

Report from the Bluefin Tuna Working Group
Observations on the Size-Composition
of Bluefin Tuna Catches from 1968

by

J. Hamre, C. Maurin, J. Rodriguez-Roda & K. Tiews

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). 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 1968 are presented.

II. MATERIAL

Reports on the catches and catch composition of bluefin tuna were submitted by the following countries: Denmark (Table 1), France (Tables 2-3), Italy (Tables 4-5), Norway (Tables 6-8), Portugal (Table 9), Spain (Tables 10-11), Turkey (Tables 12-13), and USA (Table 14). The Federal Republic of Germany could not continue its tuna fishery because of inavailability of fish on the usual fishing grounds in the central parts of the North Sea.

Mr. O. Bagge reports that the Danish catches were made, except for one fish which was caught in a stake-net south of Skagen harbour on 26th July, between 17th August and 23rd October in the Kattegat east of Læsø on hook and line or in midwater trawl as by-catch in connection with herring trawling.

Mr. R. Letaconoux gives the total catch of bluefin tuna landed at St. Jean-de-Luz as 426 tons which was much lower than in the previous years (1967 = 1,088 tons; 1966 = 1,656 tons). For the first time Dr. C. Maurin supplied length-composition data of French bluefin tuna catches made in the Mediterranean Sea (Table 3).

According to Dr. Arena and Dr. Li Greci the fish treated in Table 4 are from six sub-samples. They were taken between 1st June and 31st July 1968 and are from tuna traps stationed at Punta Raisi, San Cusumano, Favignana and Capo Granitola. The data given in Table 5 were submitted by Dr. Sara and were taken from the catches made in the madragues stationed at Favignana, S. Cusumano and Formica. The Italian data were kindly submitted through the Working Group of Scombroid Fishes of the GFCM.

The Norwegian tuna catches amounted to about 500 tons in 1968 (1967 = 1,500 tons). Dr. H. Vilela states that apart from the 39 tuna caught by traps (1967 = 1,651 fish), 26,199 tunas were caught from mid-September to mid-October by hook and line fishing on the west coast of Portugal. These were small fish of about 5 kg each. Dr. J. Rodriguez-Roda states that the Spanish bluefin tuna catches were extremely poor in 1968 (1,138 tons against 3,010 tons in 1967). The madragues of La Linea

did not catch any tuna and the madrague of St. Petri was replaced by the madrague of Conil in view of the poor catches made in 1967 in the madrague of St. Petri.

Dr. Artüz reports that tuna landings at the Istanbul fish market were so scarce during June, August, September and December that no data could be collected.

Mr. Frank Mather III states that the total bluefin tuna catches were about 670 short tons between New Jersey and Cape Cod and that the random sample measured does not include fish of a 150 tons catch of giant bluefin tuna seined in Cod Bay. Bluefin tuna catches were thus much lower in 1968 than in 1967 when 2,556 tons were caught.

III. 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 again remained more or less unchanged (Figure 1). The ultimate length of bluefin tuna seems to have been reached, and the fish caught may thus belong to the 1952 year-class. No recruitment of younger fish has occurred.

On the other hand, the composition of the Spanish catches has changed in comparison with the previous year. Old fish of year-class 1952 have become much fewer, the dominating year-class is that of 1958. Other younger year-classes were less predominant than in 1967.

2. Turkish, Italian, Spanish and Norwegian Catches

The size-composition of Turkish catches again does not show parallelism in the strength of year-classes with the Spanish and Norwegian catches. The maximum of the Norwegian curve, for example, tallies with a minimum in the Turkish curve, and also the largest mode of the Spanish curve does not tally with one of the modes of the Turkish curve. Only the first modes of the two curves correspond with each other.

The Italian curve shows four peaks which do not tally either with the first modes in the Spanish and Norwegian curves. On the other hand, two of the modes in the right part of the curve correspond widely with modes in the Turkish curve, while the first two do not tally. One should, however, remember that relatively few data are available.

In general the findings confirm again that relative strength of year-classes of bluefin tuna in the Mediterranean Sea and in the East Atlantic differed during the period under survey, thus suggesting that two more or less distinct stocks of fish can be distinguished. However, in view of the relatively meagre data collection it is again highly recommended to collect further and greater amounts of data in order to be able to draw definite conclusions in this direction.

3. US with Spanish, Norwegian, Turkish, Italian and French Catches

The US catches were again composed of smaller fish than the catches of Spain, Norway, Turkey and Italy. As in the previous years the fish of age-group 1 were scarce in the landings. However, it is noted that the fish of the 1966 year-class, which did not show up in 1967, occurred in considerable quantities in 1968. The French tuna catches from the Mediterranean show a similar age-composition.

IV. SUMMARY

1. The size-composition of bluefin tuna catches made in various countries has been compared. The Norwegian tuna catches were again apparently composed of fish of year-class 1952 mainly, while younger year-classes now predominate the Spanish catches.

Table 1. Weight distribution in o/oo (smoothed) of 26 bluefin tuna caught in the Kattegat by Danish fishermen in 1968. The weight groups refer to gutted fish with gills (kg).

Weight Group kg	o/oo
195	10
200	19
205	10
210	0
215	0
220	0
225	0
230	0
235	0
240	10
245	29
250	29
255	10
260	19
265	58
270	58
275	38
280	58
285	58
290	38
295	38
300	19
305	19
310	48
315	48
320	38
325	38
330	38
335	58
340	77
345	48
350	10
355	0
360	0
365	10
370	19
375	10
380	0
385	10
390	19
395	9
	1000

Table 2. Bluefin tuna catches at St. Jean-de-Luz (France) in 1968 in kg (data given by Cooperative Maritime Itsasokoa).

Date	Total Weight	
	Fish below 30 kg	Fish above 30 kg
9.V. - 16.V.	5,163	-
21.VI. - 26.VI.	11,031	-
28.VI. - 4.VII.	15,178.5	-
5.VII. - 11.VII.	31,856	-
12.VII. - 18.VII.	2,595	-
19.VII. - 25.VII.	19,898.5	5,488
26.VII. - 1.VIII.	51,188.5	13,243
2.VIII. - 8.VIII.	35,098.5	5,041
9.VIII. - 16.VIII.	14,538.5	5,768
17.VIII. - 22.VIII.	34,576.5	4,782
23.VIII. - 29.VIII.	22,503	-
7.IX. - 12.IX.	9,638.5	-
13.IX. - 19.IX.	5,449.5	-
4.X. - 10.X.	63,044.5	-
11.X. - 17.X.	10,192.5	-
18.X. - 24.X.	25,644.5	-
T o t a l	357,596.5	34,322

Table 3. Size-composition in o/oo (smoothed) (fork length by caliper) of French bluefin tuna catches from the Mediterranean landed at Sète in April and November 1968 and at Nice from August-October 1968.

Month Length cm	April	Aug.-Oct.	November	Sx
55		1		1
60		8		4
65		13		6
70		6		3
75		2		2
80		30	5	19
85		168	67	120
90		274	237	250
95		151	320	215
100		24	167	83
105		61	33	48
110	47	115	35	80
115	204	83	61	80
120	266	30	52	46
125	124	13	20	20
130	31	7	3	6
135	62	3		4
140	109	2		5
145	93	1		3
150	46	0		2
155	18	1		1
160		2		1
165		1		0
170		0		0
175		1		0
180		2		1
185		1		0
n =	1,000 (16)	1,000 (266)	1,000 (197)	1,000 (479)

Table 4. Length distribution (fork length) in o/oo (smoothed) for Italian bluefin tuna catches at Sicilian madragues in 1968 (by caliper).

Length Interval (LF in cm)	Pre-spawners taken May-June, at Punta Raisi, San Cusumano and Fabignana o/oo	Post-spawners taken 31st July at Capo Granitola o/oo	Total
110	1		1
115	4		4
120	11		10
125	15		14
130	16		15
135	24		22
140	30		28
145	24		23
150	21		19
155	31		28
160	51		47
165	72		67
170	84		78
175	71		66
180	44		42
185	26		24
190	13		13
195	8		8
200	11		10
205	16	11	15
210	24	57	26
215	33	125	39
220	38	148	44
225	42	136	48
230	45	125	51
235	43	68	46
240	43	23	42
245	47	80	49
250	48	125	53
255	38	68	40
260	18	23	19
265	6	11	6
270	2		2
275	1		1
n =	1,001 338	1,000 22	1,000 360

Condition factor (K) 2.10

1.79

$$K = \frac{W \times 10^5}{L^3}$$
 where W is weight in kg, and L is length in cm.

Table 5. Weight distribution in o/oo (smoothed) of 898 bluefin tuna caught in Sicilian madragues during May and June 1968. The weight groups refer to ungutted fish (kg).

Group	o/oo	Group	o/oo
20	2	220	22
25	7	225	21
30	12	230	18
35	14	235	17
40	13	240	15
45	13	245	14
50	19	250	13
55	20	255	12
60	15	260	11
65	15	265	12
70	17	270	16
75	15	275	19
80	15	280	18
85	15	285	15
90	16	290	13
95	24	295	16
100	30	300	22
105	30	305	21
110	26	310	17
115	20	315	12
120	17	320	10
125	13	325	10
130	7	330	10
135	5	335	11
140	6	340	11
145	7	345	10
150	6	350	10
155	4	355	8
160	4	360	4
165	5	365	4
170	7	370	4
175	11	375	3
180	14	380	4
185	13	385	2
190	13	390	2
195	17	395	1
200	22	400	1
205	20	405	2
210	18	410	2
215	19	415	1
			1,000

Table 6. Size-composition of Norwegian tunacatches south of 62°N by smoothed weight frequency (per mille) in 1968 (kg).

Group	Mean (kg)	Week Numbers						T o t a l
		31	32	34	35	36	37	
142	183	31						
147	189	63						1
152	196	31						
157	202		1		1			X
162	208		3	2	1			1
167	215		7	5	1		1	3
172	221		14	6	4	1	2	5
177	228		24	9	7	2	1	8
182	234	16	35	20	10	3	3	13
187	241	63	44	32	13	7	5	19
192	247	110	52	29	14	10	9	22
197	253	94	57	23	19	14	18	26
202	260	63	63	27	29	21	22	33
207	266	125	72	33	38	22	25	39
212	273	156	86	44	43	23	27	45
217	279	78	88	56	46	32	22	49
222	286	32	75	62	53	42	20	51
227	292	16	64	63	59	49	30	54
232	298	16	64	63	59	52	40	56
237	305	32	64	53	61	54	47	57
242	311	16	47	46	71	64	58	60
247	318		37	70	75	72	64	64
252	324	16	32	85	69	69	56	61
257	331	32	24	65	63	68	55	55
262	337	16	17	52	56	67	62	51
267	343		13	41	45	62	63	45
272	350		10	32	36	54	60	38
277	356		5	34	30	43	54	32
282	363		4	21	23	37	49	26
287	369		2	9	17	34	46	21
292	276		1	9	13	28	40	18
297	382			8	13	22	37	15
302	388			5	10	14	31	11
307	395			2	7	7	18	7
312	401				7	7	9	6
317	408				3	8	9	5
322	414				2	5	7	3
327	420				3	2	3	2
332	427				2		3	1
337	433				1	1	5	1
342	440					2	3	1
347	446					2		X
352	453				1	2	1	1
357	459					1	2	X
362	465					1	1	
367	472					1		X
372	478					1		
	n	16	441	165	791	528	300	2,240

Table 7. Size-composition of Norwegian tuna catches north of 63°N by smoothed weight frequency (per mille) in 1968 (kg).

Group W'	(kg)	Means W	Week No. 32
187		241	14
192		247	28
197		253	28
202		260	42
207		266	56
212		273	42
217		279	14
222		286	28
227		292	56
232		298	42
237		305	42
242		311	42
247		318	14
252		324	28
257		331	56
262		337	42
267		343	56
272		350	84
277		356	56
282		363	42
287		369	56
292		376	28
297		382	28
302		388	56
307		395	28
		n	18

Table 8. Calculated length data.
Length frequency distribution in per mille for Norwegian tuna catches in 1968 (K = 2.16).

Length Groups cm	Southern Area	Northern Area
205-209	1	-
210-214	2	-
215-219	13	-
220-224	38	20
225-229	70	84
230-234	120	114
235-239	147	107
240-244	177	115
245-249	174	109
250-254	133	199
255-259	78	148
260-264	35	112
265-269	14	-
270-274	3	-
275-279	1	-

Table 9. Bluefin tuna catches from the south coast of Portugal by madragues in 1968, specified by weight groups (kg).

Months	Atuns > 90 kg		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
May	1	123	1	70	1	30	0	0	3	223
June	104	17469	6	322	0	0	0	0	110	17791
July	259	46749	25	2151	0	0	1	5	285	48905
August	1	146	0	0	0	0	0	0	1	146
Sept.	0	0	0	0	0	0	0	0	0	0
Total	365	64487	32	2543	1	30	1	5	399	67065

Table 10. Spanish bluefin tuna catches (by number of fish) at Barbate, Conil and Tarifa by weeks in 1968 (D = pre-spawning; R = post-spawning fish). (Rodriguez-Roda, 1969)

Week No.	Time	Number of fish and spawning condition		
		Barbate	Conil	Tarifa
18	28.IV. - 4.V.	1 D	-	-
19	5.V. - 11.V.	131 D	199 D	2 D
20	12.V. - 18.V.	11 D	-	-
21	19.V. - 25.V.	1.631 D	135 D	21 D
22	26.V. - 1.VI.	431 D	75 D	44 D
23	2.VI. - 8.VI.	1.000 D	579 D	-
24	9.VI. - 15.VI.	82 D	116 D	275 D
25	16.VI. - 22.VI.	80 D	75 D	124 D
26	23.VI. - 29.VI.	-	1 D	-
27	30.VI. - 6.VII.	1 D	-	-
28	7.VII. - 13.VII.	1 R	-	-
29	14.VII. - 20.VII.	38 R	-	-
30	21.VII. - 27.VII.	412 R	-	-
31	28.VII. - 3.VIII.	357 R	-	-
32	4.VIII. - 10.VIII.	4 R	-	-
		4.180	1.180	466

Total = 5.826 = 1 138 003 kg
 =====

Table 11. Weekly size-composition in o/oo (smoothed) of Spanish madrague catches at Barbate in 1968 (D = pre-spawning fish, R = post-spawning fish) (Rodriguez-Roda, 1969).

Length Group	Week No.	D						R		Total
		19	20	21	22	23	25	30	31	
120-124.9						1				0
125-129.9						2				1
130-134.9						1				0
135-139.9						3				1
140-144.9						7				2
145-149.9				2		7				2
150-154.9				6	4	15	4			6
155-159.9				7	9	33	8	2		12
160-164.9			125	10	4	39	4	5	2	15
165-169.9	3		250	14	9	32	4	5	2	15
170-174.9	8		125	18	26	26	12	3	2	15
175-179.9	18		125	26	34	36	20	5	0	21
180-184.9	26		250	28	34	47	33	9	0	27
185-189.9	16		125	26	26	43	45	21	4	27
190-194.9	5			26	30	46	45	31	13	30
195-199.9	8			31	56	61	49	39	19	39
200-204.9	21			49	82	77	86	71	15	57
205-209.9	39			77	130	89	127	116	28	82
210-214.9	58			102	151	96	144	125	86	103
215-219.9	94			112	116	96	135	104	130	109
220-224.9	112			106	82	78	90	90	114	96
225-229.9	86			94	69	57	49	86	98	78
230-234.9	71			77	60	31	33	94	105	67
235-239.9	91			53	30	17	16	84	111	56
240-244.9	117			30	17	18	16	49	103	46
245-249.9	102			30	21	16	33	31	78	39
250-254.9	65			37	9	13	33	21	44	29
255-259.9	42			25		9	12	9	28	18
260-264.9	18			10		3		5	17	8
265-269.9	3			3				2	4	2
270-274.9				2						1
275-279.9				1						0
N		96	2	231	58	275	61	170	136	1,029

Table 12. Size composition in o/oo (smoothed) (fork length by caliper) of Turkish bluefin tuna catches in 1968 (landed at the Istanbul fish market).

Length cm	Month	January	February	March	April	May- December	Total Number
105						5	1
110						20	4
115						41	9
120						41	9
125						20	4
130		4				10	3
135		8				10	4
140		4				15	4
145		-				20	4
150		-			6	30	7
155		-			12	52	13
160		-	6		12	61	16
165		-	11		17	61	19
170		-	6	15	17	52	17
175		-	-	30	6	46	15
180		4	6	15	-	57	16
185		13	28	7	-	46	19
190		13	50	29	-	26	23
195		12	44	44	12	15	24
200		21	33	37	29	5	24
205		25	33	37	29	5	25
210		25	33	52	35	15	30
215		21	33	52	70	30	39
220		34	28	51	104	52	52
225		54	39	73	110	52	64
230		50	67	73	87	26	59
235		54	61	51	76	15	51
240		62	39	52	81	26	52
245		67	61	66	70	26	58
250		92	94	66	47	20	65
255		96	78	44	35	15	57
260		67	50	22	47	10	41
265		58	38	30	41	10	37
270		75	39	51	23	10	41
275		62	39	44	23	10	37
280		33	34	30	11	10	24
285		21	33	22	-	15	18
290		13	17	7	-	15	11
295		8	-	-	-	5	3
300		4	-	-	-	-	1
		1,000	1,000	1,000	1,000	1,000	1,000
n =		60	45	34	43	49	231

Table 13. Weight composition in o/oo (smoothed) (gutted fish with head and gills) of Turkish bluefin tuna catches in 1968 (landed at the Istanbul fish market).

Month Weight kg	January	February	March	April	May-December	Total Number
15					11	2
20					37	8
25					52	12
30					37	8
35					11	2
40					5	1
45			8		11	4
50			15	6	5	5
55			8	12	11	6
60			-	6	42	11
65			-	6	63	15
70			-	6	63	18
75			-	18	63	17
80			-	18	47	9
85			8	6	26	7
90	5	12	23	-	26	13
95	10	23	23	-	37	18
100	5	17	8	-	32	13
105	-	12	-	-	16	6
110	-	12	-	-	10	5
115	-	17	-	-	16	7
120	-	35	8	-	21	13
125	5	41	30	-	10	17
130	10	30	46	12	-	18
135	10	30	30	25	-	17
140	10	24	15	12	-	12
145	10	6	15	-	-	6
150	10	-	15	-	21	10
155	10	-	15	6	52	18
160	10	-	15	31	42	20
165	5	6	23	43	10	17
170	-	17	23	24	5	13
175	5	17	15	43	10	18
180	21	12	23	85	5	28
185	37	23	38	79	5	35
190	31	29	46	49	10	32
195	10	23	38	37	5	21
200	5	23	30	37	-	17
205	21	12	23	31	-	16
210	26	6	15	18	5	14
215	21	12	15	6	10	13
220	26	12	15	6	5	13
225	21	12	23	25	10	18
230	21	17	30	43	21	26
235	42	40	23	43	21	34
240	36	52	15	17	21	31
245	26	35	15	6	10	19
250	31	29	15	-	-	15
255	26	34	30	18	-	21
260	32	23	38	37	-	25
265	37	12	23	18	5	19
270	32	12	15	-	10	14
275	37	6	15	18	10	18
280	42	12	15	43	10	24
285	42	34	15	43	10	29
290	37	34	23	31	10	27

continued on next page

Table 13 (ctd.)

Month Weight kg	January	February	March	April	May-December	Total Number
295	21	17	23	12	5	15
300	10	17	7	-	-	7
305	21	23	7	6	-	12
310	26	23	23	12	-	16
315	16	17	23	6	-	12
320	10	6	7	-	-	5
325	5	6	7	-	-	4
330	-	17	15	-	-	6
335	5	17	7	-	-	6
340	16	12	-	-	-	6
345	26	12	-	-	5	9
350	26	6	-	-	10	9
355	16	-	-	-	5	5
360	16	-	-	-	-	4
365	16	-	-	-	-	4
370	5	6	-	-	-	2
375	-	12	-	-	-	2
380	-	6	-	-	-	1
n =	1,000 48	1,000 43	1,000 33	1,000 41	1,000 48	1,000 213

Table 14. Weekly size-composition of US bluefin tuna purse-seine catches in o/oo (smoothed) (fork length by caliper) between New Jersey and Cape Cod for 1968 (total catch = 670 short tons; about 150 tons of giant bluefin tuna seined in Cod Bay are not represented in the random sample).

Length cm	Week of Year				Total
	29	30	31	33 - 34	
45		1	1		1
50		4	4	11	4
55		6	5	28	9
60		2	2	25	7
65	10	8	0	9	6
70	92	63	33	11	52
75	234	146	178	81	164
80	233	151	284	225	225
85	94	87	172	256	149
90	59	79	60	128	79
95	120	141	88	61	104
100	108	159	105	83	113
105	35	96	52	64	60
110	3	35	8	18	15
115	4	14	2		5
120	4	7	4		4
125	3	1	2		2
130	1				1
n =	1,000 265	1,000 222	1,000 248	1,000 211	1,000 946

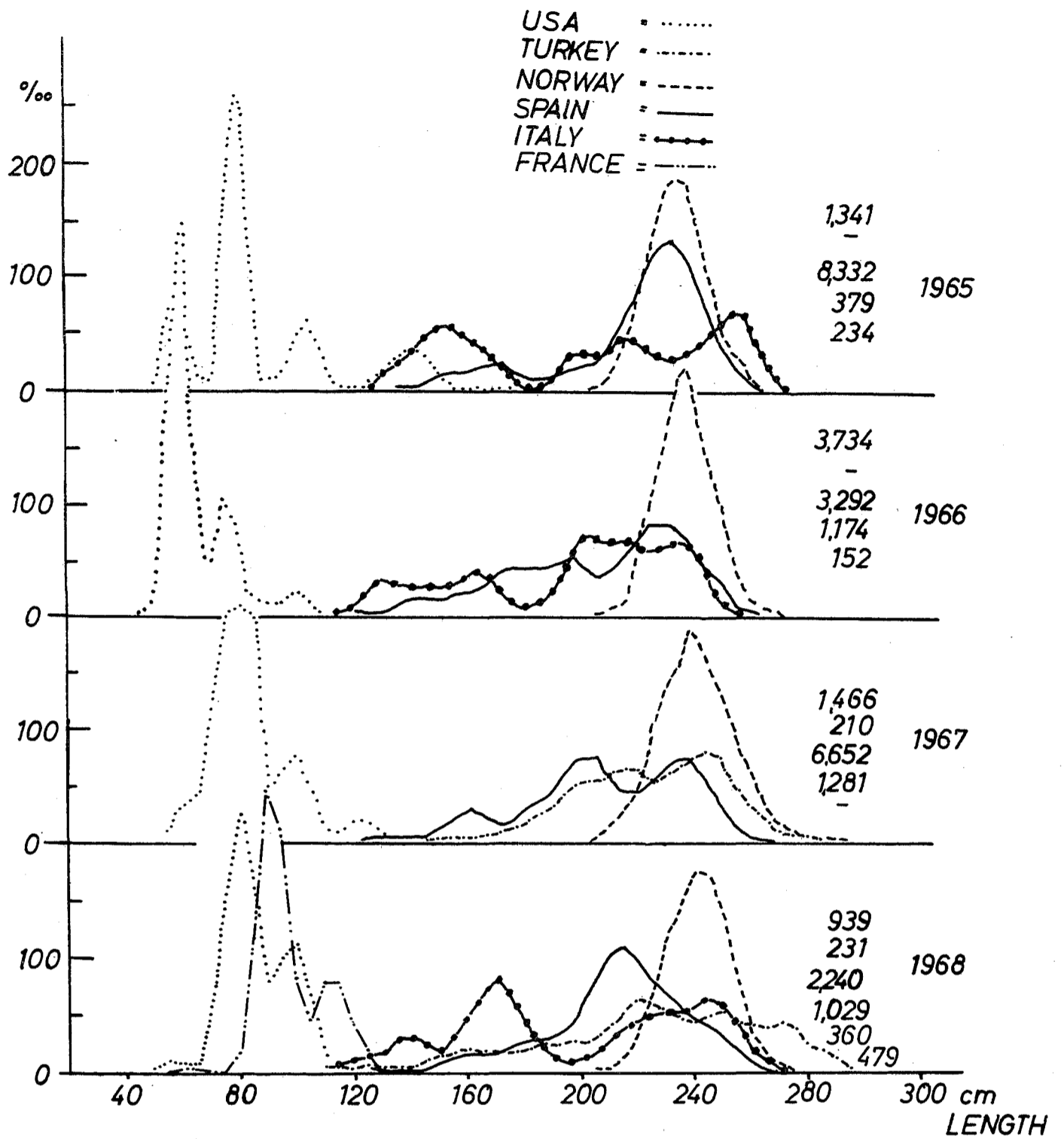


Figure 1. Size composition of bluefin tuna catches made in USA, Turkey, Norway, Spain, Italy and France.