

Report from the Bluefin Tuna Working Group

Observations on the Size Composition of Bluefin Tuna

Catches from 1969

by

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I. Introduction

Reference is made to the previous reports of the Bluefin Tuna Working Group (Statistical News Letters, Nos. 20, 26 and 38, as well as to C.M.1968, Doc. J:3 and C.M.1969, Doc. J:2). The members of the Working Group have continued their work by correspondence and with other tuna research workers in the region. In the following the data obtained for the fishing season 1969 are presented.

II. Material

On the occasion of the First Session of the International Commission for the Conservation of Atlantic Tunas FAO has published as contribution No.19 of the Bulletin of Fishery Statistics a volume on the catch statistics of Atlantic tuna fisheries, which includes a table on the catches of bluefin tuna in the Atlantic Ocean and adjacent seas by major fishing areas and by countries and this is given as Table 1 of this report (p.5).

Reports on the catches and catch composition of bluefin tuna were submitted by the following countries: Denmark (Table 2), France (Tables 3-4), Italy (Tables 5-6), Norway (Tables 7-9), Portugal (Table 10), Spain (Tables 11-12) and USA (Table 13).

Dr. O. Bagge reports that 14 of the 17 tuna landed in Skagen were caught by Danish fishermen, the rest by Swedish fishermen. All fish were caught by mid-water herring trawl.

Mr. Duclerc from the Laboratoire de Sète, ISTPM, reports that a total of 1 500 tons bluefin tuna were caught from July 1969 to January 1970 by the French purse-seine fishery in the Mediterranean. Most of the catches were made during October and November.

The Italian data were kindly submitted by Dr. F. Li Greci (Table 5) and Dr. R. Sara (Table 6). The data in Table 5 are from tuna caught during May to June 1969 in madragues stationed at Pinta Raisi and at San Cusumano (Bonagia), and those in Table 6 refer to tuna catches made in madragues at Scopello, Favignana and Formica.

The Norwegian tuna catches were in 1969 about the same as in 1968, when they amounted to about 700 tons (live weight). Since no length/weight measurements were taken in 1969, the 1968 condition factor of  $K = 2.16$  was used to transform the collected weight data into length data. According to Dr. Rodriguez-Roda the Spanish madrague catches were in 1969 1 634 tons which is slightly better than in 1968 (1 138 tons).

Mr. Frank Mather III points out that the catch for 1968 was 670 short tons of small bluefin tuna taken between Maryland and the south side of Cape Cod and 150 short tons of giant tuna made north of Cape Cod (Cape Cod Bay). In 1969 purse-seine catches of relatively small bluefin tuna increased again to 1 728 short tons. There was no fishing of giant tuna in Cape Cod Bay this year, because the two small seiners which were usually based there had been sold to fishermen in other areas. He also reports that another bluefin tuna tag from the Bay of Biscay was received. This fish was released off New Jersey on 7 July, 1967, and recaptured by a French fisherman on 3 July, 1969. One fish released the day before in the same locality was recaptured in the Bay of Biscay in October 1968. These are the only transatlantic migrations recorded for small bluefin tuna released since 1966. Although the number of releases has declined since then, it appears that there was a definite high point of transatlantic migrations in the years 1965-66.

### III. Bluefin Tuna Catches

As indicated in Table 1, the total Atlantic bluefin tuna catch has steadily declined since 1962. In 1968 it was 25 500 tons or half the catch of 1962. While catches in the north-west Atlantic remained more or less unchanged, the most marked decline occurred in the north-east Atlantic, where catches went down from 23 900 tons in 1962 to 4 400 tons in 1968. The main reduction in catch is observed in the Norwegian, Spanish and Portuguese fisheries.

The bluefin tuna catches in the Mediterranean and the Black Sea have remained at the same level as in previous years. This is another indication that the Mediterranean has a more or less independent bluefin tuna population.

### IV. Comparison of the Catch-Composition Data collected in the different Countries

#### 1. Spanish with Norwegian Catches

The size composition of the Norwegian tuna catches has remained more or less unchanged over the last five years. In the report of the Working Group for 1968 it was assumed that the majority of these fish belonged to the rich year-class 1952. The fact that the size has not markedly increased over the last years was explained with the assumption that the ultimate length of the fish had been reached. It is, however, reasonable to believe that a certain recruitment of younger fish to the Norwegian tuna stock has also taken place during the last years. A similar phenomenon has been reported by Tiews (1964) for the last years of the German tuna fishery in the North Sea which terminated in 1962.

In the Spanish catches, fish of a length corresponding to the year-class 1958 dominated again. A second mode of the length composition curve can presumably be attributed to fish of the year-class 1961 which was detected in the 1967 catches as a distinct mode. Some small tuna (below 90 cm) were also caught in the Spanish madragues, this year probably belonging to the year-classes 1968 and 1967.

#### 2. Italian, Spanish and Norwegian Catches

In former years the length composition of Italian catches did not tally with those of the Atlantic catches. In 1969, however, the two largest modes of the Italian curve tally widely with those of the Spanish curves, but the data are too scarce to be conclusive. A larger sampling of the Italian catches will be needed.

### 3. US and French Tuna Catches

In the US purse-seine catches fish of age-group I were absent, as in the two previous years. Catches were composed of year-classes 1967 and 1966, as well as 1965. Mr. Mather states that the average size of fish of age-group II was definitely larger in recent years than earlier.

The size composition of the French catches from the Mediterranean do not seem to tally with any of the others. The smallest fish may belong to the year-class 1967 or 1966.

### V. Summary

1. There is an alarmingly high rate of decline of Atlantic bluefin tuna catches from 1962-68. The decline was largest in the north-east Atlantic, where catches went down from 23 900 tons in 1962 to 4 400 tons in 1968. Only the Mediterranean catches remained more or less unchanged, indicating that the Mediterranean bluefin tuna population constitutes a more or less independent stock.

2. The size composition of bluefin tuna catches collected in 1969 show that the fisheries of the various countries under observation have taken place on different size groups of fish.

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Table 1. Bluefin tuna catches in the Atlantic Ocean and adjacent seas, by major fishing areas and by countries.

Nominal catch (live weight), thousand metric tons.

Fishing Area, Country	1962	1963	1964	1965	1966	1967	1968	1969
<b>GRAND TOTAL</b>	50.6	44.8	42.6	36.7	26.8	29.8	25.5	
<u>North-west Atlantic</u>	<u>3.4</u>	<u>4.7</u>	<u>2.7</u>	<u>2.2</u>	<u>1.4</u>	<u>2.3</u>	<u>4.0</u>	
Canada	0.2	0.7	1.5	0.7	0.2	0.3	3.4	
Japan	-	0.0	0.1	0.3	0.1	0.0	...	
Norway	-	-	0.1	0.0	-	...	...	
United States	3.2	4.0	1.0	1.2	1.1	2.0	0.6	
<u>North-east Atlantic</u>	<u>23.9</u>	<u>11.5</u>	<u>8.2</u>	<u>9.9</u>	<u>7.9</u>	<u>5.7</u>	<u>4.4</u>	
Denmark	0.2	0.0	0.1	0.0	0.0	0.0	0.0	
France	1.5	1.0	0.8	1.2	2.2	1.2	0.7	
Germany, Fed.Rep.	0.2	0.0	0.0	0.0	0.0	-	0.0	
Japan	-	-	0.0	0.0	0.0	0.0	...	
Norway	8.2	0.2	1.4	2.5	1.0	1.9	0.7	
Portugal	5.8	6.7	1.0	a)...	0.4	0.2	...	
Spain	8.0	3.6	4.9	6.2	4.3	2.4	2.8	
Sweden	0.0	0.0	0.0	...	...	0.0	...	
<u>Mediterranean and Black Sea</u>	A) <u>3.4</u>	A) <u>4.4</u>	<u>5.0</u>	<u>4.1</u>	<u>4.4</u>	<u>8.4</u>	<u>6.4</u>	
Algeria	...	0.0	0.0	0.0	0.1	0.2	0.1	
France	0.2	0.4	1.2	0.5	1.2	1.2	1.2	
Greece	...	...	0.6	0.7	0.5	0.6	...	
Italy	2.1	2.4	2.5	2.1	1.7	4.0	3.3	
Malta	0.0	0.1	0.1	0.1	0.1	0.1	0.1	
Morocco	0.0	0.0	0.0	-	-	-	-	
Spain	0.3	0.6	0.3	0.5	0.5	0.5	0.6	
Turkey	0.2	0.1	0.0	0.1	0.1	1.5	0.3	
Yugoslavia	0.1	0.3	0.3	0.1	0.2	0.3	0.2	
<u>Western Central Atlantic</u>	<u>0.0</u>	<u>0.9</u>	<u>4.5</u>	<u>6.7</u>	<u>2.9</u>	<u>2.8</u>	A) <u>1.6</u>	
China (Taiwan)	-	-	-	-	-	0.0	0.0	
Cuba b)	-	...	...	0.1	0.5	2.4	1.2	
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	...	
Japan c)	0.0	0.4	2.6	5.7	2.4	0.4	...	
United States	-	0.5	1.9	0.9	0.0	-	-	
Venezuela d)	...	...	...	...	...	...	...	
<u>Eastern Central Atlantic</u>	<u>13.3</u>	<u>14.3</u>	<u>10.8</u>	A) <u>9.2</u>	<u>8.3</u>	<u>9.4</u>	A) <u>7.5</u>	
Angola	...	...	...	0.0	...	...	...	
China (Taiwan)	-	-	-	...	0.0	0.0	0.0	
Equatorial Guinea	0.1	...	...	...	...	...	...	
Ghana e)	...	...	...	...	0.2	0.5	1.1	
Japan	4.2	1.9	0.4	0.2	0.0	0.1	...	
Morocco	1.6	3.9	4.4	...	3.5	3.5	1.1	
Portugal	2.5	2.0	2.6	a)2.1	2.2	2.0	...	
Spain	4.9	6.5	3.4	2.9	2.4	3.3	3.2	

continued on page 6....

- a) Quantities caught in north-east Atlantic included with eastern central Atlantic.
- b) 1963-64, "Bluefin tuna" included with "Yellowfin tuna".
- c) 1966-67, includes quantities of "Young tuna".
- d) "Bluefin tuna" included with "Yellowfin tuna".
- e) 1962-65, included under "Various tuna-like fishes" (Table C-9).

Table 1 (ctd.)

Fishing Area, Country	1962	1963	1964	1965	1966	1967	1968	1969
<u>South-west Atlantic</u>	<u>2.0</u>	<u>6.0</u>	<u>5.9</u>	<u>2.1</u>	<u>0.3</u>	<u>0.1</u>	<u>0.2</u>	
Argentina	-	0.3	0.2	0.1	0.1	0.1	0.0	
Brasil f)	...	...	...	...	...	...	...	
China (Taiwan)	-	-	-	-	...	...	0.0	
Cuba	...	...	...	...	...	0.0	0.2	
Japan	2.0	5.7	5.7	2.0	0.2	0.0	...	
<u>South-east Atlantic</u>	<u>4.6</u>	<u>3.0</u>	<u>5.5</u>	<u>2.5</u>	<u>1.6</u>	<u>1.1</u>	<u>1.4</u>	
Angola	2.4	2.6	4.2	2.3	1.6	1.1	1.3	
China (Taiwan)	-	-	-	-	-	0.0	0.1	
Japan	0.2	0.0	0.0	0.2	0.0	0.0	...	
Spain	2.0	0.4	1.3	-	-	-	-	

f) "Bluefin tuna" included with "Albacore".

Table 2. Weight distribution in % (smoothed) of 17 bluefin tuna caught in the Kattegat by Danish fishermen in 1969. The weight groups refer to gutted fish with gills (kg).

Weight Group kg	%
255	29
260	59
265	30
270	15
275	30
280	15
285	29
290	74
295	59
300	15
305	0
310	0
315	15
320	73
325	103
330	58
335	29
340	15
345	0
350	15
355	44
360	59
365	59
370	59
375	42
380	15
385	15
390	29
395	15
	1 000

Table 3. Bluefin tuna catches at St. Jean-de-Luz (France) in 1969 in kg (data given by Cooperative Maritime Itsasokoa).

Date	Total Weight	
	Fish below 30 kg	Fish above 30 kg
22.V. - 28.V.	9 706	1 082
29.V. - 5.VI.	4 654	-
6.VI. - 12.VI.	19 478.5	-
13.VI. - 19.VI.	48 752	-
20.VI. - 26.VI.	11 334	-
27.VI. - 3.VII.	32 466.5	-
4.VII. - 10.VII.	24 656	-
11.VII. - 17.VII.	18 463	-
18.VII. - 24.VII.	16 708.5	21 762
25.VII. - 31.VII.	14 821.5	-
1.VIII. - 7.VIII.	83 562	-
8.VIII. - 12.VIII.	19 964.5	21 964
13.VIII. - 21.VIII.	37 142	25 955
22.VIII. - 28.VIII.	9 861.5	-
29.VIII. - 4.IX.	2 150.5	-
5.IX. - 11.IX.	19 614	12 113
12.IX. - 18.IX.	15 034	-
19.IX. - 25.IX.	2 892	-
26.IX. - 2.X.	4 121	6 405
3.X. - 9.X.	1 782	1 732
10.X. - 16.X.	4 962	3 227
17.X. - 23.X.	4 056	8 469
24.X. - 30.X.	3 145.5	9 117
1.XI. - 6.XI.	4 255	8 312
7.XI. - 13.XI.	387.5	-
<b>T o t a l</b>	<b>413 969.5</b>	<b>120 138</b>

Table 4. Size-composition in % (smoothed) (fork length by caliper) of French bluefin tuna catches from the Mediterranean landed at Sète in July, September and October 1969.

Length, cm	%
65	1
70	2
75	3
80	27
85	153
90	273
95	196
100	63
105	23
110	19
115	18
120	23
125	36
130	37
135	26
140	15
145	15
150	13
155	7
160	3
165	3
170	5
175	6
180	5
185	5
190	6
195	5
200	3
205	4
210	1
215	1
220	2
225	1
230	0
235	1
240	1
	<b>1 000</b>
	<b>n = 903</b>

Table 5. Length distribution (fork length) in % (smoothed) for Italian bluefin tuna catches at Sicilian madragues in 1969 (by caliper).

Length Interval (LF in cm)	Total
105	2
110	4
115	2
120	2
125	4
130	4
135	13
140	26
145	33
150	40
155	44
160	33
165	15
170	13
175	27
180	53
185	75
190	75
195	58
200	27
205	9
210	24
215	51
220	67
225	78
230	78
235	67
240	45
245	20
250	9
255	2
	1 000
n =	113

Table 6. Weigth distribution in % (smoothed) of 528 bluefin tuna caught in Sicilian madragues during May and June 1969. The weight groups refer to ungutted fish (kg).

Group	%	Group	%
20	0	245	17
25	0	250	18
30	0	255	17
35	1	260	17
40	6	265	19
45	9	270	19
50	11	275	17
55	14	280	14
60	15	285	18
65	16	290	19
70	19	295	18
75	16	300	16
80	11	305	19
85	11	310	23
90	12	315	23
95	12	320	17
100	11	325	14
105	15	330	17
110	19	335	18
115	21	340	15
120	24	345	12
125	23	350	13
130	16	355	17
135	11	360	17
140	9	365	11
145	8	370	9
150	7	375	13
155	6	380	17
160	5	385	15
165	4	390	11
170	4	395	6
175	5	400	3
180	6	405	2
185	5	410	6
190	5	415	8
195	4	420	4
200	3	425	2
205	7	430	3
210	12	435	2
215	10	440	1
220	9		
225	14	495	1
230	17	500	2
235	17	505	3
240	16	510	1
			1 000



Table 7. Size-composition of Norwegian tuna catches south of 62°N by smoothed weight frequency (per mille) in 1969 (kg).

Group Mean (kg)		Week Numbers				Total
W'	W	31	32	33	34	
152	196	1	-	-	2	-
157	202	1	1	-	5	1
162	208	2	1	1	2	1
167	215	2	1	2	-	2
172	221	3	4	1	2	2
177	228	6	4	2	7	4
182	234	8	11	5	11	8
187	241	14	22	11	13	16
192	247	29	27	22	15	24
197	253	45	31	33	20	34
202	260	54	42	39	28	43
207	266	59	45	43	41	48
212	273	62	48	54	54	54
217	279	66	62	67	56	67
222	286	77	75	70	48	72
227	292	74	78	66	47	71
232	298	67	75	68	50	70
237	305	69	73	67	54	69
242	311	65	69	57	76	64
247	318	58	60	55	95	60
252	324	53	51	52	80	56
257	331	43	45	55	47	48
262	337	37	39	50	39	42
267	343	28	33	46	43	37
272	350	18	31	37	39	31
277	356	17	28	28	32	25
282	363	13	19	18	24	18
287	369	7	12	14	13	12
292	376	7	9	14	15	10
297	382	7	5	8	19	7
302	388	4	1	4	11	4
307	395	2	1	2	5	2
312	401	2	1	1	5	2
317	408	1	1	2	5	1
322	414	1	-	1	2	1
327	420	-	-	-	-	-
332	427	-	-	1	-	-
337	433	-	-	1	-	1
342	440	-	-	1	-	-
n		471	697	645	116	1 929

Table 8. Size-composition of Norwegian tuna catches north of 63°N by smoothed weight frequency (per mille) in 1969 (kg).

Group Mean (kg)		Week No. 33
W'	W	
187	241	33
192	247	67
197	253	33
202	260	-
207	266	17
212	273	50
217	279	50
222	286	34
227	292	50
232	298	67
237	305	50
242	311	17
247	318	67
252	324	150
257	331	117
262	337	50
267	343	34
272	350	50
277	356	50
282	363	17
n		15

Table 9. Calculated length data.  
Length frequency distribution in per mille  
for Norwegian tuna catches in 1969 (K = 2.16).

Length Groups cm	Southern Area	Northern Area
210-214	3	-
215-219	6	-
220-224	29	45
225-229	88	88
230-234	151	97
235-239	198	131
240-244	199	134
245-249	157	327
250-254	108	144
255-259	50	37
260-264	14	-
265-269	3	-
270-274	1	-

Table 10. Bluefin tuna catches from the south coast of Portugal by madragues in 1969, specified by weight groups (kg).

Months	Atuns > 90kg		Atuarros 50-89 kg		Albacoras 30-49 kg		Cachorretas < 30 kg		T o t a l	
	N	kg	N	kg	N	kg	N	kg	N	kg
June	9	1 057	1	70	0	0	1	*)	11	1 127
July	982	181 716	11	779	0	0	58	-	1 051	182 495
August	732	138 277	20	1 367	4	112	2 057	-	2 813	139 756
Total	1 723	321 050	32	2 216	4	112	2 116	-	3 875	323 378

\*) The weight of the greatest part of the Cachorretas caught was comprised between 3 and 6 kg.

Table 11. Spanish bluefin tuna catches (by number of fish) at Barbate, Sancti-Petri, Tarifa and La Linea by weeks in 1969 (D = pre-spawning; R = post-spawning fish) (Rodriguez-Roda, 1970).

Week No.	Time	Number of Fish and Spawning Condition				Total
		Barbate	Sancti-Petri	Tarifa	La Linea	
18	27.IV - 3.V.	217 D	135 D	190 D		542 D
19	4.V. - 10.V.	3 D	39 D	3 D		45 D
20	11.V. - 17.V.	251 D	487 D	2 D		740 D
21	18.V. - 24.V.	295 D	212 D	3 D		510 D
22	25.V. - 31.V.	2 256 D	606 D	296 D		3 158 D
23	1.VI. 7.VI.	208 D	48 D	2 D		258 D
24	8.VI. - 14.VI.	346 D	154 D	88 D		588 D
25	15.VI. - 21.VI.	10 D	89 D	-		99 D
26	22.VI. - 28.VI.	66 D	3 D	139 D		208 D
27	29.VI. - 5.VII.	8 D	212 D			220 D
28	6.VII.- 12.VII.	11 R				11 R
29	13.VII.- 19.VII.	326 R			95 R	421 R
30	20.VII.- 26.VII.	773 R			17 R	790 R
31	27.VII.- 2.VIII.	560 R			34 R	594 R
32	3.VIII.- 9.VIII.	180 R			11 R	191 R
33	10.VIII.- 16.VIII.	8 R			18 R	26 R
34	17.VIII.- 23.VIII.	53 R			12 R	65 R
35	24.VIII.- 30.VIII.	14 R				14 R
		5 585	1 985	723	187	8 480

Total = 840 = 1 633 510 kg.

Table 12. Weekly size-composition in % (smoothed) of Spanish madraque catches at Barbate in 1969 (D = pre-spawning; R = post-spawning fish) (Rodriguez-Roda, 1970).

Length Group	Week No.									Total
	20	21	22	24	26	29	30	31	32	
45 - 49.9							16			2
50 - 54.9							49			7
55 - 59.9							49			7
60 - 64.9							16			2
65 - 69.9							66			10
70 - 74.9							181			28
75 - 79.9							168			26
80 - 84.9							59			9
85 - 89.9							7			1
90 - 94.9							2			0
135 - 139.9					4		-			0
140 - 144.9		6			7		-			1
145 - 149.9		24		2	4		-			1
150 - 154.9		55		7	-		-			3
155 - 159.9		91		11	-		-			4
160 - 164.9		98		12	-		-			5
165 - 169.9		73	1	14	8	3	-	5	2	6
170 - 174.9		67	5	33	23	8	-	11	7	11
175 - 179.9		67	14	54	60	11	4	16	16	19
180 - 184.9	1	43	31	63	125	22	10	30	39	32
185 - 189.9	7	24	56	63	155	44	10	57	71	47
190 - 194.9	21	30	73	54	136	50	12	80	89	55
195 - 199.9	19	43	67	40	98	42	16	77	85	51
200 - 204.9	21	55	54	40	57	53	19	55	66	44
205 - 209.9	36	55	63	65	42	78	25	36	55	49
210 - 214.9	56	43	69	84	42	108	32	36	51	58
215 - 219.9	71	30	57	72	57	161	34	66	42	64
220 - 224.9	89	30	53	70	76	169	32	86	57	71
225 - 229.9	109	37	72	82	53	106	40	61	74	74
230 - 234.9	125	37	88	68	30	58	44	52	78	73
235 - 239.9	126	43	80	47	19	42	29	61	87	68
240 - 244.9	92	37	72	37	4	28	19	59	80	55
245 - 249.9	56	12	58	28		14	18	66	55	40
250 - 254.9	55		33	26		3	10	66	28	30
255 - 259.9	56		19	21			12	43	11	22
260 - 264.9	41		16	7			15	18	5	15
265 - 269.9	14		14				6	9	2	8
270 - 274.9	5		5					7		2
275 - 279.9								2		0
n	188	41	202	107	66	90	170	110	141	1 115

Table 13. Weekly size-composition of US bluefin tuna purse-seine catches in % (smoothed) (fork length by caliper) between New Jersey and Cape Cod for 1969 (total catch = 1 728 short tons).

Length cm	Week of Year					Total
	27	28	29	33	35	
50			1	3		1
55			5	10	1	4
60		3	11	12	2	6
65		40	15	6	1	12
70		147	95	39	14	59
75		192	211	99	98	136
80		87	167	93	168	132
85		5	44	31	117	54
90	31	0	1	3	15	17
95	125	30	16	15	2	14
100	281	133	86	75	33	74
105	344	186	153	167	128	155
110	187	92	119	178	181	150
115	32	23	46	73	107	70
120		28	14	18	15	22
125		23	5	36	18	20
130		9	3	56	24	23
135		2	4	35	17	15
140			4	16	15	10
145			1	19	24	13
150				13	20	10
155				3		3
n	8	143	187	170	302	810

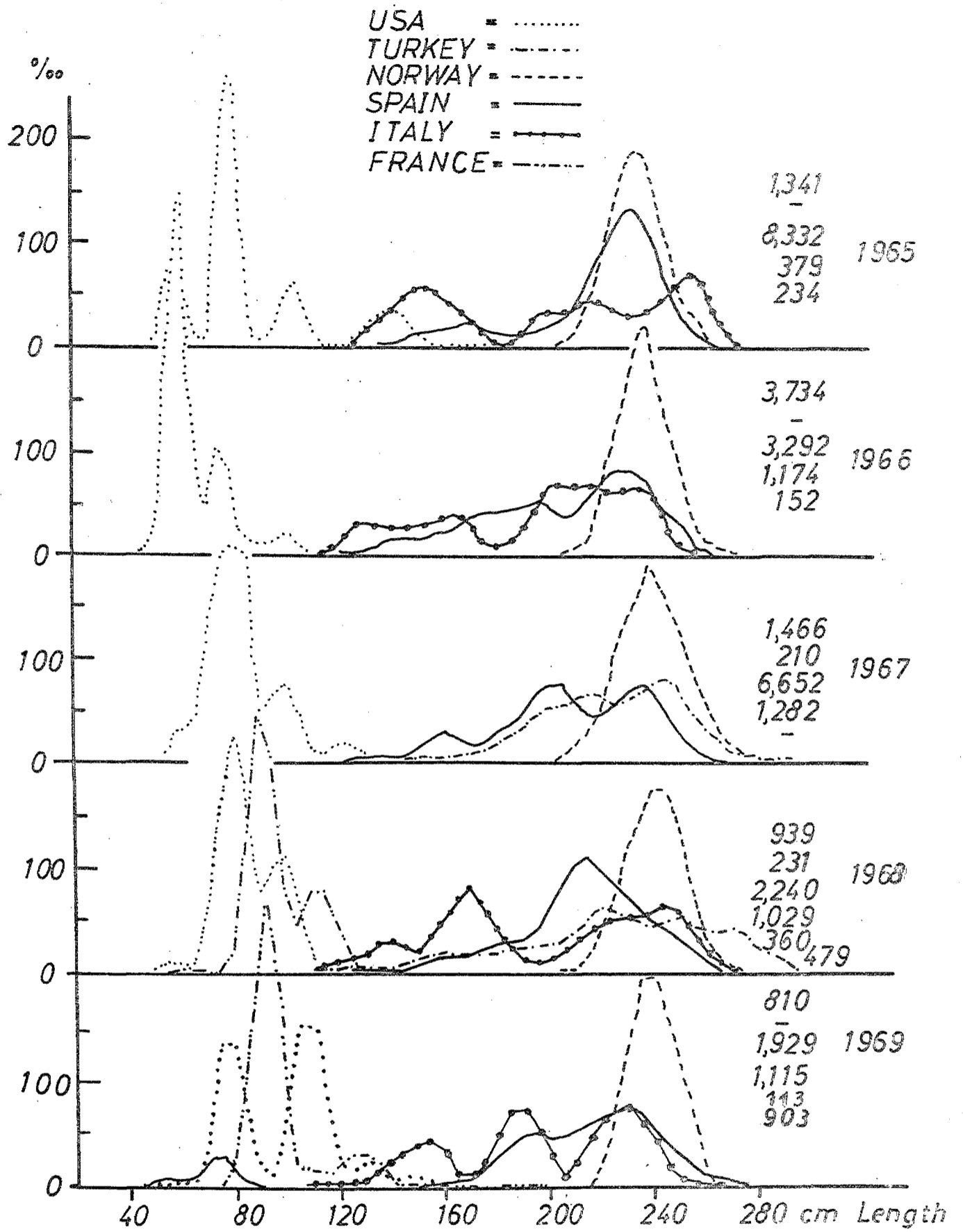


Figure 1: Size composition of bluefin tuna catches made in USA, Turkey, Norway, Spain, Italy and France