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U.S. FISHERIES CATCHING TROPICAL TUNAS IN THE CENTRAL-WESTERN
PACIFIC OCEAN, 1994-1995

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INTRODUCTION

A variety of marine resources of the central-western Pacific Ocean, west of 150° W longitude, are harvested by United States fishermen (Table 1). Among the most valuable and important are tunas and billfishes, but particularly tropical tunas, yellowfin tuna (*Thunnus albacares*), bigeye tuna (*T. obesus*) and skipjack tuna (*Katsuwonus pelamis*). In 1995, the total U.S. commercial catch of tunas and billfishes was approximately 184,000 metric tons (t) of which 93% were tropical tunas.

This report focuses on the 1994 and 1995 U.S. central-western Pacific tropical tuna fisheries, which are divided into a large-scale purse seine category and a small-scale and artisanal category. Fishery statistics are reviewed for each of these categories.

LARGE-SCALE PURSE SEINE FISHERY

U.S. commercial tuna purse seiners have fished in the central-western Pacific under the terms of the South Pacific Regional Tuna Treaty (SPTT) since June, 1988 (Figure 1). The number of purse seine vessels is currently limited to 55 by the SPTT. The Treaty is reviewed annually and is in effect until the year 2004. As a requirement of the SPTT, vessels are to submit logbook and landings data. The National Marine Fisheries Service (NMFS) samples landings for size and species composition and these samples are also submitted.

During 1995, forty-four, U.S. purse seiners caught an estimated 166,890 t of yellowfin, skipjack and bigeye tunas in the central-western Pacific (Table 2). This represented a decrease in vessels from the 49 that fished in 1994 as well as a 19% decrease from 1994 catches of 207,269 t. Yellowfin tuna accounts for approximately 19% of the 1995 total catch, skipjack tuna, 79% and bigeye tuna, 2%. The 1995 catch of yellowfin tuna (31,552 t) is the lowest for this fleet since 1988. Skipjack tuna catches decreased 12% from catches in 1994 and bigeye tuna catches increased 97% over catches in 1994. Bigeye tuna catches in Table 1 are estimates based on species composition sampling.

Approximately 66% of the 1995, U.S. purse seine catch was unloaded directly to canneries in American Samoa. Other direct unloadings were to canneries in Australia and the Philippines (3%). Catches were also transshipped from various locations in the Treaty

area. The most frequently used transshipment ports were Tinian (Northern Mariana Islands, NMI) and Chuuk (Truk Islands, Federated States of Micronesia, FSM) with approximately 11% and 9% respectively of the 1995 catch. Other transshipment ports included Kokopo (Papua New Guinea, PNG), Kavieng (PNG), Funafuti (Tuvalu), Guam (NMI), Pago Pago (American Samoa), Rabaul (PNG), Madang (PNG), Whangarei (New Zealand), Pohnpei (FSM), and General Santos City (Philippines) (11%). Destinations of the 1995 catches were to canneries in American Samoa (71%), Puerto Rico (16%), Australia (3%), and Thailand (2%). Other destinations included Ecuador, Colombia, Mexico, Philippines, Indonesia, Italy, and Japan (8%).

Approximately 87% of the 1995 catch was made within the EEZs of Pacific Island countries, more than 12% on the high seas and less than 0.5% in U.S. EEZs. Skipjack tuna was the predominant species caught in all EEZs (72 to 100% of the catch) except off Palau and Wallis/Futuna Islands where yellowfin tuna was dominant at 59% and 75% respectively.

In contrast, 66% of the 1994 catches were within Pacific Island country EEZs, 21% on the high seas and 13% in U.S. EEZs. As in 1995, skipjack tuna was the predominant species caught in all EEZs (65 to 100% of the catch) except off Jarvis Island (U.S. EEZ) where yellowfin tuna was dominant at 68%.

Sizes of Fish

Yellowfin tuna in the 1995 catch averaged 68 cm fork length (FL); 83 cm FL in school sets and 58 cm FL in log sets. Modes in the length-frequency distribution for all set types (Figure 2) were at 52 cm, 57 cm, 70 cm, 90 cm, and 108 cm. In general, yellowfin tuna in 1995 catches were larger in log sets and smaller in school sets than in 1994.

Skipjack tuna in the 1995 catch averaged 54 cm FL; 55 cm FL in school sets and 51 cm FL in log sets. Two dominant modes at 50 cm and 59 cm were present in the length-frequency distribution for all set types (Figure 3). In general, skipjack tuna were smaller in 1995 than in 1994.

Bigeye tuna in the 1995 catch averaged slightly under 56 cm FL; 52 cm FL in school sets and 56 cm FL in log sets. Three dominant modes at 53 cm, 55 cm, and 67 cm were present in the annual length distribution of all types of sets (Figure 4). In general, bigeye tuna were larger in 1995 than in 1994.

Species Composition

Since U.S. canneries pay the same prices for yellowfin and bigeye tunas, catches of both species are grouped together and reported as yellowfin tuna. Species composition, by set type (log or school) and size of fish (<9kg and >9kg), was determined from samples of landings that appear to be a mixture of yellowfin and bigeye tunas. Sampling indicated that 1995 yellowfin catches

contained 26% bigeye tuna in log sets containing small fish, 10% in log sets containing large fish, 5% in school sets containing small fish and 0.5% on school sets containing large fish.

Fleet Performance

The U.S. fleet spent 7,346 days fishing in 1995, a decrease of 9% from fishing effort in 1994, although the number of days at sea decreased by only 6%. Fishing effort shifted to the west in 1995 with the majority in waters around Papua New Guinea and the Federated States of Micronesia. Effort was distributed from Palau to Jarvis Island, over a slightly smaller area than in 1994 and was more concentrated (Figure 5). In 1994, only seven, 1-degree squares had more than 60 days of fishing effort, whereas in 1995, twenty-one squares had more than 60 days of fishing effort.

The fleet made 179 trips in 1995, a decrease of 15% from total trips made in 1994 (Figure 6). The decrease in the number of trips was accompanied by an increase in the average number of days per trip. The average number of sets per trip (36) decreased 12% from that in 1994, while the average number of trips/vessel (4) remained relatively stable.

The fleet made 77% of its sets on free-swimming schools of yellowfin, bigeye and skipjack tunas in 1995. This was a decrease of 32% from 1994 (Figure 7).

Overall catch rate (22 t of tuna/day fished) decreased 15% in 1995 from the catch rate (26 t/day fished) in 1994 (Figure 8). Catch rate for yellowfin tuna (5 t/day fished) decreased 41% from that of 1994. Skipjack tuna catch rate of approximately 18 t/day fished also decreased slightly from that of 1994 (19 t/day).

SMALL-SCALE AND ARTISANAL FISHERIES

Hawaii-based Commercial Fisheries

Hawaii-based commercial tuna fisheries, have operated since the early 1950s using longline, pole-and-line, troll and handline fishing gears. Longline vessels fish in areas as far away as 1,000 nm north of the Hawaiian Islands, and vessels using other gears usually operate within the 200-mile Hawaiian Exclusive Economic Zone (EEZ).

Longline gear currently targets swordfish (*Xiphias gladius*), yellowfin tuna and bigeye tuna. The number of vessels that can operate in the fishery is limited to 167. In 1995, the tropical tuna catch was approximately 31% yellowfin tuna, 66% bigeye tuna, and 3% skipjack tuna (Table 3). Longline fishery catches of yellowfin and bigeye tunas in 1995 (2,993 t) increased 28% over catches in 1994.

The pole-and-line fleet targets skipjack tuna. In 1995, approximately 98% of the catch was skipjack tuna and 2% yellowfin tuna (Table 2). The 1995 skipjack and yellowfin tuna catch of 607 t increased 16% over the 1994 catch.

The troll and handline fleet targets yellowfin and skipjack tuna. The 1995, tropical tuna catch of 1,317 t decreased 16% from 1994 catches (Table 2).

Artisanal Fisheries

Artisanal fisheries operate off Guam, American Samoa and the Northern Mariana Islands and catch a variety of tuna and tuna-like species. These fisheries use mainly troll fishing gear and fish inside the U.S. EEZ. In 1995, these fisheries caught an estimated 287 t of yellowfin and skipjack tunas, an increase of 20% from 1994 catches (240 t, Table 4). Fisheries in Guam produced approximately 43% of the 1995 tropical tuna catch, the Northern Mariana Islands, 19% and American Samoa, 38%. Skipjack tuna is approximately 76% of the 1995 catch in all areas.

1996 MONITORING

NMFS is monitoring fishing activities of the fleet in 1996, and is continuing to collect landings and logbook information in the same manner as in past years. Length-frequency and species composition sampling is also continuing in Pago Pago, American Samoa.

A port sampling program in Tinian was established in the latter half of 1994 and 46 length-frequency samples were collected in 1995. In 1996, sampling of U.S. purse seiner landings is again planned for Tinian. Sampling there is important if the fleet continues to fish in the waters around the Federated States of Micronesia and Papua New Guinea and lands its catch in those areas.

Logbook and observer coverage of the Hawaii-based longline fishery will continue in 1996. However, logbook coverage of the other commercial fleets is not available and is not planned in 1996. Size composition sampling of catches from the Hawaii-based longline fishery will continue in 1996 through a market sampling program.

Table 1. U.S. commercial landings (metric tons) of large pelagic and insular species from the central-western Pacific (west of 150° W longitude).

SPECIES	1989	1990	1991	1992	1993	1994	1995
ALBACORE	3,318	4,218	5,919	3,401	3,296	2,553	6,045
YELLOWFIN	44,610	53,668	39,020	45,007	47,623	58,054	33,732
BIGEYE	3,857	3,179	3,170	7,746	5,894	3,661	5,516
SKIPJACK	96,321	109,706	178,368	156,397	149,004	150,243	132,841
SWORDFISH	282	1,905	4,600	5,714	5,955	3,182	2,668
STRIPED MARLIN	633	527	722	497	542	362	596
BLUE MARLIN	731	701	709	666	692	720	887
MAHIMAH	542	698	786	572	571	543	658
WAHOO	244	168	260	240	274	216	361
BOTTOMFISH	647	516	464	491	382	481	448
SPINY LOBSTER	574	356	68	144	-	51	19
SLIPPER LOBSTER	93	75	15	69	-	21	2

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Table 2. Total tropical tuna catch (metric tons) and number of U.S. purse seiners fishing in the central-western Pacific Ocean. Data for 1995 are preliminary.

YEAR	VESSELS	YELLOWFIN	SKIPJACK	BIGEYE	TOTAL
1976	3	200	500	-	700
1977	1	200	700	-	900
1978	2	200	800	-	1,000
1979	8	600	8,000	20	8,620
1980	14	1,100	9,900	-	11,000
1981	14	16,299	21,482	-	37,781
1982	24	22,990	49,705	-	72,695
1983	62	54,668	124,697	-	179,365
1984	61	45,812	113,755	-	159,567
1985	40	24,191	83,763	-	107,954
1986	36	33,168	87,983	-	121,151
1987	35	63,628	77,575	-	141,203
1988	32	20,757	93,483	-	114,240
1989	35	42,739	94,639	2,421	139,799
1990	43	51,657	108,956	1,762	162,375
1991	43	37,284	177,021	1,550	215,855
1992	44	43,564	155,313	3,480	202,357
1993	42	45,862	147,752	3,731	197,345
1994	49	56,115	149,448	1,706	207,269
1995	44	31,552	131,982	3,356	166,890

Table 3. Total tropical tuna catch (metric tons) of U.S. Hawaii-based commercial fleets fishing in the central-western Pacific Ocean. Data for 1995 are preliminary.

YEAR	LONGLINE			POLE-AND-LINE		TROLL		HANDLINE	
	YELLOWFIN	BIGEYE	SKIPJACK	YELLOWFIN	SKIPJACK	YELLOWFIN	SKIPJACK	YELLOWFIN	BIGEYE
1970	251	-	-	18	-	24	-	27	-
1971	191	-	-	22	-	28	-	147	-
1972	143	-	-	25	-	43	-	146	-
1973	88	-	-	14	-	66	-	172	-
1974	126	-	-	23	-	126	-	244	-
1975	84	-	-	25	-	333	-	319	-
1976	111	-	-	43	-	315	-	370	-
1977	176	-	-	21	-	280	-	455	-
1978	172	-	-	62	-	328	-	370	-
1979	233	-	-	49	2,901	365	38	483	12
1980	495	-	-	91	1,796	360	29	681	7
1981	614	-	-	89	1,819	285	42	847	10
1982	397	-	-	106	1,400	188	36	498	4
1983	556	-	-	55	1,135	223	78	573	37
1984	607	-	-	54	1,536	246	110	544	13
1985	466	-	-	103	851	388	94	581	5
1986	479	-	-	114	942	595	109	974	1
1987	264	814	-	78	1,510	829	125	833	3
1988	595	1,245	-	76	1,723	355	161	719	15
1989	982	1,427	-	10	1,332	251	142	607	9
1990	1,014	1,373	-	17	487	500	124	431	44
1991	736	1,555	-	20	992	295	228	641	64
1992	345	1,491	36	16	763	297	157	695	74
1993	632	2,118	23	4	713	271	157	803	42
1994	609	1,719	36	9	514	318	148	943	164
1995	952	2,041	91	15	592	399	148	722	48

Table 4. Total tropical tuna catch (metric tons) of U.S. artisanal fisheries in the central-western Pacific Ocean. Data for 1995 are preliminary.

YEAR	AMERICAN SAMOA		NORTHERN MARIANAS		GUAM	
	YELLOWFIN	SKIPJACK	YELLOWFIN	SKIPJACK	YELLOWFIN	SKIPJACK
1970	-	-	-	-	-	-
1971	-	-	-	-	-	-
1972	-	-	-	-	-	-
1973	-	-	-	-	-	-
1974	-	-	-	-	-	-
1975	-	-	-	-	-	-
1976	-	-	-	-	-	-
1977	-	-	-	-	-	-
1978	-	-	-	-	-	-
1979	-	-	-	-	-	-
1980	-	-	2	-	13	-
1981	-	-	0.4	-	22	80
1982	3	-	3	-	49	72
1983	9	-	4	-	62	62
1984	27	-	8	66	30	38
1985	17	-	7	106	32	113
1986	24	-	4	64	56	62
1987	13	52	6	92	21	33
1988	23	67	4	57	19	27
1989	25	51	6	97	35	84
1990	11	23	4	94	16	59
1991	15	20	4	54	31	60
1992	11	33	5	42	22	62
1993	9	12	9	30	69	63
1994	23	68	5	35	35	61
1995	28	82	5	32	32	95
			7	48	35	87