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BLUEFIN TUNA (Thunnus thynnus L.) AND ALBACORE (Thunnus alalunga Bon.) FISHERY IN THE SOUTHERN TYRRHENIAN SEA: 1985-1989 SURVEYS.

by

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Key words: Bluefin Tuna, Albacore, southern Tyrrhenian, length classes.

ABSTRACT

A brief report on Bluefin Tuna and Albacore fishery in the southern Tyrrhenian Sea in the years 1985-1989 is here reported, with a short description of the fisheries.

CPUE data are available only for 1985 and 1986, but length classes analysis has been carried out for the whole period for all the gears together, except the purse seine.

BLUEFIN TUNA

Bluefin Tuna (Thunnus thynnus L.) fishery is one of the most ancient and typical tradition in the Mediterranean.

The most tradititonal fishery is the historical "tonnara", a tuna trap known since V century b.C. (SARA', 1975; CONSOLO, 1987), but now none of them is still active in the southern Tyrrhenian Sea: the last one was in Scopello, near Palermo, but it was closed in 1984, even is the same tuna trap has been used in Punta Raisi (also near Palermo) in 1985.

Now, the commercial catches are mostly from the purse seine fleet, which operate in the southern Tyrrhenian Sea during spring and summer and in the Ligurian Sea in autumn (ARENA et Al., 1981; ARENA, 1989).

But a smallest portion of the commercial catches in the southern Tyrrhenian Sea is due to other minor fishery activities: surface drift

nets, surface drift long lines, hand lines and harpoons, and the aim of this paper is to give a short report on these fisheries.

The surface drift nets used for Bluefin Tuna have small mesh (from 6 to 8 cm) and they are commonly called "bisantonare", because it is possible to catch both tunas and tuna-like fishes like bonito ("biso"); this nets are used only by small artisanal boats along the northern coast of Sicily. Other drift nets have a largest mesh size, from 8 to 18 cm, and they are called "alalungare", because are used both for tuna and albacore. Bluefin tunas are also a by-catch in the swordfish driftnets fishery.

Surface drift long lines have often small hooks (n. 6 to 7), because they are used to catch juvanile tunas; typical tuna drift long lines are used by some Japanese and Corean boats which operate in the southern Tyrrhenian Sea in spring, but the catches are not reported.

Hand lines are very common in the Strait of Messina, where there is a large fleet (over than 100) of small artisanal boats.

Bluefin tuna is also a target species for the characteristical boats of the Starit of Messina which still use the harpoon, both for bluefin tuna and swordfish.

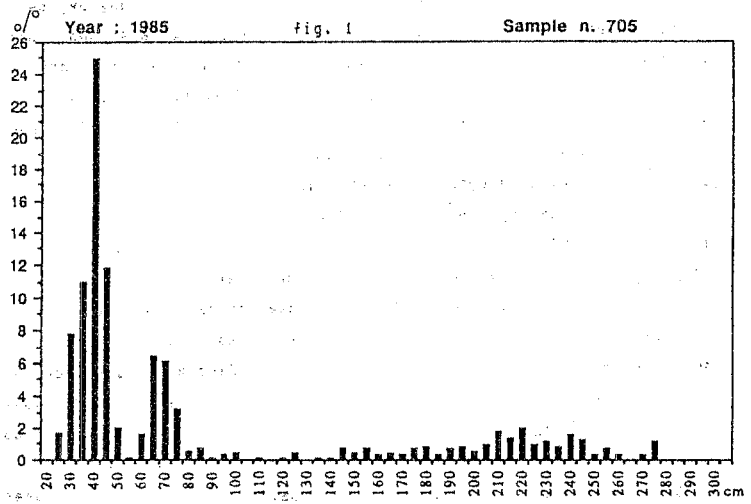
A very accurate CPUE data series exists for the purse seine fleet (ARENA, 1989), but CPUE data for all the other gears are extremely poor: a two years (1985-1986) CPUE data are available only for the harpoon (DI NATALE et Al., 1987), because CPUE for other gears are related to a clear by-catch.

C = catches in kg; E = fishing days;

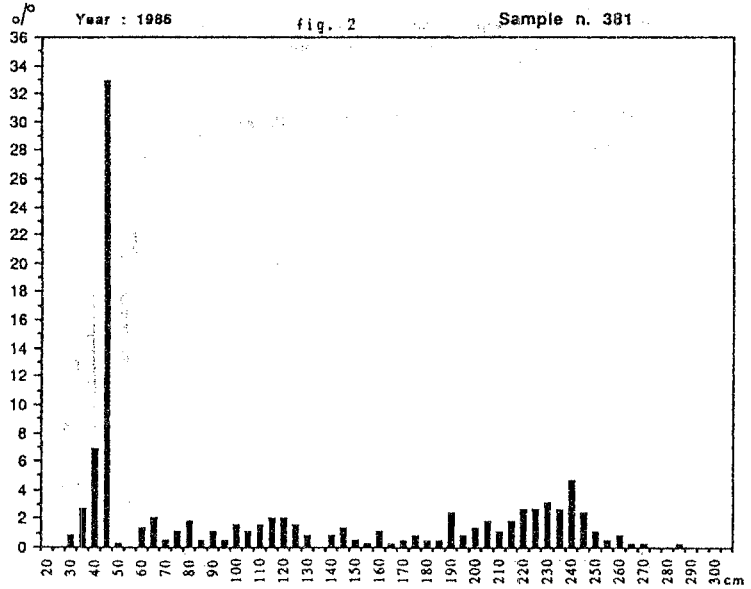
1985 - CPUE: 70,80

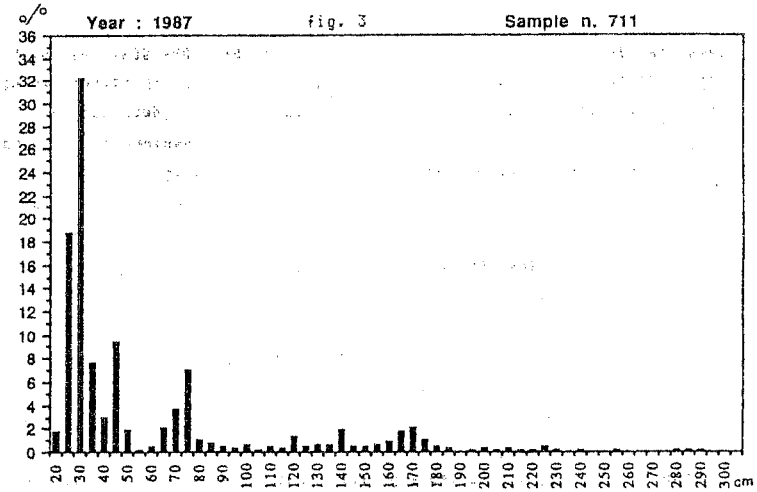
1985 - CPUE: 49,19

Some more detailed information are available for the length frequency of the classes, due to a survey research programme sponsored by the Italian Ministry of Merchant Marine (Law 41/82) in 1984-1986. The sampling points were Lipari, S. Agata Militello, Milazzo, Messina, Ganzirri and Vibo Marina; in the following years, the research has been carried on by Aquastudio, by private funds, with a reduction of the sampling points (Milazzo, Messina and Ganzirri).



Length classes distribution of Bluefin Tuna
(Thunnus thynnus) in the Southern Tyrrhenian Sea





Length classes distribution of Bluefin Tuna
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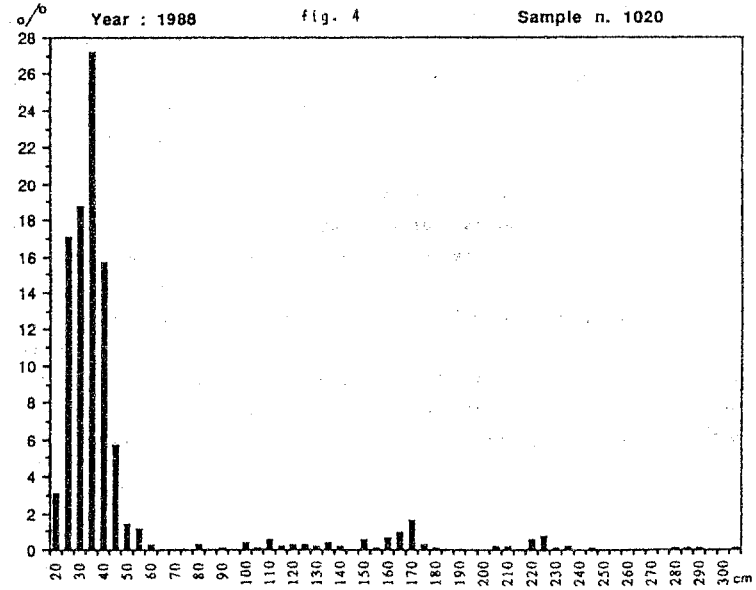
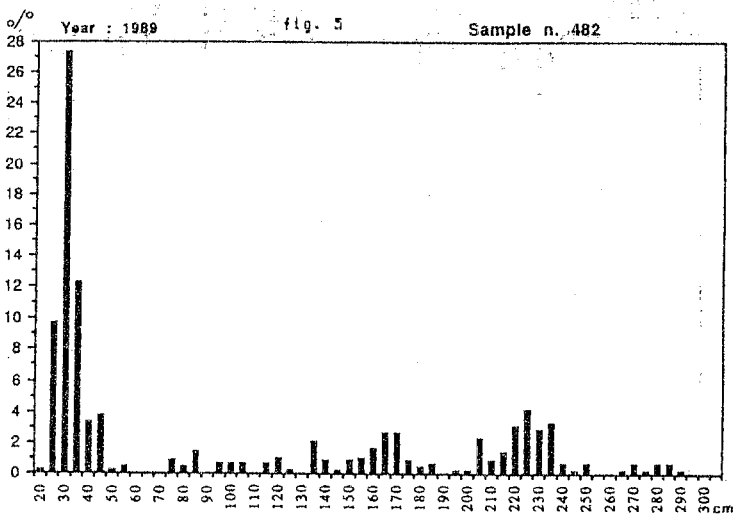




Length classes distribution of Bluefin Tuna (Thunnus thynnus) in the Southern Tyrrhenian Sea

Pondered mean lengths are the followings:

year	1985	1986	1987	1988	1989
cm	78,7	119,3	58,4	49,1	100,5

but these data show only a situation heavely influenced by the affluence of juvaniles close to the coast, in areas where the small boats are able to fish, and they have no sense for stock information.

The length frequency graphs, elaborated for the last five years (fig. 1 to 5), shows clearly a very high percentage of juvaniles in all the years (peaks at 40 cm in 1985, at 45 cm in 1986, at 30 cm in 1987, at 35 in 1988 and 30 cm in 1989), due to the strong incidence of illegal fishery. The graphs for age classes over 1 are quite different from the graphs reported by ARENA (1989), but this is due to the fact that all gears catches are spread all over the year and so the fishery is quite less specialistic than the purse seine fishery. As a matter of fact, the graph shown by ARENA et Al. (1980) for the southern Tyrrhenian sea is not so far from the pattern of the last five year graphs.

ALBACORE

Albacore (Thunnus alalunga, Bonn.) fishery in the southern Tyrrhenian Sea is certainly more recent in comparison with other fisheries but this species has a good economical importance in spring and autumn.

Surface drift nets, surface drift long lines and hand lines are commonly used for Albacore fishery in this area.

Surface drift nets has often the Albacore as a target species, mostly in spring and autumn, when the fleet use medium size mesh and the net is called "alalungara" or "palamitara"). Albacore represents, also, a important by-catch percentage during the swordfish fishery.

Surface drift long lines (with medium hooks) have Albacore as target species, mostly in the Aeolian Isles, but a very high by-catch of juvanile swordfish has been reported (DI NATALE et Al., 1987).

Hand lines are used in the Isle of Lipari with about the same technique of "pole and line", sometimes with very important catches.

CPUE data are available for 1985 and 1986 (DI NATALE et Al., 1987):

- surface drift nets (C = catches in kg; E = 100 m net x day)

1985: CPUE = 0,04

1986: CPUE = 0,12

- surface swordfish drift long lines (C = catches in kg; E = 100 hooks x day)

1985: CPUE = 6,76

1986: CPUE = 3,05

- surface albacore drift long lines

1985: CPUE = 13,65

1986: CPUE = 5,25

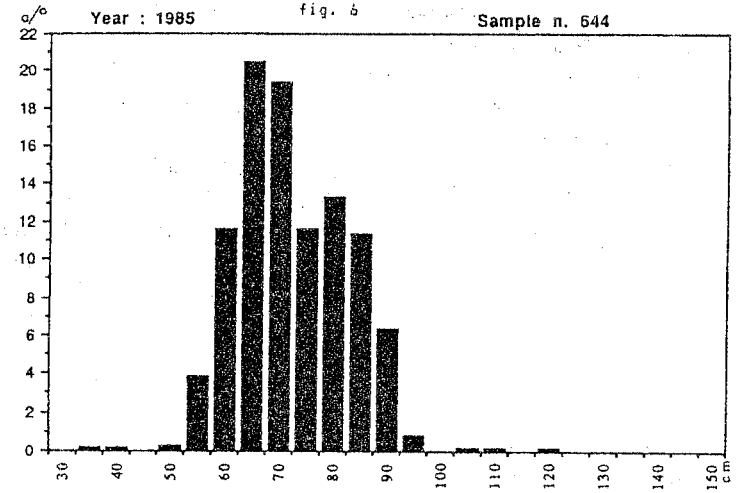
- hand lines (C = catches in kg; E = one fishing day)

1985: CPUE = 255,47

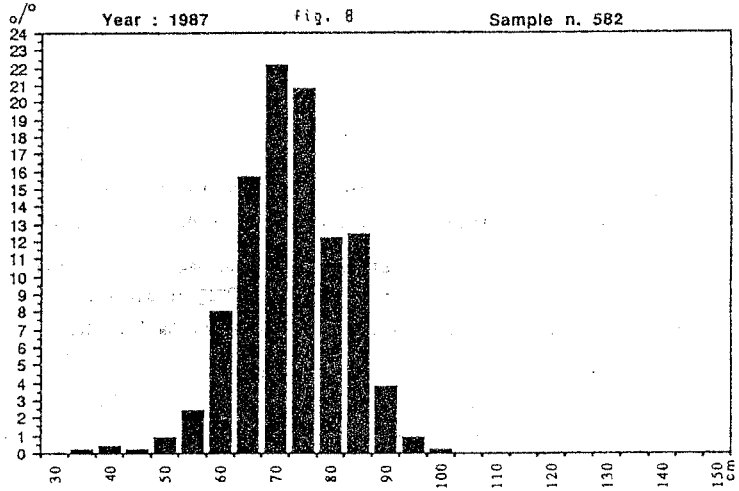
1986: CPUE = 36,14

Anyway, CPUE data in 1986 have been affected by bad weather condition in autumn.

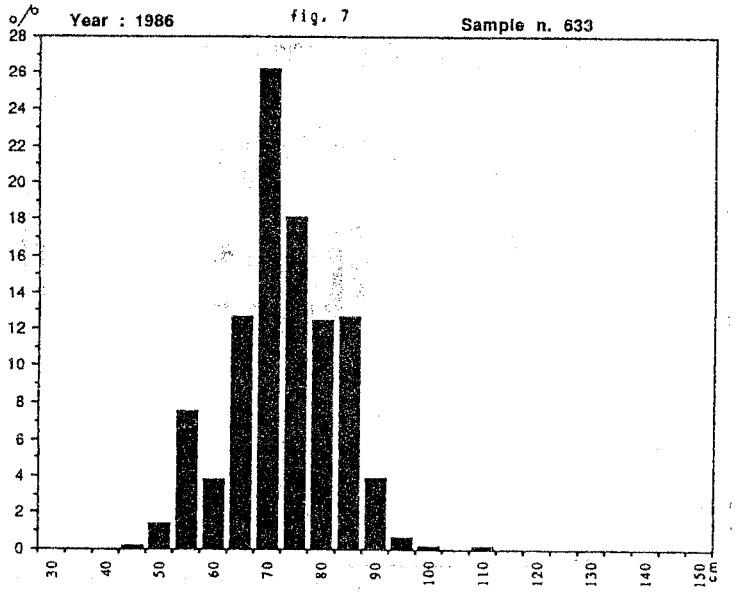
Length samplings heve been collected in the same places of Bluefin tuna: Lipari, S. Agata Militello, Milazzo, Messina, Ganzirri and Vibo Marina in 1985 and 1986 (with a grant by the Ministry of Merchant

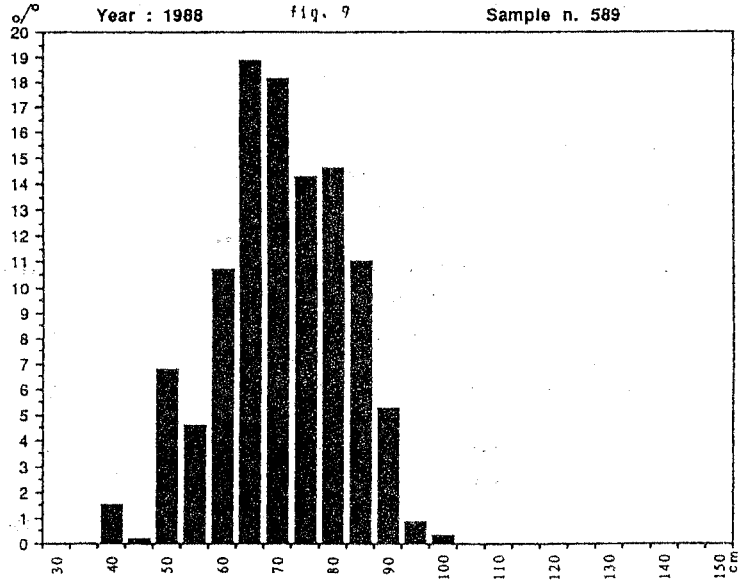


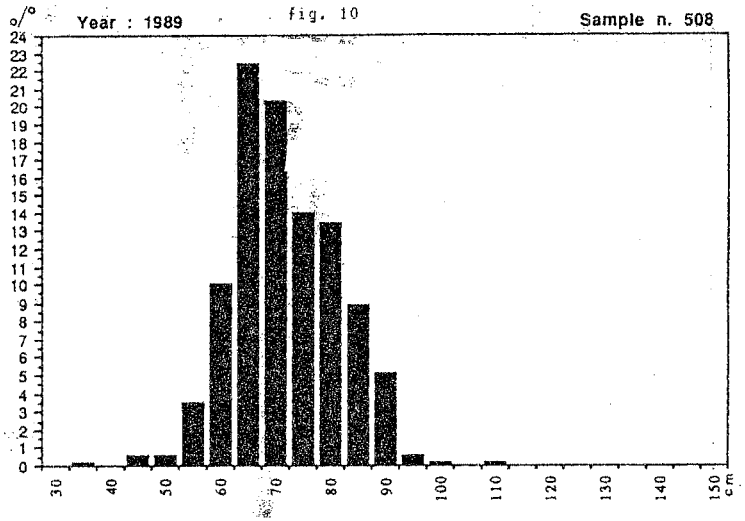
Length classes distribution of Albacore
(Thunnus alalunga) in the Southern Tyrrhenian Sea



Length classes distribution of Albacore
(Thunnus alalunga) in the Southern Tyrrhenian Sea







Length classes distribution of Albacore (Thunnus alalunga) in the Southern Tyrrhenian Sea

Marine, law n. 41/82); in the following years, the research has been carried on by Aquastudio, with private funds, in Milazzo, Messina and Ganzirri.

Pondered mean lengths are the followings:

year	1985	1986	1987	1988	1989
cm	74,9	75,1	75,3	74,7	74,2

with a clearly stable trend.

Graphs 6 to 10 show peaks at 65 cm (1985, 1988 and 1989) and at 70 cm (1986 and 1987), with a one-year alternated similar shape. In all the graphs coorts are not very clear; on the opposite, ARENA et Al. (1980) obtained a graph in which modal length classes are really clear, but they used only a 3-months sampling.

Furthermore, in these last years several giant Albacores have been reported in the southern Tyrrhenian Sea: a 36 kg specimen was captured near the Aeolian Isles in 1985; specimens over 22 kg are also reported in 1985, 1986 and 1989. These fishes are quite unusual in the Mediterranean, but are more common in the Atlantic.

CONCLUSION

Bluefin tuna is clearly a species with a marginal importance for the artisanal fishery, except for the purse seine fleet (which should be considered as industrial) and for the tuna traps.

For the purse seine, a very important reduction of CPUE indexes is known (ARENA, 1989), due to a complexity of factors; but for other gears CPUE has no sense, because of the short period.

Of course, the high illegal catches of juvanile speciemens could affect the stock, also because this kind of fishery is well spread along all the Mediterranean coasts.

A more strict control about the management of this species is important for a future maintenance of the resource.

On the contrary, Albacore stock seems stable and the fishing effort is located only in some areas (southern Tyrrhenian Sea and Jonian Sea).

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AREA: Southern Tyrrhenian Sea (Mediterranean)
Species: BLUEFIN TUNA (Thunnus thynnus) BFL
Gear: all gears UNCL (except PS)

LENGTH CLASSES	1985 n.	1985 %	1986 n.	1986 %	1987 n.	1987 %	1988 n.	1988 %	1989 n.	1989 %
20-24,9	9	0	0	0	12	1,69	31	3,04	1	0,21
25-29,9	12	1,70	0	0	133	18,71	174	17,06	47	9,75
30-34,9	54	7,76	3	0,79	229	32,21	191	18,76	132	27,39
35-39,9	77	10,92	10	2,62	54	7,59	277	27,16	59	12,24
40-44,9	176	24,96	26	6,82	21	2,95	160	15,68	16	3,32
45-49,9	83	11,77	125	32,81	67	9,42	58	5,69	18	3,73
50-54,9	14	1,99	1	0,26	13	1,83	14	1,37	1	0,21
55-59,9	1	0,14	0	0	1	0,14	11	1,08	2	0,41
60-64,9	11	1,56	5	1,31	3	0,42	3	0,29	0	0
65-69,9	45	6,38	8	2,10	15	2,11	0	0	0	0
70-74,9	43	6,10	2	0,52	28	3,86	0	0	0	0
75-79,9	22	3,12	4	1,05	5	7,03	0	0	4	0,83
80-84,9	4	0,57	7	1,84	7	0,98	3	0,29	2	0,41
85-89,9	5	0,71	2	0,52	5	0,70	0	0	7	1,45
90-94,9	1	0,14	4	1,05	3	0,42	1	0,10	0	0
95-99,9	2	0,28	1	0,52	2	0,28	0	0	3	0,62
100-104,9	3	0,43	6	1,57	4	0,56	4	0,39	3	0,62
105-109,9	0	0	4	1,05	1	0,14	1	0,10	3	0,62
110-114,9	1	0,14	6	1,57	3	0,42	6	0,59	0	0
115-119,9	0	0	8	2,10	2	0,28	2	0,20	3	0,62
120-124,9	1	0,14	8	2,10	9	1,27	3	0,29	5	1,03
125-129,9	3	0,43	6	1,57	3	0,42	3	0,29	1	0,21
130-134,9	0	0	3	0,79	4	0,56	2	0,20	0	0
135-139,9	1	0,14	0	0	4	0,56	4	0,39	10	2,08
140-144,9	1	0,14	3	0,79	13	1,83	2	0,20	4	0,83
145-149,9	5	0,71	5	1,31	3	0,42	0	0	1	0,21
150-154,9	3	0,43	2	0,52	3	0,42	6	0,59	4	0,83
155-159,9	5	0,71	1	0,26	4	0,56	1	0,10	5	1,03
160-164,9	2	0,28	4	1,05	6	0,84	7	0,69	8	1,66
165-169,9	3	0,43	1	0,26	12	1,69	10	0,98	13	2,70
170-174,9	2	0,28	2	0,52	15	2,11	16	1,57	13	2,70
175-179,9	5	0,71	3	0,79	7	0,98	3	0,29	4	0,83
180-184,9	6	0,85	2	0,52	3	0,42	1	0,10	2	0,42
185-189,9	2	0,28	2	0,52	2	0,28	0	0	3	0,62
190-194,9	5	0,71	9	2,36	0	0	0	0	0	0
195-199,9	6	0,85	3	0,79	1	0,14	0	0	1	0,21
200-204,9	4	0,57	5	1,31	2	0,28	0	0	1	0,21
205-209,9	7	0,99	7	1,84	1	0,14	2	0,20	11	2,28
210-214,9	13	1,84	4	1,05	2	0,28	2	0,20	4	0,83
215-219,9	10	1,42	7	1,84	1	0,14	0	0	7	1,45
220-224,9	14	1,99	10	2,62	1	0,14	6	0,59	15	3,11
225-229,9	7	0,99	10	2,62	3	0,42	8	0,78	20	4,15
230-234,9	8	1,13	12	3,15	1	0,14	1	0,10	14	2,91
235-239,9	6	0,85	10	2,62	0	0	2	0,20	16	3,32
240-244,9	11	1,56	18	4,72	1	0,14	0	0	3	0,62
245-249,9	9	1,28	9	2,36	0	0	1	0,10	1	0,21
250-254,9	2	0,28	4	1,05	0	0	0	0	3	0,62
255-259,9	5	0,71	2	0,52	1	0,14	0	0	0	0
260-264,9	2	0,28	3	0,79	0	0	0	0	0	0
265-269,9	0	0	1	0,26	0	0	0	0	1	0,21
270-274,9	2	0,28	1	0,26	0	0	0	0	3	0,62
275-279,9	1	1,14	0	0	0	0	0	0	1	0,21
280-284,9	0	0	0	0	1	0,14	1	0;10	3	0,62
285-289,9	0	0	1	0,26	1	0,14	1	0,10	3	0,62
290-294,9	0	0	0	0	1	0,14	1	0,10	1	0,21
295-299,9	0	0	0	0	0	0	0	0	0	0
300-304,9	0	0	0	0	0	0	0	0	0	0
305-309,9	0	0	0	0	0	0	1	0,10	0	0
total n.	705		381		711		1020		482	

AREA: Southern Tyrrhenian Sea (Mediterranean)
Species: BLUEFIN TUNA (Thunnus thynnus) BFL
Only catches over the italian legal size (70 cm)
Gear: all gears UNCL (except PS)

LENGHT CLASSES	1985 n.	1985 %	1986 n.	1986 %	1987 n.	1987 %	1988 n.	1988 %	1989 n.	1989 %
70-74,9	43	18,53	2	0,99	28	16,95	0	0	0	0
75-79,9	22	9,48	4	1,97	5	3,07	0	0	4	2,94
80-84,9	4	1,72	7	3,45	7	4,29	3	3,97	2	0,97
85-89,9	5	2,16	2	0,99	5	3,07	0	0	7	3,40
90-94,9	1	0,43	4	1,97	3	1,84	1	0,99	0	0
95-99,9	2	0,86	2	0,99	2	1,23	0	0	3	1,46
100-104,9	3	1,29	6	2,96	4	2,45	4	3,96	3	1,46
105-109,9	0	0	4	1,97	1	0,61	1	0,99	3	1,46
110-114,9	1	0,43	6	2,96	3	1,84	6	5,94	0	0
115-119,9	0	0	8	3,94	2	1,23	2	1,98	3	1,46
120-124,9	1	0,43	8	3,94	9	5,52	3	2,97	5	2,43
125-129,9	3	1,29	6	2,96	3	1,84	3	2,97	1	0,49
130-134,9	0	0	3	1,48	4	2,45	2	1,98	0	0
135-139,9	1	0,43	0	0	4	2,45	4	3,96	10	4,85
140-144,9	1	0,43	3	1,48	13	7,98	2	1,98	4	1,94
145-149,9	5	2,16	5	2,46	3	1,84	0	0	1	0,49
150-154,9	3	1,29	2	0,99	3	1,84	6	5,94	4	1,94
155-159,9	5	2,16	1	0,49	4	2,45	1	0,99	5	2,43
160-164,9	2	0,86	4	1,97	6	3,68	7	6,93	8	3,88
165-169,9	3	1,29	1	0,49	12	7,36	10	9,90	13	6,31
170-174,9	2	0,86	2	0,99	15	9,20	16	15,84	13	6,31
175-179,9	5	2,16	3	1,48	7	4,29	3	2,97	4	1,94
180-184,9	6	2,59	2	0,99	3	1,84	1	0,99	2	0,97
185-189,9	2	0,86	2	0,99	2	1,23	0	0	3	1,46
190-194,9	5	2,16	9	4,43	0	0	0	0	0	0
195-199,9	6	2,59	3	1,48	1	0,61	0	0	1	0,49
200-204,9	4	1,72	5	2,46	2	1,23	0	0	1	0,49
205-209,9	7	3,02	7	3,45	1	0,61	2	1,98	11	5,34
210-214,9	13	5,60	4	1,97	2	1,23	2	1,98	4	1,94
215-219,9	10	4,31	7	3,45	1	0,61	0	0	7	3,40
220-224,9	14	6,04	10	4,93	1	0,61	6	5,94	15	7,28
225-229,9	7	3,02	10	4,93	3	1,84	8	7,92	20	9,71
230-234,9	8	3,45	12	5,91	1	0,61	1	0,99	14	6,80
235-239,9	6	2,59	10	4,93	0	0	2	1,98	16	7,77
240-244,9	11	4,74	18	8,87	1	0,61	0	0	3	1,46
245-249,9	9	3,88	9	4,43	0	0	1	0,99	1	0,49
250-254,9	2	0,86	4	1,97	0	0	0	0	3	1,46
255-259,9	5	2,16	2	0,99	1	0,61	0	0	0	0
260-264,9	2	0,86	3	1,48	0	0	0	0	0	0
265-269,9	0	0	1	0,49	0	0	0	0	1	0,49
270-274,9	2	0,86	1	0,49	0	0	0	0	3	1,46
275-279,9	1	0,43	0	0	0	0	0	0	1	0,49
280-284,9	0	0	0	0	1	0,61	1	0,99	3	1,46
285-289,9	0	0	1	0,49	1	0,61	1	0,99	3	1,46
290-294,9	0	0	0	0	1	0,61	1	0,99	1	0,49
295-299,9	0	0	0	0	0	0	0	0	0	0
300-304,9	0	0	0	0	0	0	0	0	0	0
305-309,9	0	0	0	0	0	0	1	0,99	0	0
total n.	232		203		163		101		206	

AREA: Southern Tyrrhenian Sea (Mediterranean)
Species: ALBACORE (Thunnus alalunga) ALB
Gear: all gears UNCL (except PS)

LENGTH CLASSES	1985 n.	1985 %	1986 n.	1986 %	1987 n.	1987 %	1988 n.	1988 %	1989 n.	1989 %
30-34,9	0	0	0	0	0	0	0	0	0	0
35-39,9	1	0,16	0	0	1	0,17	0	0	1	0,20
40-44,9	1	0,16	0	0	2	0,34	3	1,51	0	0
45-49,9	0	0	1	0,16	1	0,17	1	0,17	3	0,59
50-54,9	2	0,31	9	1,42	5	0,86	4	6,79	3	0,59
55-59,9	25	3,88	48	7,58	14	2,41	27	4,58	18	3,54
60-64,9	75	11,65	24	3,79	47	8,08	63	10,70	51	10,04
65-69,9	132	20,50	80	12,64	91	15,64	111	18,85	114	22,44
70-74,9	125	19,41	166	26,22	129	22,17	107	18,17	103	20,28
75-79,9	75	11,65	115	18,17	121	20,79	84	14,26	71	13,98
80-84,9	86	13,35	79	12,48	71	12,20	86	14,60	68	13,39
85-89,9	73	11,34	80	12,64	72	12,37	65	11,04	45	8,86
90-94,9	41	6,37	25	3,95	22	3,78	31	5,26	26	5,12
95-99,9	5	0,78	4	0,63	5	0,86	5	0,85	3	0,59
100-104,9	0	0	1	0,16	1	0,17	2	0,34	1	0,20
105-109,9	1	0,16	0	0	0	0	0	0	0	0
110-114,9	1	0,16	1	0,16	0	0	0	0	1	0,20
115-119,9	0	0	0	0	0	0	0	0	0	0
120-124,9	1	0,16	0	0	0	0	0	0	0	0
125-129,9	0	0	0	0	0	0	0	0	0	0
130-134,9	0	0	0	0	0	0	0	0	0	0
135-139,9	0	0	0	0	0	0	0	0	0	0
140-144,9	0	0	0	0	0	0	0	0	0	0
145-149,9	0	0	0	0	0	0	0	0	0	0
150-154,9	0	0	0	0	0	0	0	0	0	0
total n.	644		633		582		589		508	