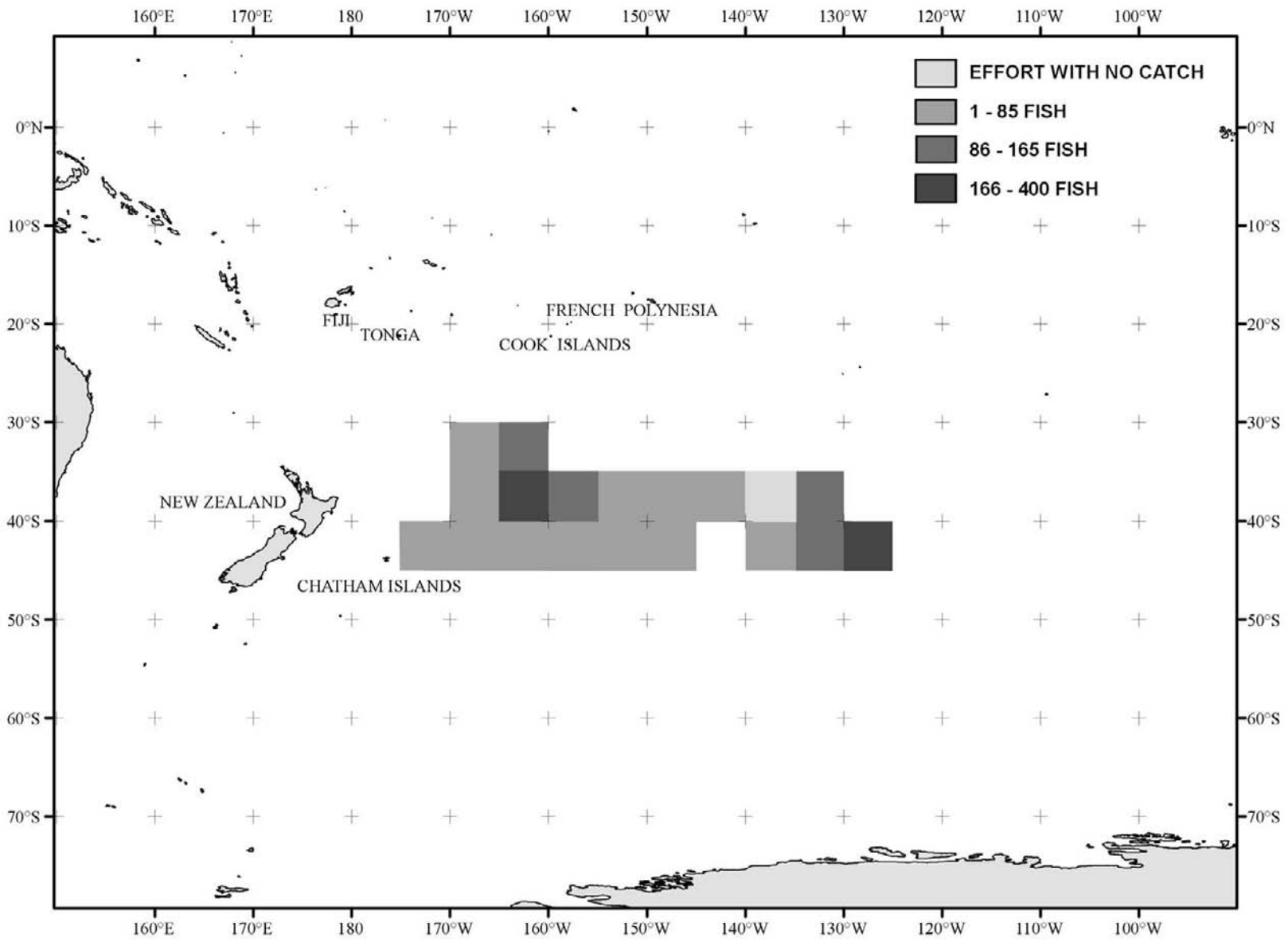

Figure 6. Distribution of albacore CPUEs by U.S. troll vessels in the 2004-2005 South Pacific season.

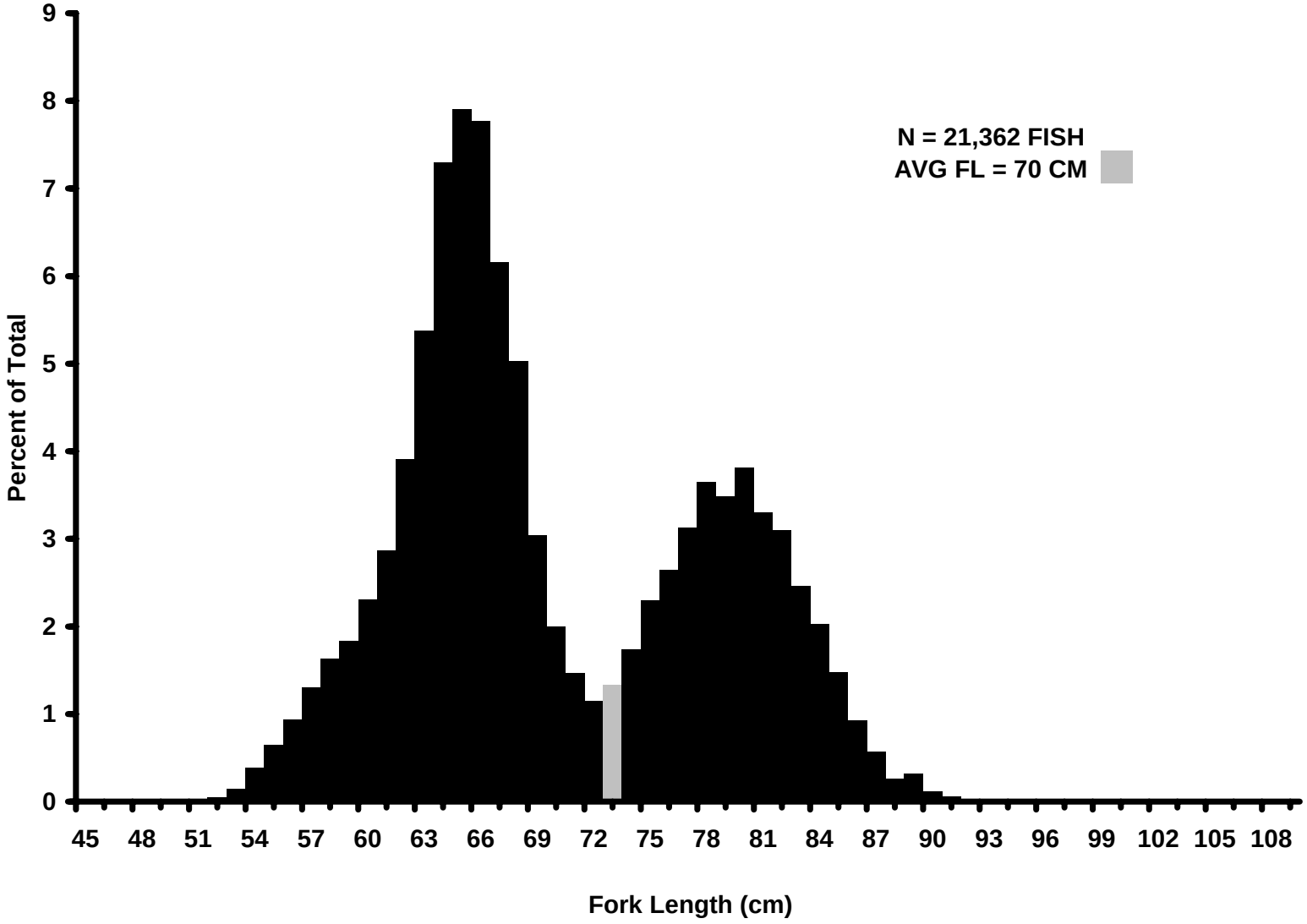

Figure 7. Length-frequency histogram of North Pacific albacore caught by U.S. troll vessels during the 2005 season.

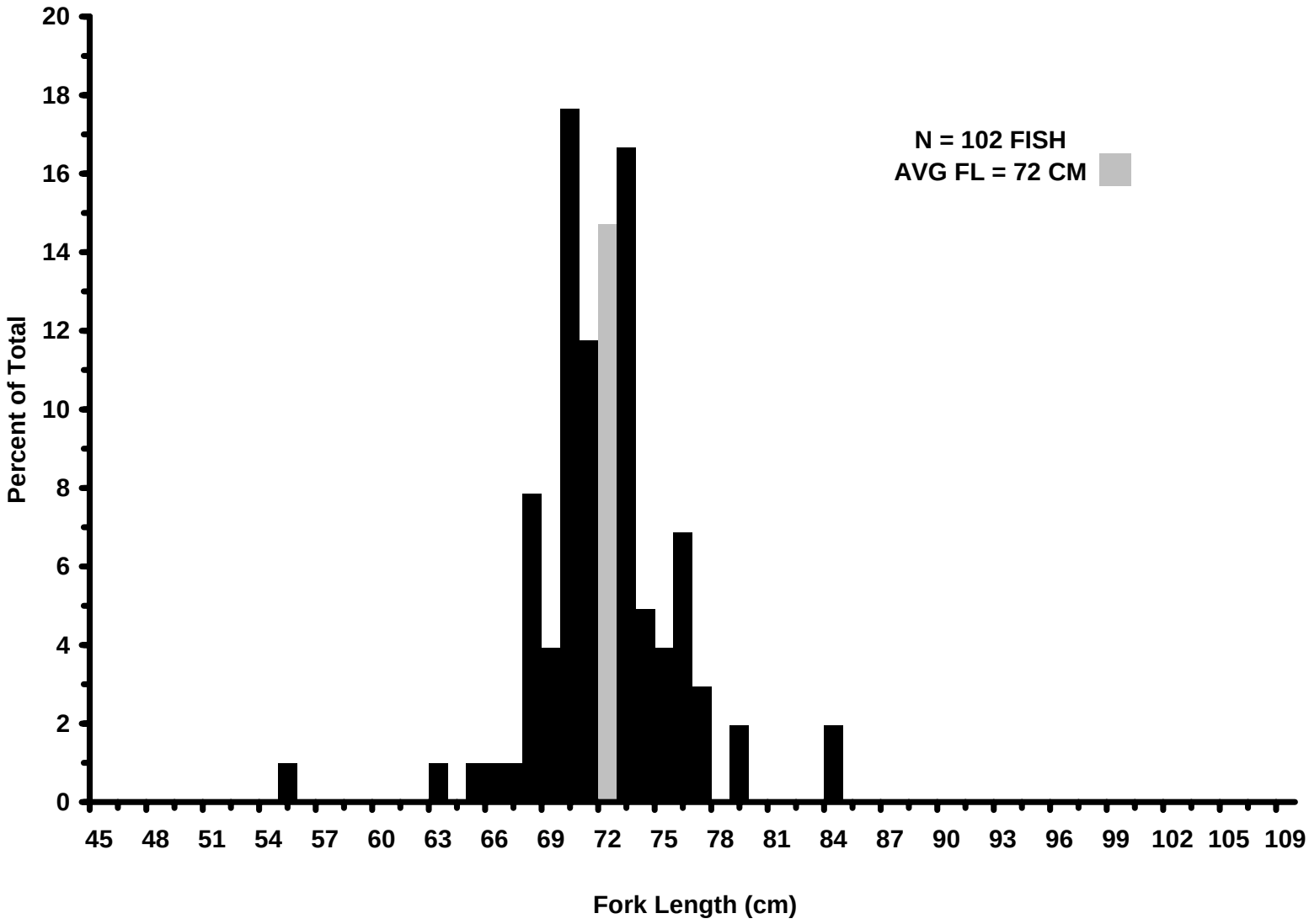

Figure 8. Length-frequency histogram of South Pacific albacore caught by U.S. troll vessels during the 2004-2005 season.