

## TENTATIVE RECOVERY OF HISTORICAL BLUEFIN TUNA CATCHES IN THE BLACK SEA: THE BULGARIAN CATCHES 1950-1971

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### SUMMARY

*Among the many activities of the GBYP, data mining is one of the main ones. As part of this task, following a specific request from the ICCAT Department of Research and Statistics, it was possible to find evidence of some historical catches of bluefin tuna from the Bulgarian fleet operating in the Black Sea up to 1970. These catches were estimated from some documents and are hereby provided to the ICCAT Department of Research and Statistics and the SCRS BFT Species Group for filling some gaps in the BFT statistics database.*

### RÉSUMÉ

*L'exploration des données constitue l'une des principales activités de l'ICCAT-GBYP. Dans le cadre de cette tâche, suite à une demande spécifique formulée par le département des statistiques de l'ICCAT, il a été possible de trouver des preuves de quelques prises historiques de thon rouge réalisées par la flottille bulgare dans la mer Noire jusqu'en 1970. Ces captures ont été estimées à partir de certains documents et ont été dès lors fournies au département des statistiques de l'ICCAT et au groupe d'espèces sur le thon rouge du SCRS dans le but de combler certaines lacunes dans la base de données statistiques du thon rouge.*

### RESUMEN

*Entre las muchas actividades del ICCAT GBYP, la minería de datos es una de las principales. Dentro de esta tarea, a petición específica del Departamento de estadísticas de ICCAT, fue posible encontrar evidencias de algunas capturas históricas de atún rojo de la flota búlgara que operó en el mar Negro hasta 1970. Estas capturas se estimaron a partir de algunos documentos y, por tanto, se proporcionan aquí para el Departamento de estadísticas de ICCAT y el grupo de especies de atún rojo del SCRS con el fin de cubrir algunas lagunas en la base de datos estadísticos de atún rojo.*

### KEYWORDS

*Bluefin tuna, Black Sea, fishery, historical catches*

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## 1. Foreword

The catch statistics for the Bluefin tuna (*Thunnus thynnus*) are not fully complete, even for the last 60 years, besides all efforts continuously carried out by the ICCAT Statistical Department and the SCRS BFT Species Group.

One of the main task of the Atlantic-wide research programme on Bluefin Tuna (GBYP) is to carry out a data mining, with the purpose to fill data gaps. Since years, it was pointed out that data on Bluefin tuna catches from the Black Sea were simply not available in the ICCAT BFT data base and, for this reason, the ICCAT Statistical Department, in view of the SCRS BFT Data Preparatory meeting in March 2017, asked GBYP to try to find some data.

Even if the historical presence of Bluefin tuna in the Black Sea is well-documented (see the review provided by Di Natale, 2015), the Bluefin tuna fishing activities were very poorly documented and data were not available at all. A first data recovery tentative carried out in Turkey (Örenc *et al.*, 2014) was not able to find any Bluefin tuna catch data for the Turkish Black Sea fisheries. GBYP contacts with scientists from countries having fisheries in the Black Sea, with the objective to recover any possible evidence of historical bluefin tuna fisheries, provided no results so far. Therefore, it was decided to try to recover at least the basic information, in order to partly fill a gap, by examining all available data sources, with a desk work.

## 2. Bluefin tuna fishery data from the Black Sea

Even if Turkish catches between 1920 to 1960 are partly available (Hamre *et al.*, 1966; Miyake and Manning, 1975; Miyake and Tibbo, 1972), ranging from less than one ton to over 1,500 tons, and considering that the Turkish fleet was fishing also in the Black Sea, Bluefin tuna catches from the Black Sea or the Marmara Sea or the Straits were never distinguished from all other Turkish catches obtained in the Mediterranean Sea, and the statistics are comprehensive. Even the very recent publication by FAO (2016) is not able to disentangle the Mediterranean Bluefin tuna catches from those obtained in the past from the Black Sea. This fact prevents any analysis of the history of the Bluefin tuna disappearance from the Black Sea in the last decades. Mather *et al.* (1995) reported that Bluefin tuna catches in Turkey were negligible after 1970.

Bluefin tuna fishery in the Black Sea is even much less documented in recent years. Esipow (1928) made a general overview, but without relevant details. Popescu (2010) made a comprehensive report of all fisheries in the Black Sea, including the Bluefin tuna one, reporting that bluefin tuna was abundant prior to the '70s but it almost disappeared at the beginning of the '70s; he reported that bluefin tuna disappeared from the Romanian catches in the Black Sea in the '60s (Dumont *et al.*, 1999), but that catches were reported from Turkey up to 1986. It is not clear if those Turkish catches were originating from the Black Sea or from the Bosphorus. He referred to the drastic reduction of the bluefin tuna stock reported by Zaitsev and Mamaev (1997), who reported that small schools of bluefin tuna were sighted at the surface from aircrafts in the 1950s, but then the population fallen dramatically in the '80s in Bulgarian waters. This information is not in line with the graph included in the National Bulgarian National Report in 1995, which is the same included in the papers by Zaitsev and Mamaev (1997) and Kideys (2004); according this the official figure, the Bluefin tuna fully disappeared from the Bulgarian catches in 1970.

The disappearance of top predators in the Black Sea was apparently caused by dramatic environmental changes, possibly induced also by the heavy industrial pollution, but it also caused a chain of changes in the Black Sea trophic chains (Di Natale, 2010). At the same time, a chain of drastic changes has been reported in the biological components in the upper stratum of the Black Sea since the '70s, with various blooms of planktonic species, mostly alien and invasive. Detailed data are provided by the comprehensive work by Sorokin (2002).

According to recent anecdotal information and local press reports, sporadic catches of Bluefin tuna individuals have been reported again in the Turkish Black Sea waters, in the vicinity of the Bosphorus. These sporadic catches, all concerning single fish, which were mostly reported in very late summer and autumn, are possibly showing a slow reappearance of Bluefin tuna in the Black Sea, maybe linked to more acceptable environmental conditions. A strict monitoring of incidental catches, including sport fishery, in this area is certainly highly desirable, but current data are anyway not available.

Therefore, being the graph provided by Zaitsev and Mamaev (1997) and Kideys (2004) the only data source available for the historical catches in the Black Sea available so far, it was agreed to use it as the unique data source. The main problem is that this graph (**Figure 1**), which includes a total of 7 species, does not show the quantities in tons, being the graph just a percentage of the total quantity of large pelagic top predators and forage fish.

This further complication was partly solved when the paper provided by Keskin *et al.* (2015) was published, making the Bulgarian catch statistics from 1950 to 2010 finally available. The additional problem is that this paper does not include any specific catch figure for any top predator species, while catches are available for most of the main species (*Sprattus sprattus*, *Sarda sarda*, *Trachurus mediterraneus*, *Scophthalmus maximus* and *Rapana venosa*) plus a category “Others”, which surely includes anchovies, sardines, top-predators and even other species.

Being *Scophthalmus maximus* a demersal species and *Rapana venosa* a benthic Mollusc species, they were fully excluded from the following calculations. The major problem was trying to understand the content of “Others” category and Keskin *et al.* (2015) provided some details, which were partly useful for better understanding the statistics they provided. As a matter of fact, three species of clams (*Mytilus galloprovincialis*, *Chamelea gallina* and *Donax* spp.) were about 3.2% of the total industrial catches, but the Bulgarian industrial fishery (**Figure 2**) started mainly after the disappearance of the Bluefin tuna and therefore this information was not considered. Many other species were certainly included in the category “Others”, but most of these species were also Bluefin tuna preys.

Therefore, being impossible to obtain a more detailed figure, it was decided to fully consider the category “Other” in addition to the catches of *Sprattus sprattus*, *Sarda sarda* and *Trachurus mediterraneus*, as total catches for calculating and assessing the quantity of Bluefin tuna catches, being conscious that these quantities will provide a slight overestimation, due to the possible inclusion of undefined not foraging species among the “Others” category.

**Table 1** provides the calculation for obtaining the estimated catches of Bluefin tuna from the Bulgarian fishery for the years 1950-1971. According to the report provided by Popescu (2010) it is supposed that these catches were largely provided by purse-seiners (PS) and therefore they will be listed under this gear category in the ICCAT statistics, until more detailed data is made available.

### 3. Discussion

Unfortunately, at the moment the detailed catch statistics for the fisheries operating in the Black Sea in the last part of the XX century are only very partly available. For improving the current situation of full lack of data in the ICCAT Bluefin tuna catch data base for the Black Sea, we used only the Bulgarian catch statistics available so far.

The graph provided by Zaitsev & Mamaev (1997) and Kideys (2004) includes also the percentages for the years 1941 to 1949, where the Bluefin tuna catches were a much higher percentage of the catches, but unfortunately it was not possible to find any reference catch value for calculating the percentage values of Bluefin tuna catches and therefore estimating the total catch in tons.

Even if this exercise contributes for improving the Bluefin tuna catch statistics, it is sure that we are still missing the catches obtained in the same years in the Black Sea at least by Turkey<sup>2</sup>, Russia and Romania. We really hope that, in a future, the Colleagues in those countries will be able to conduct a proper data mining and report to the SCRS the detailed data of these past important catches.

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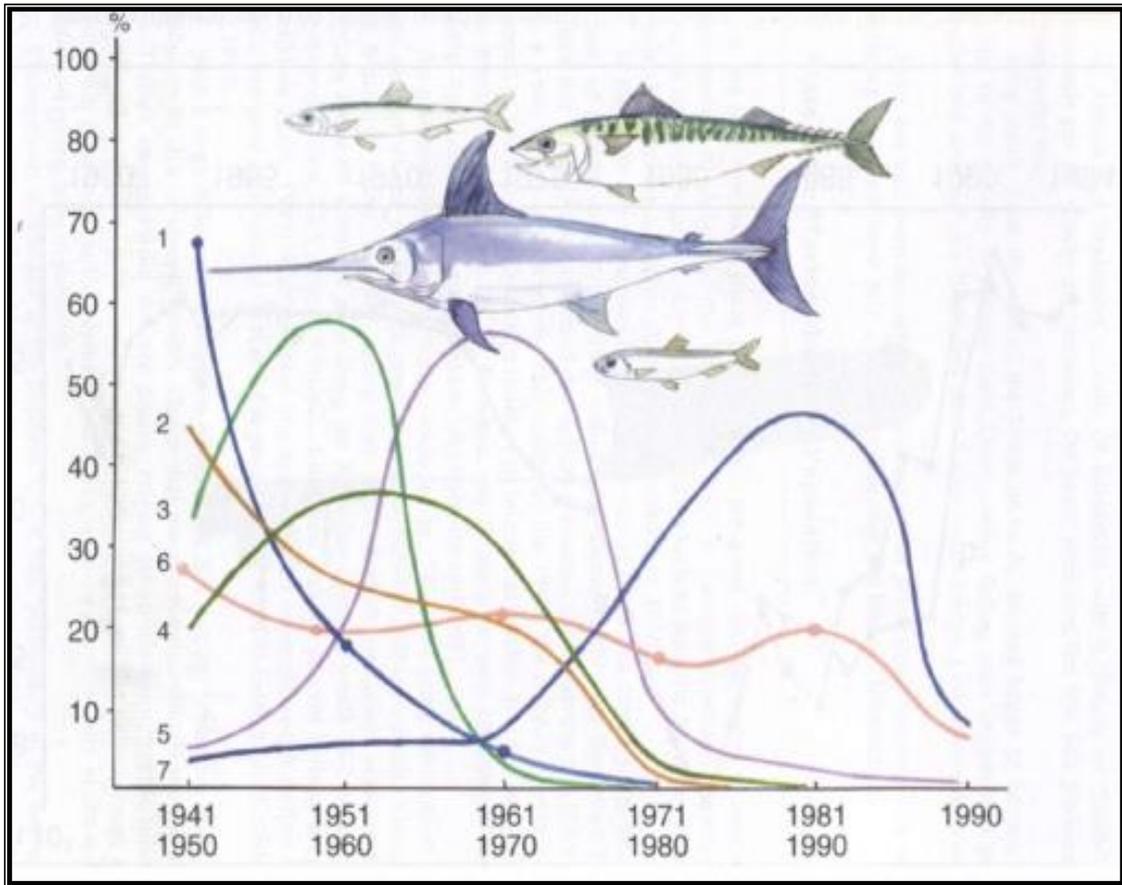
<sup>2</sup> For Turkey, it is possible that the catches from the Black Sea and the Marmara Sea were fully or partly included in the Turkish Bluefin tuna catches reported for the Mediterranean Sea, at least in some years.

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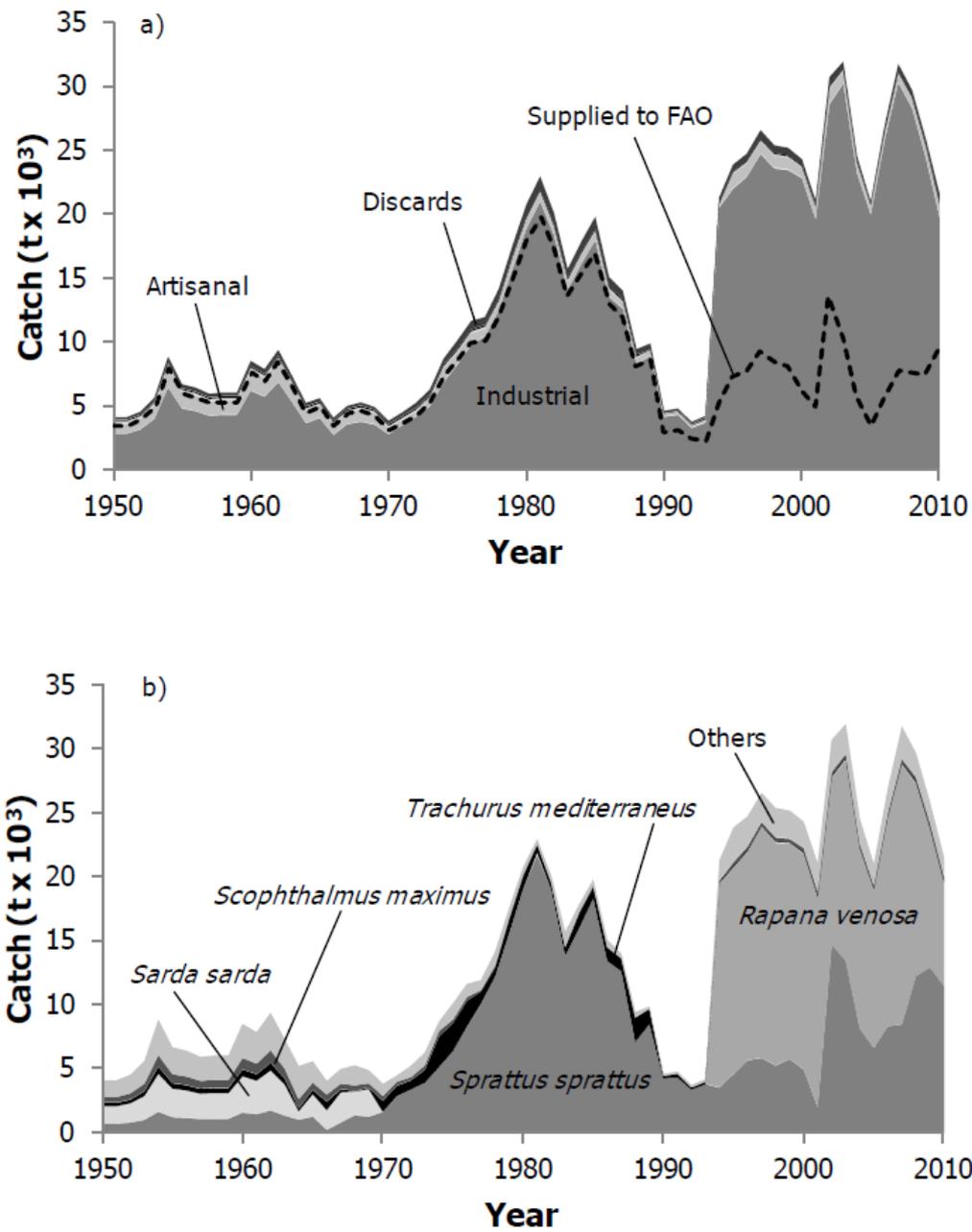
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**Table 1.** Reference catches for the Bulgarian fishery between 1950 to 1971 (from Keskin *et Al.*, 2015). Sprat, Bonito, Mediterranean horse mackerel and “others” were considered as reference base for calculating the quantities of Bluefin tuna catches, according to the percentages reported by the Bulgarian Fishery Statics and the graph provided by Zaitsev & Mamaev (1997) and Kideys (2004).

<b>YEAR</b>	<b>SPR (t)</b>	<b>BON (t)</b>	<b>HMM (t)</b>	<b>OTH (t)</b>	<b>total</b>	<b>%BFT</b>	<b>BFT (t)</b>
<b>1950</b>	730	1385	250	1300	3665	20	733
<b>1951</b>	730	1384	250	1300	3664	18	660
<b>1952</b>	810	1529	270	1430	4039	16,5	666
<b>1953</b>	1020	1895	340	1760	5015	14,6	732
<b>1954</b>	1640	2994	540	2740	7914	13,1	1037
<b>1955</b>	1230	2261	410	2080	5981	11,4	682
<b>1956</b>	1170	2170	390	2000	5730	10,4	596
<b>1957</b>	1080	2004	360	1850	5294	9	476
<b>1958</b>	1100	2041	370	1890	5401	7,9	427
<b>1959</b>	1100	2041	370	1890	5401	6,8	367
<b>1960</b>	1580	2868	520	2640	7608	5,9	449
<b>1961</b>	1460	2648	480	2440	7028	4,9	344
<b>1962</b>	1750	3161	570	2900	8381	2,1	176
<b>1963</b>	1350	2465	450	2280	6545	1,1	72
<b>1964</b>	1030	690	220	2580	4520	1	45
<b>1965</b>	1260	1784	320	1650	5014	0,7	35
<b>1966</b>	230	1573	630	1050	3483	0,6	21
<b>1967</b>	800	2387	220	1130	4537	0,4	18
<b>1968</b>	1380	1884	10	1540	4814	0,3	14
<b>1969</b>	1260	2182	110	1010	4562	0,2	9
<b>1970</b>	1620	44	850	930	3444	0,1	3
<b>1971</b>	2850	55	790	470	4165	0,05	2



**Figure 1.** Trends (%) of mean catches per decade of pelagic top predators and forage fish (anchovy and sprat) in 1941-1990 in the Bulgarian Black Sea waters. 1: bluefin tuna; 2: mackerel; 3: swordfish; 4: bonito; 5: bluefish; 6: anchovy; 7: sprat (from Bulgarian National Report 1995, in Zaitsev and Mamaev, 1997, and in Kideys, 2004).



**Figure 2.** Total reconstructed catches for Bulgaria in the Black Sea by a) fisheries sector plus discards, 1950-2010. Officially reported data as reported by FAO (adjusted time series) on behalf of Bulgaria is overlaid as line graph. Subsistence and recreational catches are included but too small to be visible; and b) by major taxonomic category. The category ‘others’ consists of 36 additional, minor taxa. The significant reduction in fishing around 1990 resulted from the privatization of the fishing fleet from a state-owned industry (from Keskin *et al.*, 2015).