Col.Vol.Sci.Pap. ICCAT, 33 : 135-139 (1990)

SWORDFISH (*Xiphias gladius* L.) FISHERY IN THE SOUTHERN TYRRHENIAN SEA: A BRIEF REPORT (1985-1989)

by

Antonio Di Natale

AQUASTUDIO - Via Trapani, 6 - 98121 Messina - Italia

Key words: swordfish, Tyrrhenian Sea, gears, length classes.

ABSTRACT

A brief report about the Swordfish fishery in the Southern Tyrrhenian Sea gives a preliminary information about the fishery technology used in this area and the fishery season.

CPUE data are available for a couple of years but a length frequency analysis has been carried out for the last five years.

Graphs show a different shape every year but the peak seems stable around 115 cm in the years 1987-1989.

THE SWORDFISH FISHERY

Swordfish fishery has a really ancient tradition in the southern Tyrrhenian sea. Historical reports are known for the harpoon fishery in the Strait of Messina (XVII century b.C.) and for the drift nets fishery in the same area (Oppiano, 177 a.C.) (SISCI, 1984).

Harpoon fishery is still carried on by some special boats, called "feluche" or "passerelle", with a very long steel front deck (max 55 m) and a high iron main topmast (max 33 mt), with a small steering compartment at the top (SISCI et Al., 1988; SISCI & GOVERNALI, 1989). In 1989, only 18 "passerelle" were still in use, all in the area of the Strait of Messina.

Harpoon CPUE data (E = fishing days) are available only for two years (DI NATALE et Al., 1987):

C = Swordfish catches in kg

E = average fishing days

1985: CPUE = 34,86

1986: CPUE = 21,09.

The drift nets fishery has changed a lot after the second World War, when the boats were equipped with engins. The original vegetable

nets were gradually substituted with multifilament nylon nets, and the lenght rapidly changed fron 800 to more than 10 km (high is between 25 and 30 m), according with the new dimension of the boats. In the last years, nets of more than 30 km have been reported, even if this fishery could be still considered artisanal. The mesh size for the drift nets called "spadare" goes from 32 cm to 48 cm, with a maximum frequency around 42 cm. Such gear could be used from april to september.

Another type of drift net is called "palamitara" (mesh size between 18 and 32 cm), used both for Swordfish and Albacore, in spring and autumn.

The drift nets fleet which operate in the southern Tyrrhenian sea is quite a big one, with 497 boats in 1986 (estimated in over 650 in 1989), and an additional fleet could migrate from other areas in summer. More than 43 % of the above mentioned fleet use the drift nets alternatively with other gears.

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

C = Swordfish catches in kg

E = net legth/100 m x fishing day

1985: CPUE = 1,04

1986: CPUE = 0,90

Another gear commonly used for the Swordfish fishery in the southern Tyrrhenian sea is the surface drift long line: a first type of gear has the adult Swordfish as the target species (hooks n. 0 to 2), but a second type of long line (hooks n. 6 to 7 or 15 to 17), mostly used for the Albacore, could have juvanile Swordfish as the target prey.

The fleet which use the surface drift long line is bigger than the drift net one, with 717 boats in 1986 (DI NATALE et Al., 1987), but the boats are often very small and all the fleet should be considered as a true artisanal one. In the last two years a undefined percentage of the fleet left the long line fishery for the drift net fishery, due to the highest income and to the cost of the bait (which should means a dependance from the wholesaler, too).

More than 58% of the boats use the drift long line alternatively with other gears, depending from the season; anyway, the drift long line could be used every month of the year, but the juvanile Swordfish fishery is carried out mostly in autumn and winter in a certain number of villages.

Surface drift long line CPUE data are available for both types of gears, for 1985 and 1986 (DI NATALE et Al., 1987):

C = Swordfish catches in kg

E = number of hooks/100 x fishing day

ASWLL = surface drift long line with big hooks

JSWLL = surface drift long line with small hooks

1985: CPUE = ASWLL 10,42; JSWLL 0,72

1986: CPUE = ASWLL 5,65; JSWLL 0,01

CPUE data for 1986 have been strongly influenced by a bad weather season in the area and by the sampling draft (based on fixed days); JSWLL CPUE data are also affected by a more strict police control along the coast for illegal fishery.

LENGTH FREQUENCY

A continous survey has been carried out on Swordfish catches in several sampling points in the southern Tyrrhenian sea, in order to have a length frequency analysis of the stock.

In 1985 and 1986 the surveys were carried out in the harbours of Lipari, S.Agata Militello, Milazzo, Vibo Marina, Bagnara Calabra, Messina and Ganzirri, with a grant of the Italian Ministry of Merchant Marine (law n.41/82); in 1987, 1988 and 1989 the surveys have been carried out only in Milazzo, Messina and Ganzirri, with private funds by Aquastudio.

Length frequency (LJFL) graphs are shown in figures 1 to 5, for the catches obtained by all the gears and without any sex separation. Peaks are at 135 cm in 1985, 125 cm in 1986, 115 cm in 1987, 1988 and 1989, but the shape of the graphs is not so different in the last five years.

It is sure that another smallest peak should exists before 60 cm LJFL, but it is almost impossible to collect such length data at the landing points, due to the illegality of the fishery at that size.

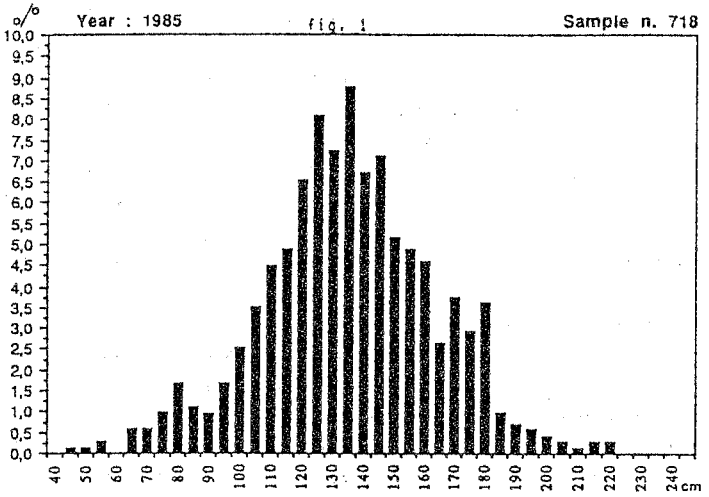
Pondered mean lengths are the followings:

year	1985	1986	1987	1988	1989
cm	136,1	137,3	125,4	122,9	123,8

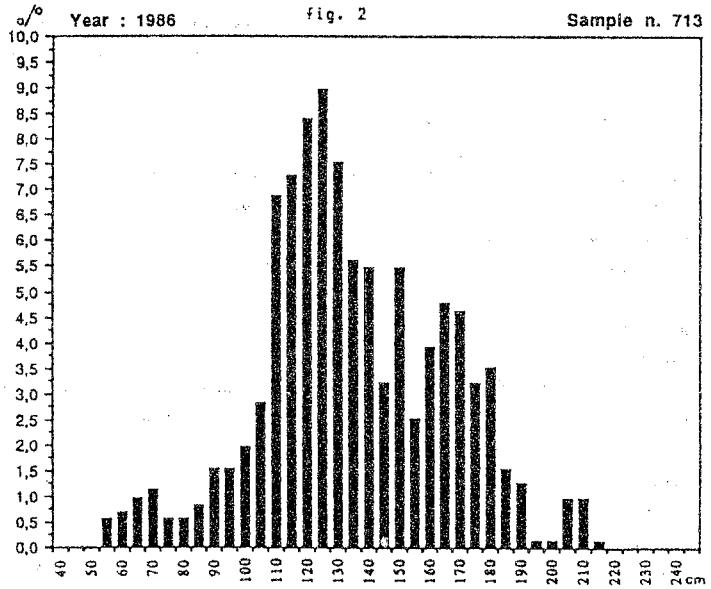
with a mean decreasing trend of 9,1 %.

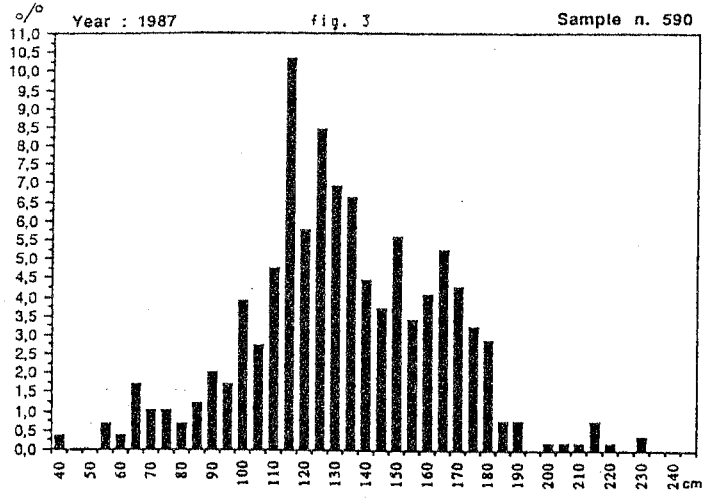
CONCLUSIONS

The Swordfish fishery has a great socio-economical importance for the people living around the southern Tyrrhenian Sea (and for the

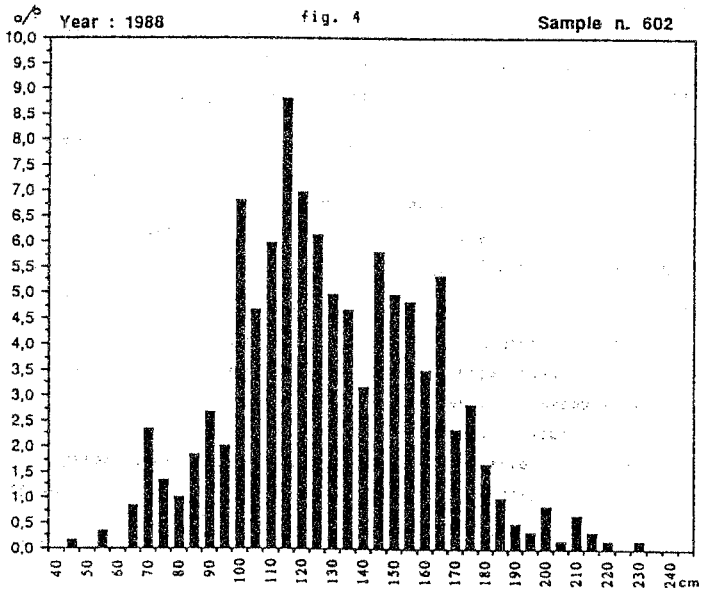


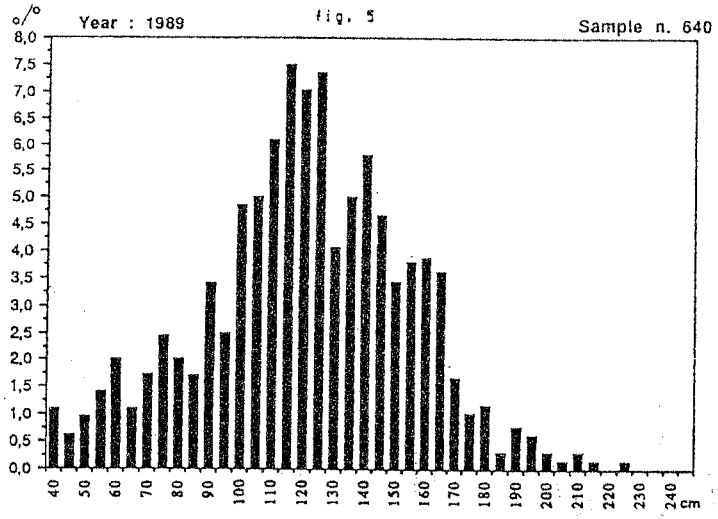
Length classes distribution of Swordfish (Xiphias gladius) in the Southern Tyrrhenian Sea





Length classes distribution of Swordfish
(Xiphias gladius) in the Southern Tyrrhenian Sea





Length classes distribution of Swordfish
(Xiphias gladius) in the Southern Tyrrhenian Sea

Italian fishery) and such activity seems to have still a general increasing trend.

But CPUE data (both scientific or informal), length frequency data and mean length trends show a troubled pattern, confirmed by the first data about a general decrease of catches during the 1990's spring fishery season, even if the value of such index is relatively low.

Furthermore, the impact of the drift nets causes serious management problem for this fishery, both in the southern Tyrrhenian Sea and in other Mediterranean basins.

A general reduction of the fishing effort seems to be necessary for the maintenance of the stock, but the application of any rules is extremely difficult, due to the migrating habit of the fleet and to the distribution of the boats (spread all around the coasts). Furthermore, the very low number of gross fish markets means a very difficult control of the catches, mainly for the fishery of juvanile specimens, which seems to have an increasing trend all around the Mediterranean basin.

International agreements about a more strict control of the fishing effort on the Swordfish stock in the Mediterranean are now useful for a first tentative of management for this important resource.

LITERATURE

CAVALLARO G., CEFALI A., FARANDA F.M., POTOSCHI A., SOTIRIADIS S., 1988 - Rilevazioni e studi biologici per la valutazione dello stock di Pescespada (Xiphias gladius L., 1758) nei mari meridionali italiani. Atti Seminari delle Unità Operative responsabili dei progetti di ricercapromossi nell'ambito della schema preliminare di Piano per la pesca e l'Acquacoltura. M.M.M., C.N.R., Roma: 259-270.

DI NATALE A., D'ORAZIO E., LEONARDI G., MANGANO A., MENTO N., PRESTIPINO GIARRITTA S., SCUDERI C., SARA' M., MAGNAGHI L., PODESTA' M., 1987 - Rilevazioni sulle quantità pescate e sullo sforzo di pesca esercitato nei confronti delle principali specie di Scombroidei. Report to the Ministry of Merchant Marine, 212 p.

DI NATALE A., MANGANO A., 1989 - Problematiche connesse allo sviluppo delle attività di pesca d'altura con reti pelagiche nel Mediterraneo. Mare Nostrum, ICRAP, III, 3: 7-8.

SISCI R., 1988 - La caccia al Pescespada nello Stretto di Messina. EDAS, Sfameni Ed., Messina, 519 p.

SISCI R., CAVALLARO N., CHILLEMI F., DI NATALE A., RICCOBONO F., SANTORO G., 1988 - Barche, Padroni e Marinai. Storia, arte e tradizioni della Riviera Nord di Messina. EDAS, Sfameni Ed., Messina, 301 p.

SISCI R., GOVERNALI S., 1989 - I Cavalieri del Mare. Enchiridion Ed., Palermo, 59 p.

AREA: Southern Tyrrhenian Sea (Mediterranean)
Species: SWORDFISH (Xiphias gladius) SWO
Gear: all gears UNCL (except PS)

LENGTH CLASSES	1985 n.	1985 %	1986 n.	1986 %	1987 n.	1987 %	1988 n.	1988 %	1989 n.	1989 %
40-44,9	0	0	0	0	2	0,34	0	0	7	1,09
45-49,9	1	0,14	0	0	0	0	1	0,17	4	0,63
50-54,9	1	0,14	0	0	0	0	0	0	6	0,94
55-59,9	2	0,29	4	0,56	4	0,68	2	0,33	9	1,40
60-64,9	0	0	5	0,70	2	0,34	0	0	13	2,03
65-69,9	4	0,56	7	0,98	10	1,69	5	0,83	7	1,09
70-74,9	4	0,56	8	1,12	6	1,02	14	2,32	11	1,72
75-79,9	7	0,97	5	0,56	6	1,02	8	1,33	16	2,50
80-84,9	12	1,67	5	0,56	4	0,68	6	1,00	13	2,03
85-89,9	8	1,11	6	0,84	7	1,19	11	1,83	11	1,72
90-94,9	[illegible]	[illegible]	11	1,54	12	2,03	16	2,66	22	3,44
95-99,9	[illegible]	[illegible]	11	1,54	10	1,69	12	1,99	16	2,50
100-104,9	[illegible]	[illegible]	14	1,96	23	3,90	41	6,81	31	4,84
105-109,9	[illegible]	[illegible]	20	2,81	16	2,71	28	4,65	32	5,00
110-114,9	[illegible]	[illegible]	49	[illegible]	28	4,75	36	5,98	39	6,09
115-119,9	[illegible]	[illegible]	52	7,29	61	10,34	53	8,80	48	7,50
120-124,9	[illegible]	[illegible]	60	8,42	34	5,76	42	6,98	45	7,03
125-129,9	[illegible]	[illegible]	64	8,98	50	8,47	37	6,15	47	7,34
130-134,9	[illegible]	[illegible]	[illegible]	[illegible]	41	6,95	30	4,98	26	4,06
135-139,9	[illegible]	[illegible]	[illegible]	[illegible]	39	6,61	28	4,65	32	5,00
140-144,9	[illegible]	[illegible]	[illegible]	5,47	26	4,41	19	3,16	37	5,78
145-149,9	[illegible]	[illegible]	[illegible]	[illegible]	22	3,73	35	5,81	30	4,69
150-154,9	[illegible]	[illegible]	[illegible]	[illegible]	33	5,59	30	4,98	22	3,44
155-159,9	[illegible]	[illegible]	18	[illegible]	20	3,39	29	4,82	24	3,75
160-164,9	[illegible]	[illegible]	28	[illegible]	24	4,07	21	3,49	25	3,91
165-169,9	[illegible]	[illegible]	34	4,77	31	5,25	32	5,32	23	3,59
170-174,9	[illegible]	[illegible]	[illegible]	4,63	25	4,24	14	2,32	11	1,72
175-179,9	[illegible]	[illegible]	[illegible]	[illegible]	19	3,22	17	2,82	7	1,09
180-184,9	[illegible]	[illegible]	[illegible]	[illegible]	17	2,88	10	1,66	8	1,25
185-189,9	[illegible]	[illegible]	[illegible]	1,54	4	0,78	6	1,00	2	0,31
190-194,9	[illegible]	[illegible]	[illegible]	[illegible]	4	0,78	3	0,50	5	0,78
195-199,9	[illegible]	[illegible]	[illegible]	[illegible]	0	0	2	0,33	4	0,63
200-204,9	[illegible]	[illegible]	[illegible]	[illegible]	1	0,17	5	0,83	2	0,31
205-209,9	[illegible]	[illegible]	[illegible]	[illegible]	1	0,17	1	0,17	1	0,16
210-214,9	[illegible]	[illegible]	[illegible]	[illegible]	1	0,17	4	0,66	2	0,31
215-219,9	[illegible]	[illegible]	[illegible]	[illegible]	4	0,78	2	0,33	1	0,16
220-224,9	[illegible]	[illegible]	[illegible]	0	1	0,17	1	0,17	0	0
225-229,9	0	[illegible]	0	0	0	0	0	0	1	0,16
230-234,9	0	0	0	0	2	0,34	1	0,17	0	0
235-239,9	0	0	0	0	0	0	0	0	0	0
240-244,9	0	0	0	0	0	0	0	0	0	0
245-249,9	0	0	0	0	0	0	0	0	0	0
total n.	718		717		590		602		640	

AREA: Southern Tyrrhenian Sea (Mediterranean)
Species: SWORDFISH (Xiphias gladius) SWO
only catches over the italian legal size (140 cm UJFL = about 100 cm LJFL)
Gear: all gears UNCL (except PS)

LENGHT CLASSES	1985 n.	1985 %	1986 n.	1986 %	1987 n.	1987 %	1988 n.	1988 %	1989 n.	1989 %
100-104,9	18	2,76	14	2,15	23	5,36	41	8,78	31	6,14
105-109,9	20	3,07	20	3,07	16	3,04	28	5,31	32	6,34
110-114,9	36	5,53	49	7,53	28	5,31	36	6,83	39	7,72
115-119,9	52	7,99	52	7,99	61	11,58	53	10,06	48	9,51
120-124,9	44	6,76	60	9,22	34	6,45	42	7,97	45	8,91
125-129,9	58	8,91	64	9,83	50	9,49	37	7,02	47	9,31
130-134,9	48	7,37	53	8,14	41	7,78	30	5,69	26	5,15
135-139,9	40	6,14	40	6,14	39	7,40	28	5,31	32	6,34
140-144,9	34	5,22	34	5,22	26	4,93	19	3,61	37	7,33
145-149,9	22	3,38	22	3,38	22	4,17	35	6,64	30	5,94
150-154,9	36	5,53	36	5,53	33	6,26	30	5,69	22	4,36
155-159,9	18	2,76	18	2,76	20	3,80	29	5,50	24	4,75
160-164,9	28	4,30	28	4,30	24	4,55	21	3,99	25	4,95
165-169,9	24	3,69	24	3,69	31	5,88	32	6,07	23	4,55
170-174,9	27	4,15	27	4,15	25	4,74	14	2,66	11	2,18
175-179,9	13	2,00	13	2,00	19	3,61	17	3,23	7	1,39
180-184,9	25	3,84	25	3,84	17	3,23	10	1,90	8	1,58
185-189,9	11	1,69	11	1,69	4	0,76	6	1,14	2	0,40
190-194,9	5	0,77	5	0,77	4	0,76	3	0,57	5	1,00
195-199,9	4	0,61	1	0,15	0	0	2	0,38	4	0,79
200-204,9	1	0,15	1	0,15	1	0,19	5	0,95	2	0,40
205-209,9	7	1,08	7	1,08	1	0,19	1	0,19	1	0,20
210-214,9	7	1,08	7	1,08	1	0,19	4	0,76	2	0,40
215-219,9	1	0,15	1	0,15	4	0,76	2	0,38	1	0,20
220-224,9	0	0	0	0	1	0,19	1	0,19	0	0
225-229,9	0	0	0	0	0	0	0	0	1	0,20
230-234,9	0	0	0	0	2	0,38	1	0,19	0	0
235-239,9	0	0	0	0	0	0	0	0	0	0
240-244,9	0	0	0	0	0	0	0	0	0	0
245-249,9	0	0	0	0	0	0	0	0	0	0
total n.	657		651		527		527		505	