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PACIFIC, 1991-93**

by

Atilio L. Coan Jr. and Doug Prescott

National Marine Fisheries Service
Southwest Fisheries Science Center
8604 La Jolla Shores Drive
La Jolla, CA 92038

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INTRODUCTION

U.S. fisheries for tunas in the central and western Pacific continued in 1991 to 1993, through operations of its distant-water large purse seine fishery, its Hawaii-based commercial fisheries and other artisanal fisheries. The U.S. distant-water purse seine fishery has operated since 1976, in a large area of the southwestern Pacific. Purse seiners greater than 1000 mt in carrying capacity target both skipjack and yellowfin tunas.

The Hawaii-based commercial fisheries operate mainly in the EEZ of Hawaii. However, Hawaii-based longline fisheries, while not contributing landings in quantities of countries like Korea, Taiwan or Japan, currently use some of the same gear and methods and can fish as much as 1,000 miles offshore. Besides longline gear, Hawaii-based fisheries also use handline, baitboat and troll fishing gears that target various species of tunas, tuna-like fishes and billfish.

Artisanal fisheries operate in the EEZ's of Hawaii, Guam, American Samoa and the Northern Marianas. These fisheries consist of mainly small vessels that target a variety of tuna and tuna-like fishes.

This paper reviews data from U.S. fisheries in the central and western Pacific in 1991-1993. Data are presented for previous years for comparison purposes. Only landings data are reviewed for Hawaii-based commercial fisheries and artisanal fisheries, whereas catch rates and length-frequency data are also reviewed for the distant-water purse seine fishery.

LANDINGS AND VESSEL PARTICIPATION

Total landings of the U.S. distant-water purse seine fishery have increased from a low of 700 mt in 1976 to record highs of over 200,000 mt in 1991 and 1992 (Table 1). The number of U.S. vessels participating in the fishery has increased from a single vessel in 1977, to a record high of 62 in 1983, before decreasing to 44 in 1992. Since June 15, 1988, The number of vessels have been limited to 50 by the South Pacific Regional Tuna Treaty (SPRTT), in Treaty waters.

Skipjack tuna is the major species caught by the U.S. distant-water purse seine fishery, accounting for 57% (1981) to 83% (1991) of the landings. Skipjack tuna landings increased from a low of 500 mt in 1976 to 124,000 mt in 1984, before reaching record highs in 1991 and 1992 of over 160,000 mt. Yellowfin tuna landings have fluctuated from a low of 200 mt in the late 1970's, to highs of over 50,000 mt in 1987, 1990 and 1992.

Yellowfin tuna landings from Hawaii-based, commercial and artisanal fisheries have increased from approximately 100 mt in the mid 1950s to over 2,100 mt in 1986, then decreased to 1,200 mt in 1992. The majority of the landings has been from handline and troll gears until 1989, when longline gear started to contribute an equal share of the landings.

Artisanal yellowfin tuna landings in Guam, American Samoa and the Northern Marianas have fluctuated between 15 mt in 1979 to 90 mt in 1992. The majority of the landings are is from Guam.

CATCH RATES

Yearly nominal catch rates (metric tons of all species caught/days fishing), for the distant-water purse seine fishery, increased from 18 mt/day in 1988 to 30 mt per day in 1991 (Table 3, Figure 1). Catch rates decreased to 27 mt/day in 1992, and for the first two months in 1993, decreased slightly to 26 mt/day.

Skipjack tuna catch rates were highest in 1991, at 24 mt/day and lowest in 1989, at 14 mt/day. Yellowfin tuna catch rates were highest in 1990, at 9 mt/day and lowest in 1988 and 1993, at 3 mt/day. No clear pattern in monthly catch rates for either skipjack or yellowfin tuna were evident. In some years, high catch rates existed in the first half of the year and in others, during the last.

LENGTH-FREQUENCY DATA

Average sizes (fork length) of yellowfin tuna caught by the U.S. distant-water purse seine fishery decreased from 70 cm in 1988, to 64 cm in 1993 (Figure 2). Yellowfin tuna in schools associated with floating objects (log sets) were smaller in fork length (53 to 66 cm) than fish in unassociated free-swimming schools (school sets, 75 to 105 cm).

Sizes of yellowfin tuna caught in 1991 and 1992 were very similar. School fish ranged from approximately 35 cm to 145 cm and log fish sets contained yellowfin tuna ranging between 35 and 135 cm (Figure 3,4). Preliminary sampling of the 1993 yellowfin tuna catch show that the predominate mode of fish at approximately 47 cm in 1992, is again evident in 1993 at 55 to 65 cm (Figure 5), which may indicate a strong incoming age class in 1992, a weak incoming age class in 1993 or an availability change in 1992, due to El Nino.

SUMMARY AND 1993 OUTLOOK

Landings of yellowfin and skipjack tunas from the distant-water purse seine fishery increased approximately 53%, during the period 1989 to 1992, with yellowfin tuna landings leveling off at approximately 46,000 mt. As of March 1993, twenty-nine U.S. purse seiners fished in the southwestern Pacific under the SPRTT and landed 8,500 mt of yellowfin tuna and 35,000 mt of skipjack tuna. Vessel participation levels in 1993, are expected to be as high or slightly higher than in 1992. However, assuming preliminary landings, catch rates and average size of fish are a good indication of landings during the rest of the year, yellowfin tuna landings may be approximately 10 to 20% lower than in 1992. Yellowfin tuna catch rates are approximately 50% lower so far in 1993, than in 1992, and skipjack tuna catch rates are 15% higher. Average sizes of yellowfin tuna caught so far in 1993, are 10% lower than those in 1992.

Yellowfin tuna landings from Hawaii-based commercial and artisanal fisheries have leveled off at approximately 1,700 mt during the period 1989 to 1992. Yellowfin tuna landings in 1993, from these fisheries, are expected to remain at this level.

Artisanal fisheries in Guam in 1992, showed a substantial increase in yellowfin tuna landings over those recorded in 1991, while landings from the Northern Marianas and American Samoa have remained relatively stable. Yellowfin tuna landings in 1993, may be slightly lower as Guam landings are not expected to remain high.

Table 1: Total number of U.S. distant-water purse seiners and landings (metric tons) of tropical tunas from the central and western Pacific.

YEAR	VESSELS	LANDINGS (MT)			
		YELLOWFIN	SKIPJACK	BIGEYE	TOTAL
1976	3	200	500	-	700
1977	1	200	700	-	900
1978	2	200	800	-	1,000
1979	8	559	8,031	16	8,606
1980	14	1,059	9,918	-	10,977
1981	14	12,973	17,394	173	30,540
1982	24	22,011	37,984	1	59,996
1983	62	49,599	104,057	-	153,656
1984	61	45,090	124,322	55	169,467
1985	40	29,012	87,649	-	116,661
1986	36	36,608	93,477	-	130,085
1987	35	66,359	79,822	-	146,181
1988	32	25,211	99,454	-	124,665
1989	35	41,640	91,102	-	132,742
1990	40	57,132	107,358	-	164,490
1991	41	34,987	171,356	-	206,343
1992	44	50,258	161,649	-	211,907
1993	29	8,552	35,016	-	43,568

Remarks:

- Landings in each calendar year may contain some catches from the previous year.
- Figures for 1992 and 1993 are preliminary. 1993 figures are for data collected through the first quarter.

Table 2. Yellowfin tuna landings (metric tons) from U.S. commercial and artisanal fisheries in the central and western Pacific.

YEAR	HAWAII				AMERICAN SAMOA	NORTHERN MARIANAS	GUAM
	TOTAL	LL	BB	HL			
1954	240	-	-	-	-	-	-
1955	200	-	-	-	-	-	-
1956	140	-	-	-	-	-	-
1957	170	-	-	-	-	-	-
1958	180	-	-	-	-	-	-
1959	256	175	60	14	-	-	-
1960	161	137	5	14	-	-	-
1961	209	152	26	28	-	-	-
1962	180	110	48	20	-	-	-
1963	175	118	29	18	-	-	-
1964	226	133	58	27	-	-	-
1965	226	153	44	23	-	-	-
1966	228	159	22	35	-	-	-
1967	228	141	36	38	-	-	-
1968	188	99	46	35	-	-	-
1969	191	106	38	31	-	-	-
1970	320	251	18	24	-	-	-
1971	389	191	22	28	-	-	-
1972	357	143	25	43	-	-	-
1973	340	88	14	66	-	-	-
1974	519	126	23	126	-	-	-
1975	762	84	25	333	-	-	-
1976	840	111	43	315	-	-	-
1977	932	176	21	280	-	-	-
1978	932	172	62	328	-	-	-
1979	1,130	233	49	365	-	-	-
1980	1,626	495	91	360	-	-	13
1981	1,836	614	89	285	-	0.4	22
1982	1,189	397	106	188	-	3	49
1983	1,407	556	55	223	3	4	62
1984	1,451	607	54	246	9	8	30
1985	1,537	466	103	388	27	7	32
1986	2,161	479	114	595	17	4	56
1987	2,012	272	78	829	24	6	21
1988	1,739	590	76	355	13	4	19
1989	1,865	998	10	251	23	6	35
1990	1,947	998	17	500	25	4	16
1991	1,672	726	20	292	11	4	31
1992	1,215	410	19	278	15	5	22
					11	9	69

Remarks:

- Landings for American Samoa, Northern Marianas and Guam are mainly troll fishing gear.
- LL = longline, BB = baitboat, HL = handline.
- 1992 landings are preliminary.

Table 3. Catch (metric tons), effort (days fished), catch per effort (CPE, metric tons per days fished), for U.S. distant water purse seiners fishing in the central and western Pacific. Data are from logbooks collected under the South Pacific Regional Tuna Treaty.

YEAR	MONTH	DAYS FISHED	YELLOWFIN		SKIPJACK		OTHER CATCH (MT)	TOTAL	
			CATCH (MT)	CPE MT/DAY	CATCH (MT)	CPE MT/DAY		CATCH (MT)	CPE MT/DAY
1988	1	0	0	0.00	0	0.00	0	0	0.00
1988	2	0	0	0.00	0	0.00	0	0	0.00
1988	3	5	0	0.00	0	0.00	0	0	0.00
1988	4	47	65	1.39	497	10.58	0	562	11.97
1988	5	77	601	7.81	1,130	14.68	0	1,732	22.49
1988	6	429	824	1.92	8,498	19.82	2	9,324	21.75
1988	7	574	2,624	4.57	9,573	16.68	17	12,213	21.29
1988	8	535	1,041	1.95	7,180	13.43	5	8,226	15.38
1988	9	634	2,327	3.67	8,141	12.85	0	10,468	16.52
1988	10	534	931	1.74	8,158	15.29	1	9,089	17.03
1988	11	489	1,343	2.75	6,999	14.32	0	8,342	17.07
1988	12	469	1,436	3.06	7,312	15.60	1	8,749	18.66
TOTAL		3,791	11,192	2.95	57,489	15.17	25	68,706	18.12
1989	1	411	3,246	7.91	9,240	22.51	0	12,486	30.41
1989	2	432	939	2.17	11,486	26.56	28	12,453	28.80
1989	3	382	1,765	4.63	11,765	30.82	0	13,530	35.45
1989	4	492	1,272	2.59	9,774	19.88	0	11,046	22.47
1989	5	679	2,798	4.12	7,927	11.68	60	10,784	15.89
1989	6	646	5,502	8.52	9,660	14.96	80	15,242	23.60
1989	7	454	3,709	8.17	4,223	9.31	0	7,932	17.48
1989	8	734	4,288	5.84	3,973	5.41	0	8,261	11.26
1989	9	665	12,231	18.39	5,392	8.11	7	17,631	26.50
1989	10	516	4,925	9.55	6,241	12.10	0	11,166	21.65
1989	11	606	4,882	8.06	6,163	10.18	54	11,100	18.33
1989	12	579	1,527	2.64	8,803	15.21	45	10,375	17.93
TOTAL		6,593	47,086	7.14	94,646	14.35	275	142,007	21.54
1990	1	448	1,282	2.86	8,044	17.97	0	9,326	20.83
1990	2	560	3,834	6.85	7,414	13.25	98	11,346	20.27
1990	3	563	4,521	8.03	7,183	12.76	55	11,759	20.90
1990	4	487	5,112	10.50	10,552	21.67	77	15,741	32.33
1990	5	424	7,679	18.13	10,469	24.71	87	18,236	43.05
1990	6	389	6,320	16.27	5,358	13.79	5	11,683	30.07
1990	7	497	2,838	5.71	10,439	21.01	14	13,290	26.75
1990	8	613	10,650	17.39	10,251	16.74	14	20,916	34.15
1990	9	561	7,656	13.66	7,351	13.11	7	15,014	26.78
1990	10	633	4,409	6.96	13,259	20.94	0	17,668	27.90
1990	11	683	2,344	3.43	7,467	10.93	0	9,811	14.36
1990	12	751	1,331	1.77	10,664	14.19	52	12,047	16.03
TOTAL		6,607	57,977	8.77	108,451	16.41	409	166,836	25.25
1991	1	712	3,857	5.41	12,189	17.11	5	16,051	22.53
1991	2	412	4,151	10.08	6,618	16.07	10	10,780	26.17
1991	3	692	8,107	11.71	10,890	15.73	1	18,998	27.44
1991	4	507	7,326	14.46	10,012	19.77	18	17,356	34.27
1991	5	672	4,890	7.27	17,341	25.79	23	22,254	33.10
1991	6	589	2,044	3.47	15,938	27.06	0	17,983	30.53
1991	7	572	1,364	2.39	21,421	37.47	40	22,825	39.92
1991	8	465	355	0.76	22,067	47.46	1	22,424	48.23
1991	9	626	309	0.49	20,452	32.67	0	20,761	33.17
1991	10	739	1,124	1.52	19,056	25.78	50	20,230	27.37
1991	11	668	1,804	2.70	11,173	16.72	23	13,001	19.46
1991	12	657	5,601	8.52	10,029	15.26	213	15,844	24.10
TOTAL		7,312	40,933	5.60	177,929	24.33	386	219,248	29.99

Table 3. Continued.

YEAR	MONTH	DAYS FISHED	YELLOWFIN		SKIPJACK		OTHER CATCH (MT)	TOTAL	
			CATCH (MT)	CPE MT/DAY	CATCH (MT)	CPE MT/DAY		CATCH (MT)	CPE MT/DAY
1992	1	498	3,585	7.20	5,552	11.15	148	9,285	18.65
1992	2	658	8,498	12.92	4,370	6.64	156	13,024	19.80
1992	3	679	4,798	7.07	12,448	18.34	80	17,326	25.53
1992	4	666	9,426	14.16	13,698	20.58	119	23,243	34.92
1992	5	611	2,779	4.55	24,256	39.70	43	27,078	44.31
1992	6	355	413	1.16	9,326	26.31	0	9,738	27.47
1992	7	338	845	2.50	8,786	26.03	0	9,631	28.54
1992	8	524	4,143	7.91	7,031	13.42	83	11,257	21.49
1992	9	555	2,265	4.08	13,778	24.83	107	16,150	29.11
1992	10	391	1,317	3.37	6,266	16.03	3	7,585	19.41
1992	11	479	1,390	2.90	9,716	20.30	47	11,153	23.30
1992	12	290	821	2.83	7,293	25.16	0	8,114	28.00
TOTAL		6,041	40,279	6.67	122,520	20.28	786	163,585	27.08

- 1992 data are preliminary.

U.S. DISTANT-WATER PURSE SEINE FISHERY

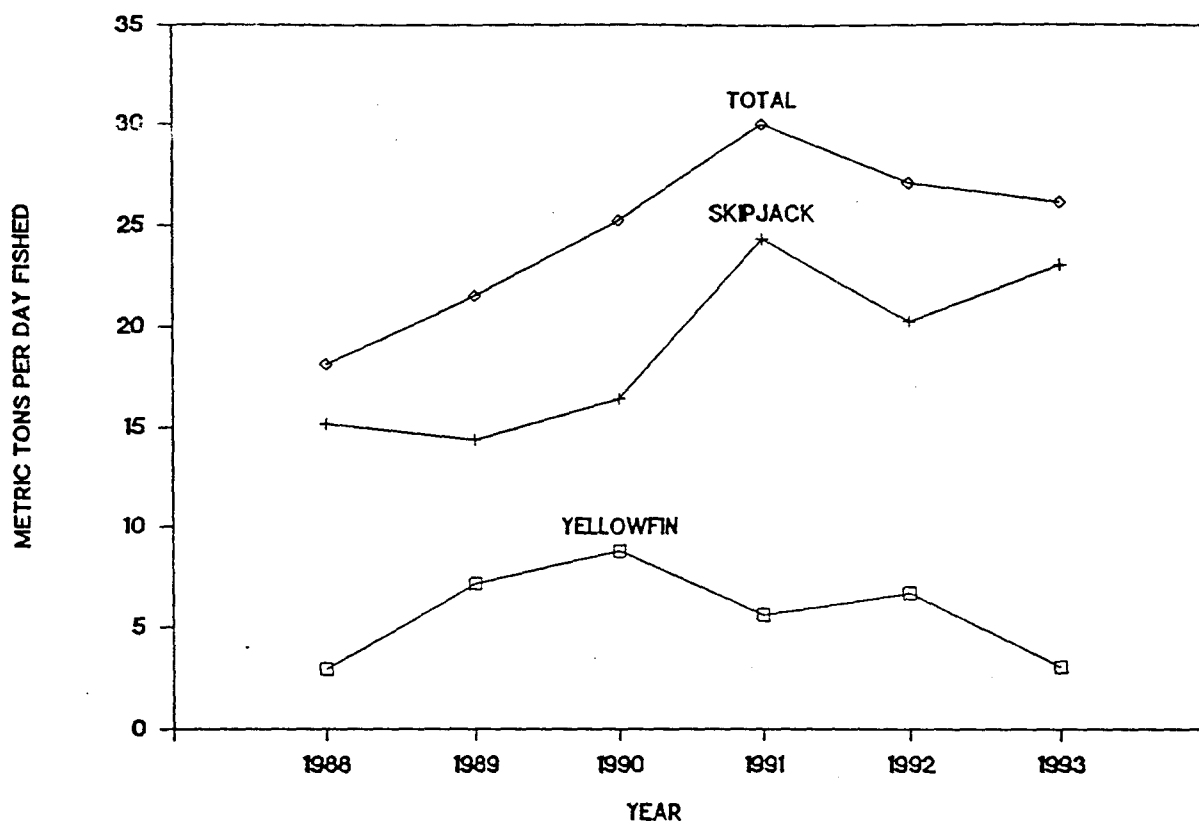


Figure 1. Catch rates (metric tons/day fished) for yellowfin and skipjack tunas caught by the U.S. distant-water purse seine fishery in the central and western Pacific. The total catch rate contains some quantities of bigeye tuna. 1993 values are for the first 2 months only.

U.S. DISTANT-WATER PURSE SEINE FISHERY

CENTRAL AND WESTERN PACIFIC

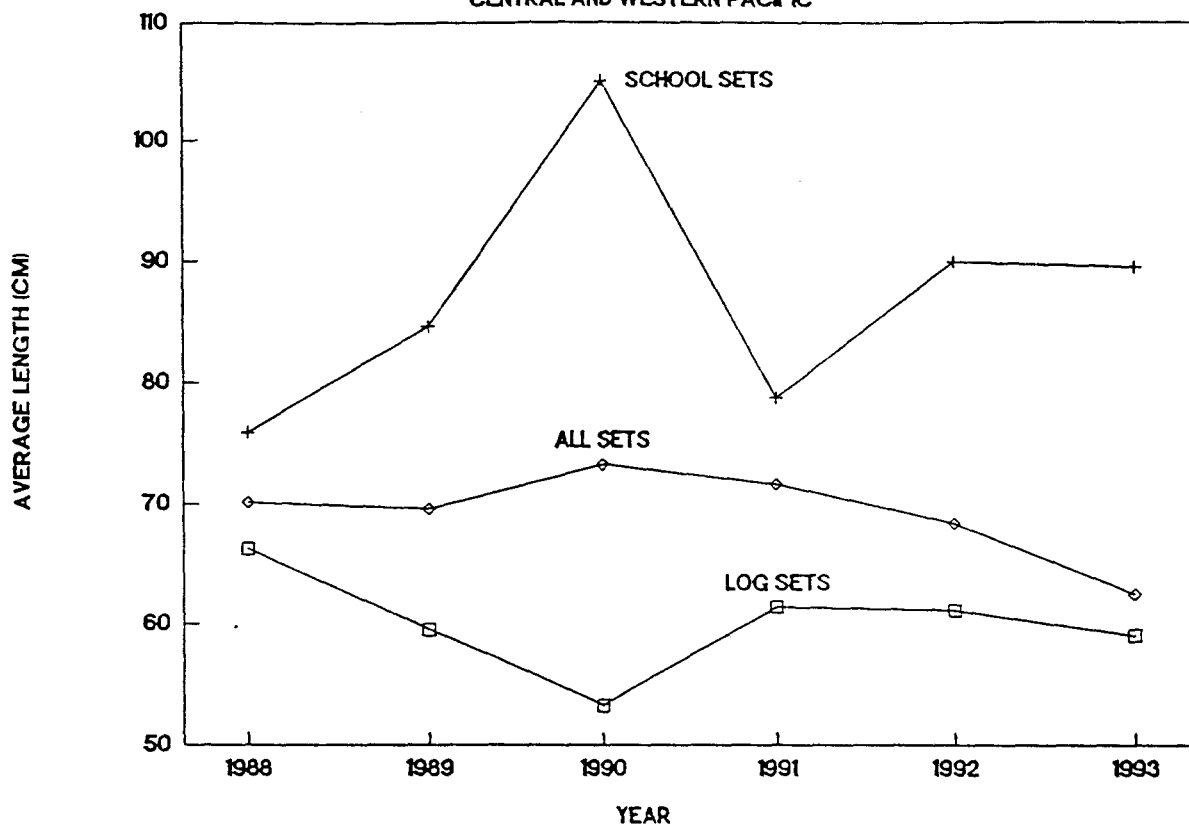


Figure 2. Average sizes (fork length in cm) of yellowfin tuna caught by the U.S. distant-water purse seine fishery in the central and western Pacific. Log sets are sets associated with floating objects, school sets are free-swimming, unassociated schools and all sets combine log, school and those sets that are a combination of both or unidentifiable.

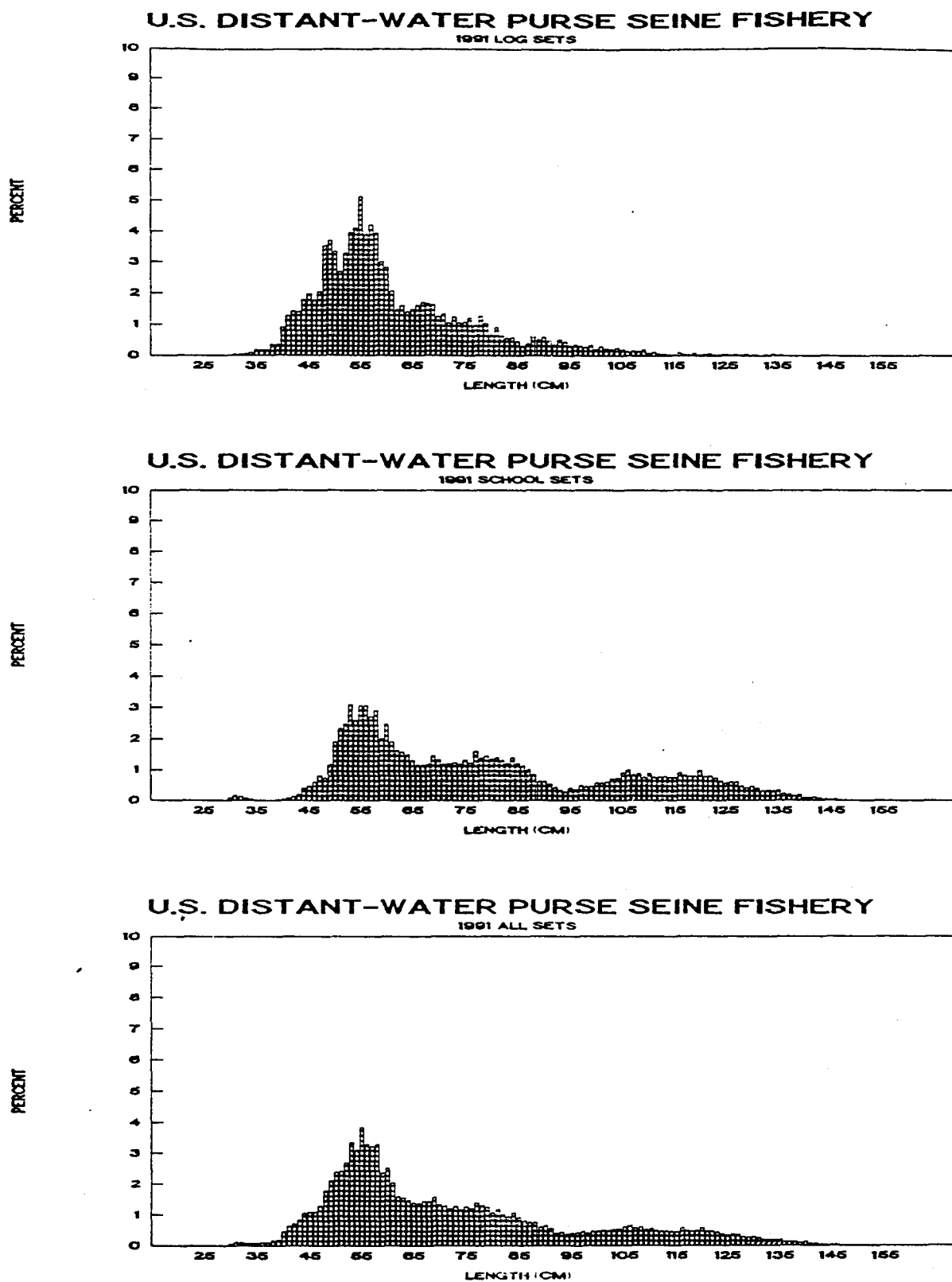


Figure 3. Length distributions (fork length in cm) of yellowfin tuna caught by U.S. distant-water purse seiners fishing in the central and western Pacific in 1991. Log sets are sets associated with floating objects, school sets are free-swimming, unassociated schools and all sets combine log, school and those sets that are a combination of both or unidentifiable.

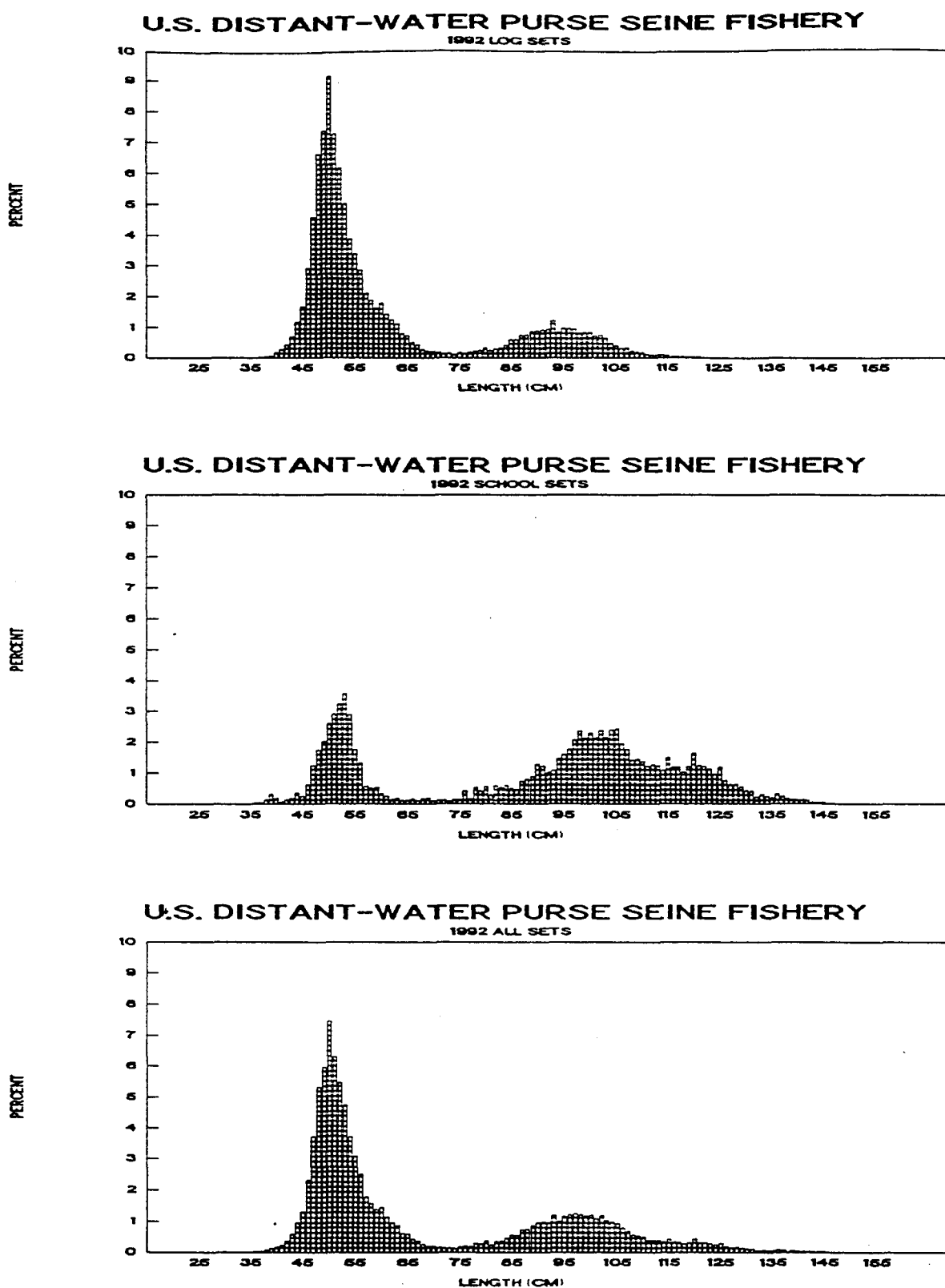


Figure 4. Length distributions (fork length in cm) of yellowfin tuna caught by U.S. distant-water purse seiners fishing in the central and western Pacific in 1992. Log sets are sets associated with floating objects, school sets are free-swimming, unassociated schools and all sets combine log, school and those sets that are a combination of both or unidentifiable.

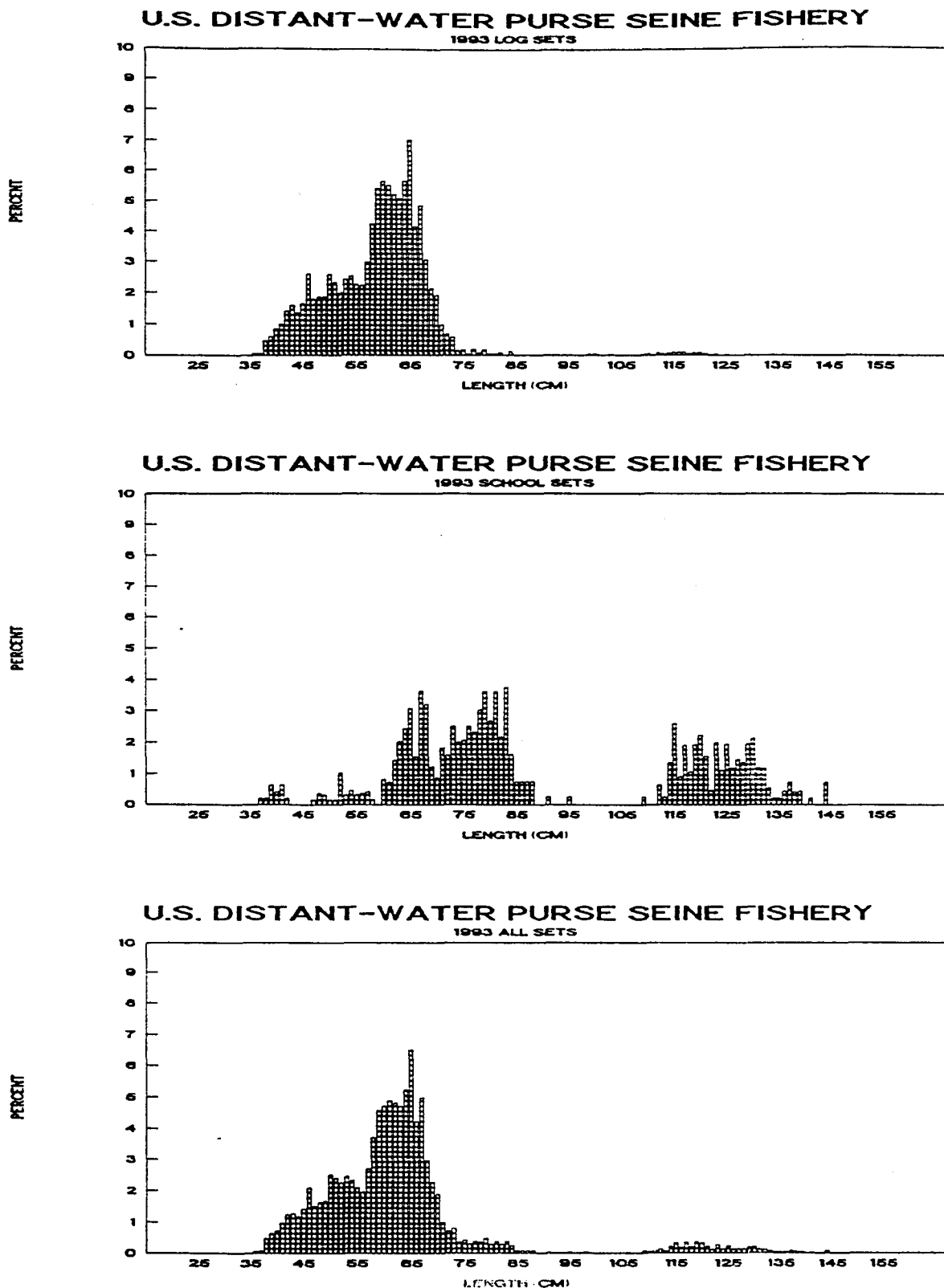


Figure 5. Length distributions (fork length in cm) of yellowfin tuna caught by U.S. distant-water purse seiners fishing in the central and western Pacific in 1993. Log sets are sets associated with floating objects, school sets are free-swimming, unassociated schools and all sets combine log, school and those sets that are a combination of both or unidentifiable.