

APPENDIX 5

SIZES OF SKIPJACK

1. Hawaii

In a typical year, such as in 1968 when 9,334,000 pounds of skipjack were landed by the Hawaiian fleet, medium fish of 8-15 pounds usually predominate in the catch in the first quarter of the year. Table 1 shows the percentage composition of the landings, by weight, for each quarter in 1968.

In the second quarter, with the heavy influx of "season" fish, large fish contributed half or 50% to the total landings. In the third quarter, the percentage contributed by large fish rose substantially to nearly three-fourths of 72% of the total landings. The departure of large fish from the fishery becomes evident in the fourth quarter as the catch is predominated by medium fish, which contributed slightly more than half of the total landings.

2. Marquesas and Tuamotu Islands

Length frequency data of skipjack caught during research cruises in 1957-59 in Marquesas waters show that the fish ranged from 39 cm or 2.5 pounds to 83 cm or 31.7 pounds (Figure 1; Rothschild and Uchida, 1968). Most, however, measured from 45 to 55 cm or 4 to 8 pounds, which would be equivalent to the "small" fish found in the Hawaiian fishery. Wilson and Austin (1957) stated that during the summer, 90% of the catch was 9 pounds or less and averaged 6 pounds. The remainder were large fish which averaged 16 pounds. In the winter, Wilson found the fish to be predominantly about 5 pounds. Yellowfin tuna from mixed skipjack-yellowfin schools were also small, averaging 5-6 pounds, but those from pure schools were large and ranged from 50 to 100 pounds. Table 2 shows the catch per school and average size of skipjack and yellowfin caught in the Marquesas in 1956-59 (Rothschild and Uchida, 1968).

3. Caroline-Marianas Islands

In 1965-67, the fishery in Palau captured a wide range of skipjack tuna--from 31.6 cm (1.5 pounds) to 78.3 cm (25.5 pounds)--but the average size taken each month fluctuated usually between 50 and 60 cm (5.5 to 10.5 pounds). Table 3 and Figure 2 show the minimum, maximum, and average lengths of skipjack sampled in 1965-67 in Palau. Larger fish usually appear in the Palau catch between October and January. In spring and summer, the fish tend to be somewhat smaller (Uchida, 1968).

Table 1. Percentage composition, by fish size, of Hawaiian skipjack quarterly catches, 1968

	Large (>15 lb)	Medium (8-15 lb)	Small (4-8 lb)	Extra small (<4 lb)
January-March	11	53	29	7
April-June	59	34	12	4
July-September	72	15	11	2
October-December	30	51	18	1

Table 2—Number of tuna schools chummed, the number and percentage successfully fished, and the average number, average weight, and average catch per school for pure and mixed schools of skipjack and yellowfin tuna, Marquesas Islands, 1956-59

Year	Number of schools chummed	Schools successfully fished		Skipjack tuna			Yellowfin tuna		
		(number)	(percent)	Average number per school	Average catch per school (metric tons)	Average weight (kilograms)	Average number per school	Average catch per school (metric tons)	Average weight (kilograms)
1956	10	2	20	344	1.4	4.1	1	—	—
1957	155	53	34	142	0.4	3.2	20	0.2	6.6
1958	127	42	33	91	0.3	4.2	5	<0.1	6.2
1959	153	52	34	76	0.3	3.9	32	0.5	13.3

Table 3. Minimum, maximum, average lengths, and the total number of skipjack tuna sampled in the Palau fishery, by months, May 1965-December 1967

Year	Month	Minimum length	Maximum length	Average length	Total number measured
		<u>Cm.</u>	<u>Cm.</u>	<u>Cm.</u>	<u>No.</u>
1965	May	40.7	64.5	50.2	793
	June	31.6	65.4	51.3	3,681
	July	44.6	66.4	53.1	485
	August	31.6	65.6	52.3	1,843
	September	38.8	69.5	52.1	382
	October	45.9	73.4	59.1	786
	November	56.4	74.5	62.1	398
	December	-	-	-	-
1966	January	44.5	65.7	56.4	535
	February	41.1	70.3	54.2	1,054
	March	42.9	70.0	56.2	821
	April	45.3	68.9	53.2	755
	May	42.8	74.0	55.1	1,011
	June	45.0	74.7	56.8	839
	July	38.8	73.5	57.2	2,050
	August	44.2	76.8	57.4	3,337
	September	46.5	68.2	58.1	1,819
	October	47.4	76.3	58.1	2,011
	November	49.7	69.4	60.5	708
	December	49.8	69.9	60.4	346
1967	January	50.0	69.4	61.1	546
	February	38.0	78.3	56.6	334
	March	41.4	68.3	52.9	542
	April	39.8	69.9	53.9	500
	May	40.3	68.2	48.1	1,413
	June	42.0	65.5	51.5	1,256
	July	38.9	69.3	53.6	1,127
	August	44.3	70.0	56.4	1,737
	September	44.4	69.0	56.5	648
	October	43.8	69.1	54.3	777
	November	47.8	72.6	60.9	450
	December	45.8	71.1	58.5	1,278

From Uchida (1968).

Data from the atlas of skipjack tuna fishing grounds in southern waters, published by the Tohoku Regional Fisheries Research Laboratory (translated by T. Otsu, 1971) shows that usually two and, at times three size groups can be detected in the monthly catches (Figure 3). Generally, however, small fish between 40 and 50 cm predominate in the catches from May through October or November, after which fish from 50 to 60 cm predominate. This situation is somewhat similar to that found in Palau. There is also a group of large skipjack, between 60 and 70 cm, that sometimes predominate in the fishery during the winter months.

4. Marshall Islands

Fishing trials conducted by the crew of the M/V Anela off Arno and Majuro in the Marshall Islands showed that in February 1972, skipjack landed by pole-and-line and live bait ranged from 4 to 17 pounds and averaged 13.1 pounds (Uchida and Sumida, 1973; also NMFS Narrative Report, M/V Anela Charter cruise, 1972). It was estimated that only 4% of the catch at this time of the year was under 10 pounds. Yellowfin were also taken by the crew; they ranged from 14 to 26 pounds and averaged 20.3 pounds.

Data from fishing conducted in April 1972 show that fishing was rather poor at this time of year. From the few schools that were fished, the Anela found that skipjack averaged between 14 and 15 pounds and yellowfin 32 pounds.

5. Line Islands

Data on size of skipjack caught in the Line Islands area are scarce; therefore, the results of several cruises by the John R. Manning were summarized and the results are presented in Table 4. The cruises were made in April-June 1950.

6. Samoa Islands

Pole-and-line fishing trials conducted aboard the M/V Charles H. Gilbert in February-March 1970 showed that the skipjack at this time of the year ranged from 4 to 17 pounds (Hida, 1970). Yellowfin were also taken on the cruise and their sizes ranged from 2.5 to 60 pounds. Table 5 shows the average size of skipjack and yellowfin caught from the schools fished in Samoa by the Gilbert. The results of the Anela charter cruise likewise showed the abundance of small fish during fishing trials conducted in March 1972 (Uchida and Sumida, 1973). It was estimated that 56% of the fish samples were less than 10 pounds. The fish ranged from 6 to 22 pounds and averaged 11.0 pounds.

Table 4. Summary of catch data, collected on cruises 2-6 of the John R. Manning, in April-June 1950 in the Line Islands area

Month	Number of skipjack	Total weight of skipjack (pounds)	Average weight (pounds)	Number of yellowfin	Total weight of yellowfin (pounds)	Average weight (pounds)
April	14	93.5	6.7	333	9,634	28.9
May	1	23.0	23.0	406	15,662	38.6
June	-	-	-	55	2,009	36.5
Totals	15	116.5	7.8	794	27,305	34.4

Table 5. Information on Large Tuna Schools Seen in the Vicinity of the Samoa Islands During Cruise 117 of the 'Charles H. Gilbert'

Position		Date	Species	Fish Size Pounds	Type of School ^{1/}
Lat. (S.)	Long. (W.)	1970	Common Names of Tuna		
14°30'	169°21'	2/16	Yellowfin	20-50	Boiler
13°25'	172°45'	2/26	Yellowfin	30-40	Boiler
14°09'	172°11'	3/1	Yellowfin-Skipjack	7-16	Boiler
14°12'	169°35'	3/19	Yellowfin-Skipjack	5	Breezer
13°30'	168°41'	3/19	Skipjack	11	Breezer
			Yellowfin	60	
14°39'	168°25'	3/20	Skipjack	10	Boiler
14°37'	168°25'	3/20	Skipjack	10	Boiler
14°45'	168°51'	3/20	Skipjack	6	Boiler
14°26'	170°42'	3/23	Skipjack	8	Breezer
14°27'	170°46'	3/23	Skipjack	7-8	Breezer
13°54'	171°21'	3/26	Skipjack	5	Breezer
14°12'	172°04'	3/31	Skipjack	6	Jumper
			Yellowfin	9	

^{1/} See Scott, 1969 for school terminology.

7. Fiji Islands

Data on skipjack sizes from Fijian waters also come from the reports of Uchida and Sumida (1972, 1973). They reported that fish caught in Fiji in March 1972 were considerably smaller than those caught in the Marshalls and Samoa Islands. The range was from 3.1 to 8.0 pounds and the average was 6.8 pounds. According to Mr. Robert E. K. D. Lee, Chief of the UNDP/Local Tuna Fishery Project, FAO, stated that large skipjack, comparable to the "season" fish of the Hawaiian fishery, do occur occasionally in Fijian waters. Their seasonal occurrence, however, has never been accurately documented.

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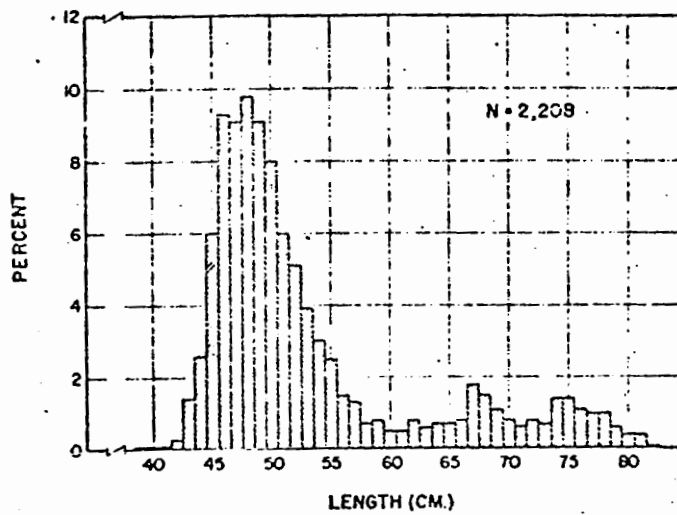


Figure 1.—Length-frequency distribution of skipjack tuna caught by pole-and line, live-bait fishing in the Marquesas Islands, 1957-59.

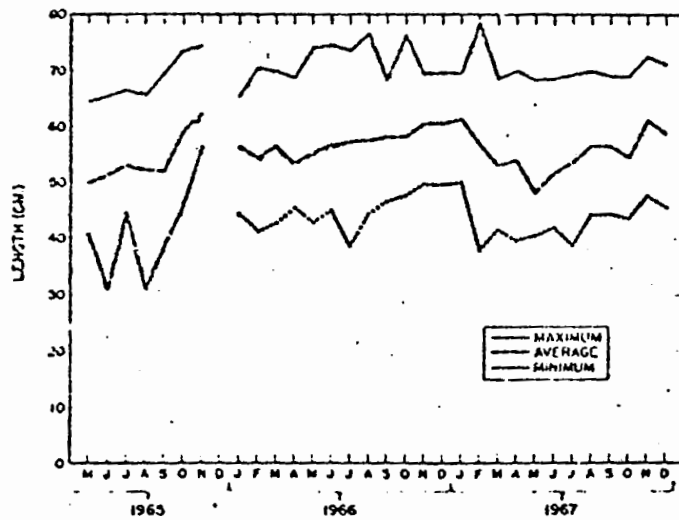


Figure 2. Minimum, maximum, and average lengths of skipjack tuna in the Palau fishery, by months, May 1965-December 1967. From Uchida (1968).

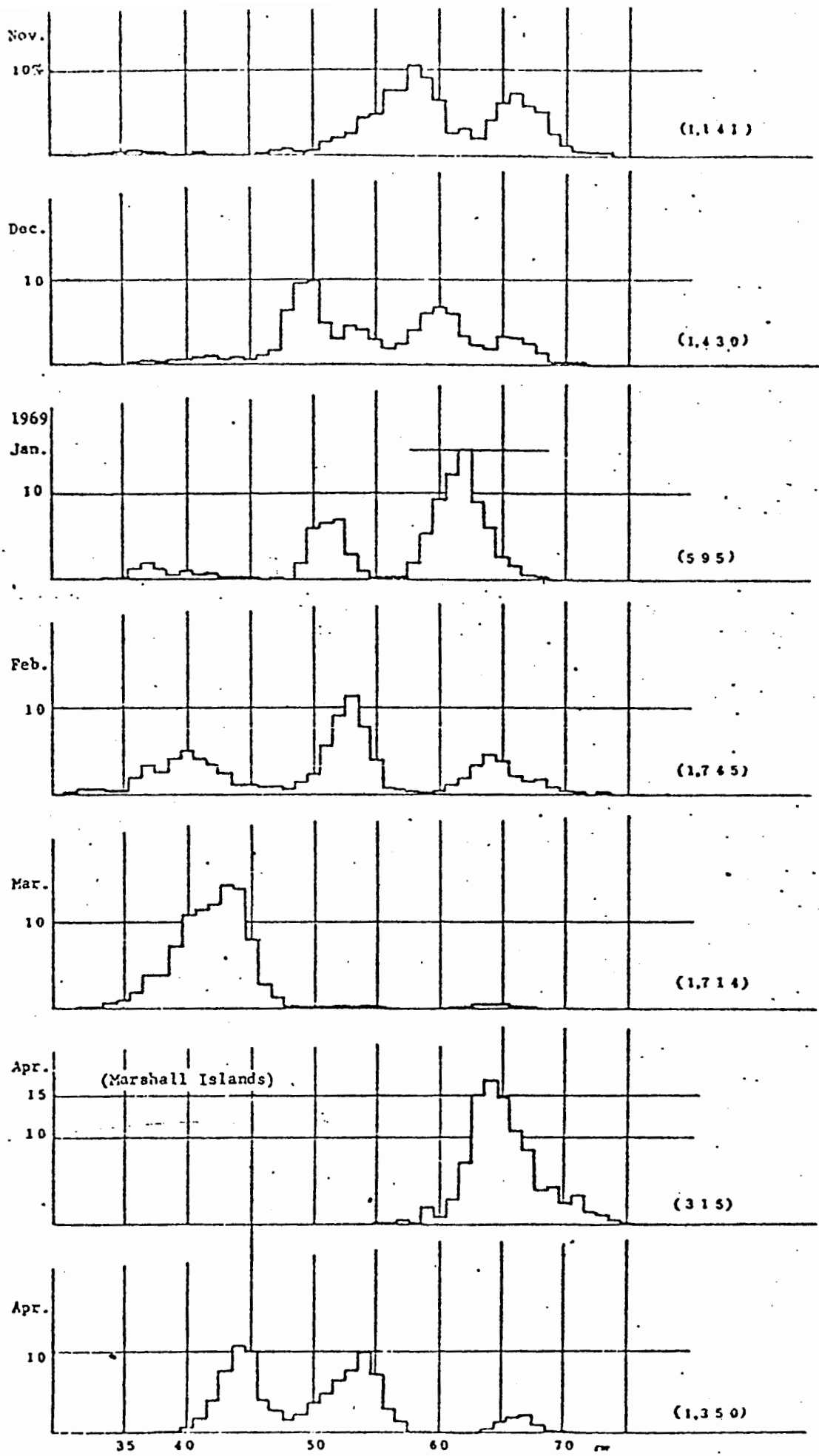


Figure 3. Monthly length frequencies of skipjack caught in the Caroline-

