

TUNA TRAP DATA EXISTING IN THE ICCAT DATABASE AND DATA RECOVERED UNDER THE GBYP

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SUMMARY

Trap data in the ICCAT bluefin tuna data base represent an important component, particularly because the time series starts from 1950. The two first Phases of ICCAT-GBYP activities considerably improved the ICCAT data base, with many new data sets, which now start from 1525. These data, with all the others that will be collected by GBYP in the following Phases, would help for better understanding the evolution of this historical fishery and of the stock, together with their fluctuations over the centuries.

RÉSUMÉ

Les données des madragues contenues dans la base de données du thon rouge de l'ICCAT représentent un élément important, en raison notamment du fait que la série temporelle démarre à partir de 1950. Les deux premières phases des activités du GBYP-ICCAT ont considérablement amélioré la base de données de l'ICCAT, grâce aux nombreux jeux de données nouvelles, qui débutent désormais à partir de 1525. Ces données, avec toutes les autres qui seront recueillies par le GBYP lors des phases suivantes, contribueront à améliorer la compréhension de l'évolution de cette pêcherie historique et du stock, ainsi que leurs fluctuations au fil des siècles.

RESUMEN

Los datos de las almadrabas son un elemento importante de la base de datos ICCAT sobre atún rojo, sobre todo porque la serie temporal comienza en 1950. Las dos primeras fases de las actividades del ICCAT-GBYP mejoraron considerablemente la base de datos de ICCAT, con muchos conjuntos de datos nuevos, que ahora comienzan a partir del año 1525. Estos datos, junto con otros que serán recopilados por el GBYP en las siguientes fases, contribuirán a una mejor comprensión de la evolución de esta pesquería histórica y de este stock, así como de sus fluctuaciones a lo largo de los siglos.

KEYWORDS

*Bluefin tuna, ICCAT, GBYP, Atlantic Ocean,
Mediterranean Sea, stocks, catch, historical series*

1. Introduction

The comprehensive ICCAT Atlantic-Wide Research Programme FOR Bluefin Tuna (GBYP) is required to improve basic data collection, understanding of key biological and ecological processes, assessment models and management.

One of the important elements of this programme is to recover existing data sets which are not actually incorporated in the ICCAT data base on bluefin tuna (BFT) and to support the improvement of the assessment analytical work. These data might include Task I data (total nominal catches by gear/region/flag and/or fleet characteristics per year), Task ii data (total catch and effort by month, by square and by area, and length and/or weight frequencies by gear/sampling area), biological data (length/age, length/ or age/maturity, etc.), genetic data, trade statistics (i.e., SDT or auction sales sets) and also historical data sets prior to 1950.

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2. The existing ICCAT bluefin tuna database

Trap fishing for bluefin tuna stocks of both the western Atlantic and the eastern Atlantic and Mediterranean has significantly contributed to the total catches made during the last seven decades (**Figure 1**). During the 1950s and 1960s, the quantities of Atlantic bluefin tuna caught by tuna traps have dominated, oscillating within a range between about 20 and over 60% of a total catch up to about 40,000 tons, made along with the other gears used to fish for the same species, namely baitboat, longline, purse seine, sport fishery and other gears (**Figure 2**). Later on, these proportions decreased to an average of 10% as the other fishing gears started to take over the traps, mainly from purse seiners and longline boats, which made the reported bluefin tuna catches exceeding 50,000 tons during the 1990s.

Within the two bluefin tuna stock management units, two-thirds (67%) of the trap catches occur in the eastern Atlantic, while 30% are in the Mediterranean Sea and only 3% in the western Atlantic (**Figure 3**).

Since the late 1960s, catch levels reached by traps in the eastern Atlantic and the Mediterranean Sea have never been able to exceed 5,000 tons a year since the peak catches of 15-20,000 tons in the late 1950s. The 1970s was the period of the lowest reported catches (**Figure 4**). For the last three decades, the eastern Atlantic represents the area where the trap fishery was mostly active, while it has been drastically diminished in the Mediterranean Sea.

In the eastern Atlantic, EU-Spain, Morocco and EU-Portugal are the only ICCAT Contracting Parties, Entities or Fishing Entities (CPCs) which still maintain trap fishing activities, although the Portuguese traps most active period was during the 1950s (**Figure 5**).

Seven ICCAT CPCs in the Mediterranean Sea have been exploiting bluefin tuna using traps and reporting data to the ICCAT database in the more recent decades. From 1950 to 1980, Libya, EU-Italy, Tunisia, EU-Spain and Algeria contributed to the most productive period of this species with quantities reaching more than 4,000 tons during the two first decades (**Figure 6**). Since then, the Mediterranean bluefin tuna caught by traps has never exceeded 2,000 tons, landed by the same countries that were joined by Turkey, for a short period of time (1981-1985), then by Morocco, from 1986 to 2002 (which also reported a few catches in the mid-1960s). For the most recent years, the few remaining active traps in the whole Mediterranean Sea are Italians, mainly in Sardinia, catch very low quantities (around 100 tons a year).

During the last six decades, bluefin tuna trap fisheries have been also continuously providing biological information necessary for stock assessment purposes, along with other gears such as purse seine, baitboat and longline (**Table 1**). The ICCAT Task II database for bluefin tuna size and catch-at-size, particularly obtained from the trap fisheries, revealed the high importance of this fishery for the biological inputs for the stock assessment.

For the western Atlantic bluefin tuna stock unit, Canada is the only ICCAT CPC which regularly provides this kind of biological information from its traps, since late 1970s, while the United States did so for only seven years (1955-1961).

Concerning the other eastern bluefin tuna stock unit, EU-Spain and EU-Italy are the main CPCs which provide this information almost on a regular basis, while EU-Portugal and Morocco have reported more regularly during the last years. On the other hand, Tunisia and Libya have ceased to provide data in 1999 and 2005, respectively, after only a few years of collecting such Task II information, due to the traps no long being active in these countries.

The size of the bluefin tuna caught by traps from 1955 to 2009 ranged between 20 and 490 cm (fork length) although the most frequent sizes are 85-315 cm, with modes showing a possible cyclic pattern (**Table 2**).

3. The contribution by ICCAT-GBYP

The ICCAT-GBYP Data Recovery Programme, initiated in 2010, had, among others, the objective to carry out a first data mining and data recovery activity from all fisheries in Phase 1, particularly focusing effort on the trap fishery, due to its historical relevance.

For this purpose, the ICCAT GBYP launched two Calls for Tenders, for beginning the process, and the first data sets from various fisheries have been already incorporated in the ICCAT bluefin tuna database.

Among many other data from various fisheries, the GBYP recovered in Phase 1 a first set of tuna trap data concerning 4 traps, from 1994 to 2008, 56 “matanzas”, 2,895 bluefin specimens and about 208 tons of total bluefin tuna catch.

Another Call for Tenders for data mining and data recovery was launched by the ICCAT-GBYP at the beginning of Phase 2, with the purpose of having additional trap data available for the Symposium.

Two other Calls for Tenders in Phase 2 provided, among other data from various fisheries, additional tuna trap data for the years from 1525 to 2009, concerning 186 traps in 6 ICCAT CPCs, for a total of 30,434 fishing operations (“matanzas”), concerning a total of 23,183,250 bluefin tuna individuals (**Table 3**) and a total of about 618,733 tons of total bluefin tuna catch. This is a relevant improvement in the ICCAT bluefin tuna database.

Another Call for Tenders for data mining and data recovery will be issued before the end of Phase 2, focusing attention on the gaps concerning all bluefin tuna fisheries (including traps) and particularly on the data from the eastern Mediterranean Sea, the Bosphorus, the Marmara Sea and the Black Sea, possibly exploring the Ottoman Archive.

Based on the results of Phase I, namely through the existing potential data sets sitting in various archives and laboratories, the ICCAT-GBYP Data Recovery Programme further focused on trap data for its data mining and data recovery activities in Phase II (2011), by:

- dedicating a specific Call for Tenders for mining and the recovery tuna trap fisheries data;
- seeking to go back as far as the XVI century to recover catch data as well as fishing effort and any available auxiliary information related to fish size, environmental notes, etc., for the historical tuna traps in the Mediterranean Sea, in the eastern Atlantic Ocean and possibly in the Marmara Sea, the Bosphorous and the Black Sea; for the latter, the possibility to explore the Ottoman Archives was identified;

4. Conclusions and recommendations

The importance of the trap data series in the context of the ICCAT bluefin tuna database is fundamental for the understanding of the long-time trends and cycles of this species.

The first activities of the GBYP have already demonstrated the concrete possibility of recovering important data sets in several countries, going back in time for more than five centuries, considerably improving the available database and creating the broadest data series for one single species among all tuna RFMOs.

These data mining and data recovery activities should be further continued and improved, both for filling the most recent gaps in the data series in some areas and for going back in time in all areas. It will be not an easy duty, but it will only be possible by continuing the serious engagement of many scientists and the ICCAT GBYP.

Furthermore, the ICCAT GBYP should possibly recover all the additional data (environmental, etc.) that may help for a better understanding of the yearly yields of this fishery.

It should be recalled that all the data collected under the Programme (ICCAT-GBYP) shall be used only for scientific purposes and according to the ICCAT rules. Any other use of these data should be specifically authorised by ICCAT.

These data proved not only their usefulness for any foreseen stock assessment, but also reinforced the need to strengthen the effort on data mining and data recovery for the coming years.

Table 3. ICCAT-GBYP trap data recovery in Phase 1 and in the first part of Phase 2.

<i>Phase 1: ICCAT-GBYP 02/2010</i>					
<i>Country</i>	<i>1st year</i>	<i>Last year</i>	<i>No. of traps</i>	<i>No. of matanzas</i>	<i>No. of Tunas</i>
Italy	1994	2008	4	56	2,895
	1994	2008	4	56	2,895
<i>Phase 2: ICCAT-GBYP 01 & 02/2011</i>					
<i>Country</i>	<i>1st year</i>	<i>Last year</i>	<i>No. of traps</i>	<i>No. of matanzas</i>	<i>No. of tunas</i>
Italy	1708	1635	73	9,758	3,422,121
Portugal	1837	1934	23	10,029	5,404,873
Spain	1525	2009	51	7,190	12,581,269
Morocco	1927	2007	13	1,080	399,538
Tunisia	1863	1932	8	1,174	1,035,940
Libya	1915	1942	18	1,203	339,509
Total	1525	2009	186	30,434	23,183,250

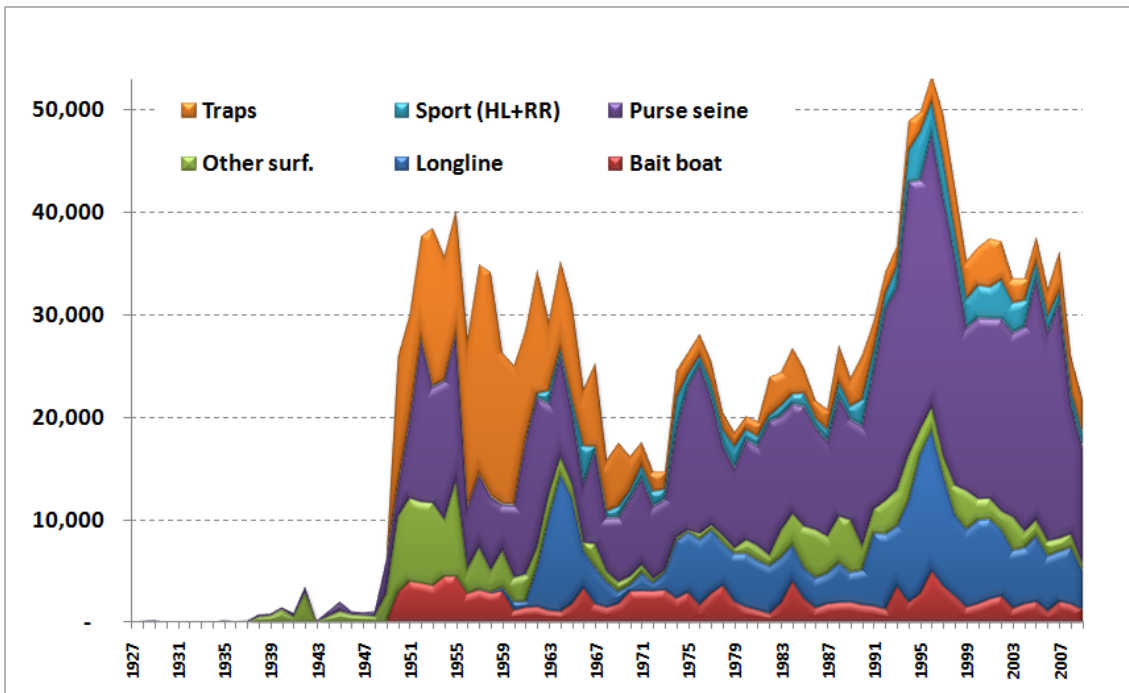


Figure 1. Summary of Atlantic bluefin tuna catches by gear type.

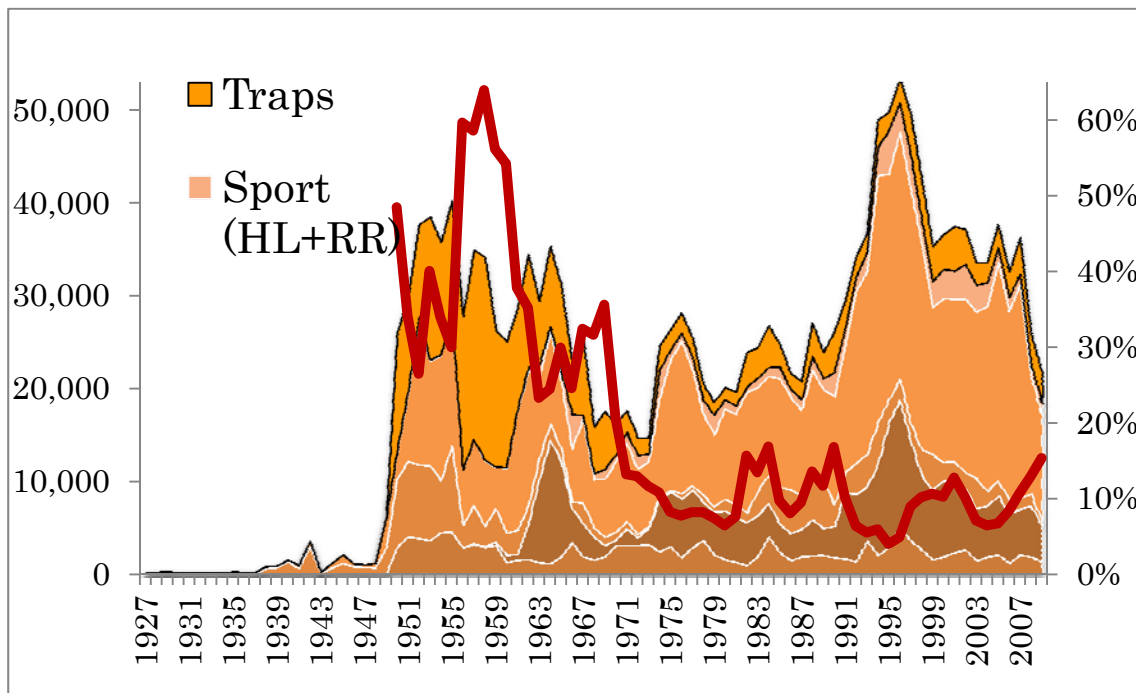


Figure 2. Percentage of bluefin catches in the trap fisheries.

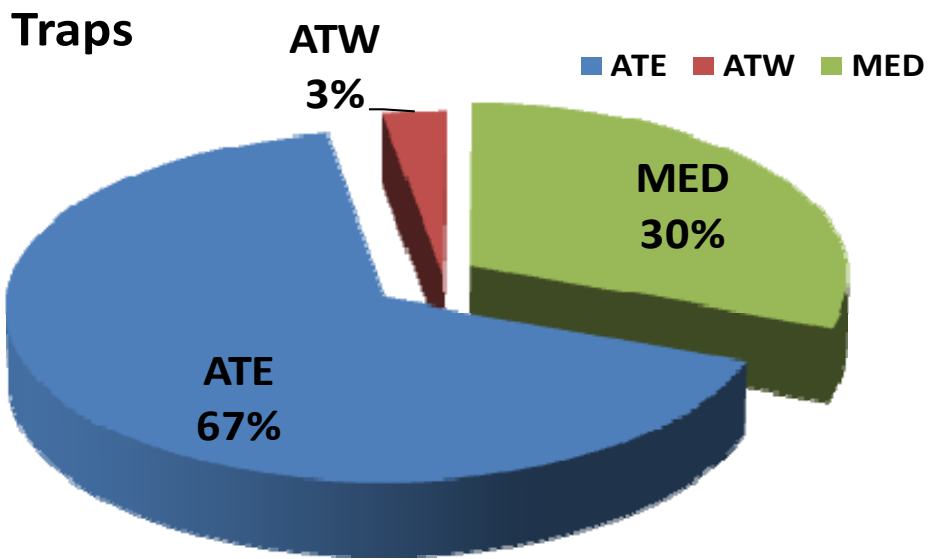


Figure 3. Distribution of bluefin tuna catches by area.

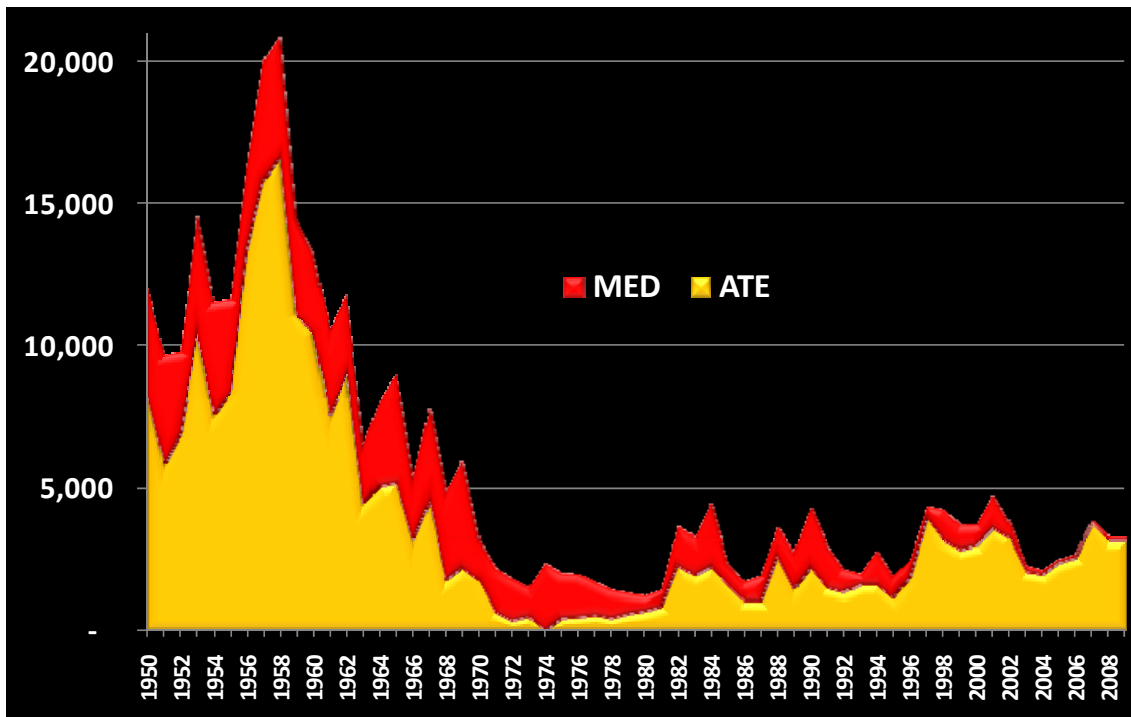


Figure 4. Annual trends in bluefin tuna catches for the eastern stock unit.

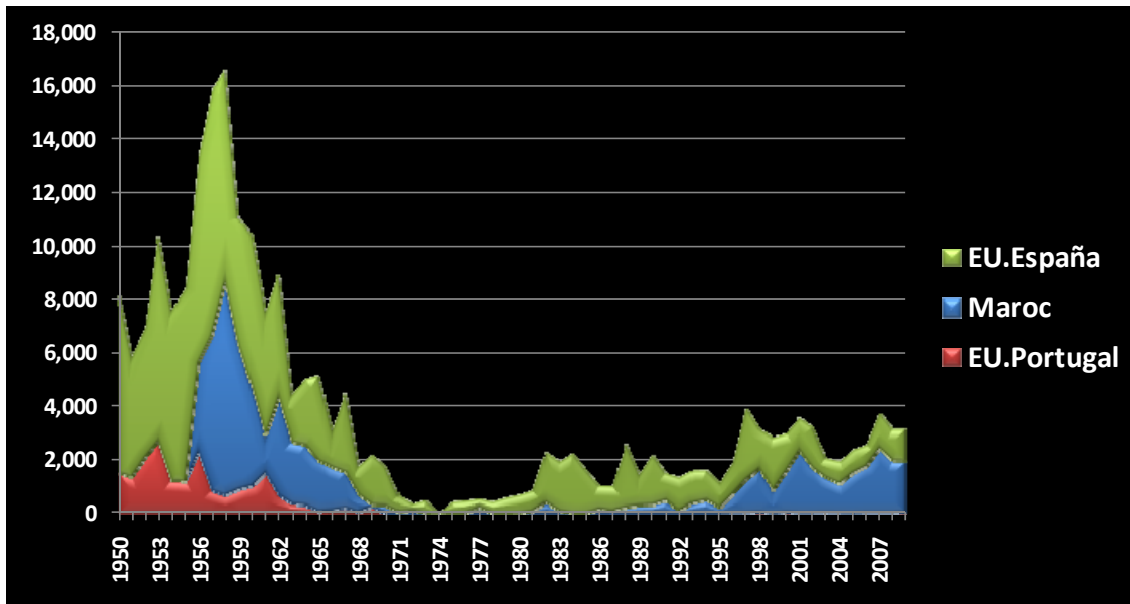


Figure 5. Annual trends of bluefin tuna catches for the eastern Atlantic eastern stock management unit by flag/CPC.

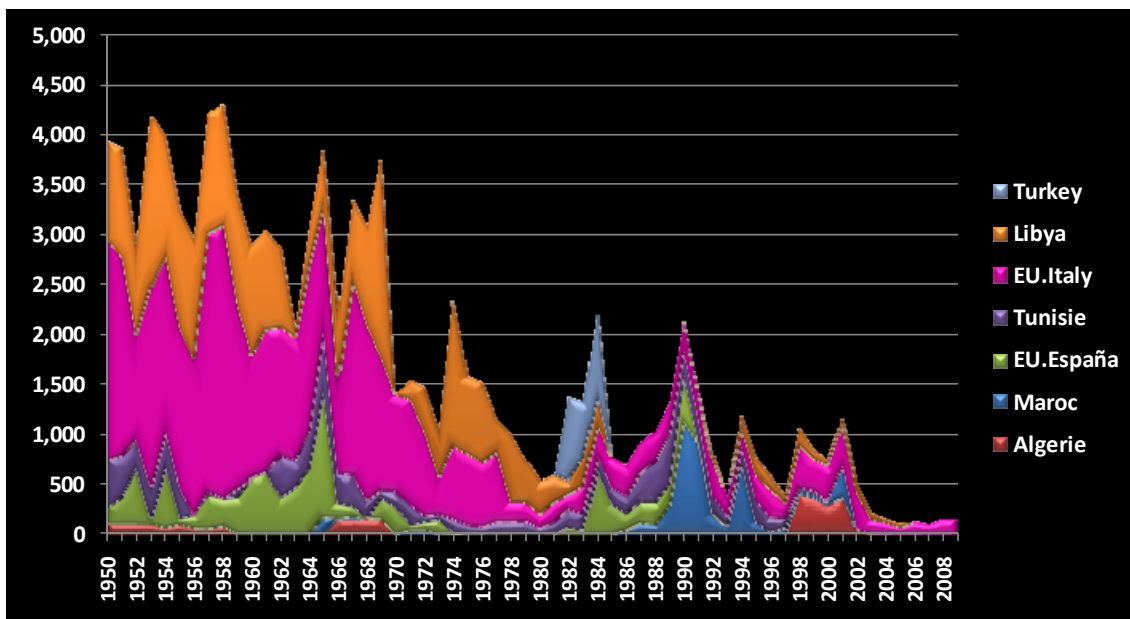


Figure 6. Annual trends of bluefin tuna catches for the Mediterranean stock management unit y flag/CPC.