

REPORT ON THE USE OF RESEARCH MORTALITY ALLOWANCE BY ICCAT GBYP IN 2012-2016 AND THE FIRST PART OF 2017

A. Di Natale¹, S. Tensek¹, A. Pagá García¹

SUMMARY

Some specific research needs of the Atlantic-wide Research Programme for Bluefin Tuna (GBYP) were officially solved by ICCAT adopting the Rec.2011-06, which allows up to 20 tons of research mortality by year. This particular provision covers incidental mortality during tagging or mortality induced by biological sampling activities, within the framework of the ICCAT GBYP contracts. This paper reports the details about the period of enforcement of RMA (from 2012 to 24 August 2017). It is very clear that RMA was used with a lot of caution by all contractors and that the system in place is working well. All RMA certificates were duly issued, checked and finally registered and they are able to provide all necessary details. The individual data of each fish can be used also for L/W correlations. The total used ICCAT GBYP Research Mortality Allowance was of 5.04 t in 2012, 4.39 t in 2013, 0.89 t in 2014, 0.32 t in 2015, 0.87 in 2016 and 0.84 in the first part of 2017.

RÉSUMÉ

Quelques besoins spécifiques en matière de recherche du Programme de recherche de l'ICCAT sur le thon rouge englobant tout l'Atlantique (GBYP) ont été résolus officiellement par l'ICCAT au moyen de l'adoption de la Rec. 11-06, qui prévoit une tolérance de mortalité pour la recherche (RMA) de 20 tonnes maximum par an. Cette disposition spécifique couvre la mortalité accidentelle ayant lieu pendant le marquage ou la mortalité causée par des activités d'échantillonnage biologique, dans le cadre des contrats de l'ICCAT-GBYP. Ce document apporte des détails sur la période de mise en place de la RMA (de 2012 au 24 août 2017). Il ressort clairement que la RMA a été utilisée avec beaucoup de prudence par tous les prestataires et que le système en place fonctionne bien. Tous les certificats RMA ont été dûment émis, vérifiés et finalement enregistrés et ils permettent de fournir tous les détails nécessaires. Les données individuelles de chaque poisson peuvent également être utilisées pour les corrélations taille/poids. Le volume total consacré à la tolérance de mortalité pour la recherche de l'ICCAT-GBYP s'élevait à 5,04 t en 2012, 4,39 t en 2013, 0,89 t en 2014, 0,32 t en 2015, 0,87 t en 2016 et 0,84 t au début de 2017.

RESUMEN

Algunas necesidades específicas en cuanto a investigación del Programa de investigación de atún rojo para todo el Atlántico (GBYP) fueron solucionadas oficialmente por ICCAT mediante la adopción de la Rec. 11-06, que establecía una cuota de mortalidad para la investigación por año de 20 t. Esta disposición particular cubre la mortalidad incidental durante el marcado o la mortalidad inducida por las actividades de muestreo biológico en el marco de los contratos del ICCAT GBYP. Este documento informa sobre los detalles del periodo de ejecución de la tolerancia de mortalidad para la investigación (RMA) (desde 2012 hasta el 24 agosto de 2017). Está muy claro que todos los prestatarios utilizaron la RMA con mucha precaución y que el sistema en vigor está funcionando bien. Todos los certificados RMA fueron debidamente expedidos, verificados y finalmente registrados y proporcionan todos los detalles necesarios. Los datos individuales de cada pez pueden usarse también para correlaciones L/W. El total utilizado de la tolerancia de mortalidad para la investigación del ICCAT GBYP fue de 5,04 t en 2012, 4,39 t en 2013, 0,89 t 2014, 0,32 t en 2015, 0,87 en 2016 y 0,84 en la primera parte de 2017.

KEYWORDS

Bluefin tuna, ICCAT, Research Mortality Allowance, size frequencies, weight frequencies, bluefin tuna mortality

¹ ICCAT, GBYP – Calle Corazón de Maria 8, 6ª – 28002 Madrid (España); antonio.dinatale@iccat.int, stasa.tensek@iccat.int, alfonso.paga@iccat.int

1. Introduction

After the beginning of all research activities of the Atlantic-wide Research Programme for Bluefin Tuna (ICCAT GBYP) in March 2010, it was clear that some of those activities were creating formal problems in terms of incidental or deliberate mortality for bluefin tuna.

Similar problems were encountered by a previous ICCAT programme (BYP) and they were resolved by the *Supplemental Recommendation by ICCAT on Bluefin Tuna Research in the Central North Atlantic Ocean* (Rec. 01-08).

As a matter of fact, since the first biological sampling programme it was necessary to find a legal solution for the specimens that were collected for scientific uses and the same problem was faced when the field tagging activities were conducted, because some fish incidentally died during the fishery or the manipulation on board. The peculiar problem caused by sampling undersize fish was also evident, particularly after the adoption and enforcement of the ICCAT Rec.08-05, Rec.09-06 and Rec. 10-04.

In the first period, the limited additional mortality was assumed by each flag CPC, declaring these individuals within the quota and issuing regular BCDs, but the general problem was clear and it was posed in front of the SCRS in 2011 and then in front of the Commission (http://iccat.int/Documents/BienRep/REP_EN_10-11_II_1.pdf page 2), where a draft Recommendation was proposed by the ICCAT Secretariat.

2. The ICCAT GBYP Research Mortality Allowance

The ICCAT Commission, after the endorsement of a draft Recommendation by Panel 2, finally adopted the Rec.11-06 “*Recommendation by ICCAT Concerning the Atlantic-Wide Bluefin Tuna Research Programme (GBYP)*” and this official decision was immediately able to provide a formal and legal solution to the several practical scientific problems linked to the various research activities of GBYP.

In particular, art. 2 of Rec.11-06 exempted the scientific institutions and entities participating in the ICCAT GBYP scientific research activities from the Commission’s conservation measures on bluefin tuna for up to a maximum of an overall amount of 20 metric tons of bluefin tuna annually (“Research Mortality Allowance” or “RMA”) taken or killed incidentally during the GBYP biological and genetic sampling programme or the tagging activities, as approved by the SCRS and endorsed by the Commission. These tunas cannot be sold for commercial purposes and shall be reported in detail to ICCAT and SCRS at the end of each Phase of GBYP, according to specific rules that will be established by the ICCAT Secretariat and attached to the research contracts.

Furthermore, art. 3 of Rec.11-06 exempted the same institutions from the Commission’s conservation measures on bluefin tuna and particularly from the minimum size limit, the limit concerning the use of any fishing gear or tool and the fishery closures, for allowing the GBYP scientific research activities to be conducted at any time of the year, with any gear and for sampling any size of bluefin tuna, according to the annual programme approved by the SCRS and endorsed by the Commission.

The ICCAT Secretariat, on 22 May 2012, issued a first circular (no. 2296/2012), establishing the rules and the details for the enforcement of Rec.11-06, including the official form for reporting the RMA and the first list of authorized institutions (20 entities). At the same time, specific procedures were set by the GBYP Coordination, in order to ensure a detailed recording of all the certificates and events, with special forms agreed with the ICCAT Statistical Department.

The initial circular was followed by other circulars that were issued for the purpose of updating the list of authorized entities in each year. The most recent circular was issued in September 2017 (no. 1386/2017), including the list of 43 authorized entities.

3. The use of ICCAT GBYP Research Mortality Allowance in 2012- 2017

The ICCAT GBYP RMA was used with a lot of attention by all institutions participating to GBYP research activities and was clearly extremely useful from a practical point of view.

The total quantities of RMA used by year from 2012 up to 24 August 2017 are showed on **Table 1** and **Figure 1**, along with the related number of certificates. In 2012 and 2013 the use of RMA was around 25% of the maximum allowed by Rec.11-06, while in the following years it was quite lower. The average weight of the fish included in the RMA up to 24 August 2017 is 6.17 kg (RWT).

Most of the RMA certificates originate from sampling activities (~63%), while considering the quantity in kg it is different and the larger amount is caused by incidental mortality during tagging activities. On the opposite, a majority of fish in number is coming from sampling (~77%) because several juvenile bluefin tunas have been sampled, including several larvae² (**Figure 2**). The detail of yearly data is on **Table 2**.

The final destination of the bluefin tuna included in the ICCAT GBYP RMA was quite variable, depending on the research needs, the opportunities and the different situations. **Figure 3** shows the distribution in detail, by year and total, both in kg and number of fish. The largest amount of RMA (~36%) was used for charity purposes, but in the reality the quantity was higher, because most of the fish classified as “mixed uses” (~6%) were very partly used for scientific purposes (sampling spines, otoliths and tissues) and then given for charity as well. A relevant quantity (~33%) was used for crew consumption, particularly when sampling was made on cruise or when it was very difficult to organise a charity donation³. About 16% of the RMA was used for scientific purposes and the details about the number of fish clearly demonstrate that many of these fish were juveniles. About 10% of the RMA was discarded at sea (usually after sampling otoliths and/or spines), either because they were fish not suitable for consumption or because they were very damaged fish. The details are on **Table 3**.

Most of the quantities used as Research Mortality Allowance by ICCAT GBYP were coming from activities carried out in the central Mediterranean Sea (~41%) and from the Strait of Gibraltar (~32%), while the majority of the specimens were originated from the western Mediterranean Sea (~33%), because of the number of juveniles and larvae sampled there; the details are showed in **Table 4** and in **Figure 4**. The average weight of the fish by area was quite variable, ranging from 0.29 kg in eastern Mediterranean to 225 kg in North-western Atlantic, with a general average of 6.17 kg.

The large majority of the quantities in weight (~45%) used by ICCAT GBYP RMA were made by the baitboat fishery (either in the Bay of Biscay or in the Strait of Gibraltar), while considering the number of fish, this fishing gear accounted for only ~19%. The majority of the number of fish proceeded by hand lines (~40%), while considering the quantities in weight this gear accounted for only ~4% of RMA, because they were used for sampling juvenile tunas. Important components were also originated from longlines (~14% in weight and ~9% in number of fish), while farms (cages) provided also important quantities in weight (~15%) and number of fish (~8%). The average weight by gear is quite representative of the usual average. The details are showed on **Table 5** and **Figure 5**.

4. Possible use of individual fish data from ICCAT GBYP Research Mortality Allowance

The data from the individual fish reported on ICCAT GBYP RMA certificates are usually of the best quality, because these forms were compiled by scientists under the best possible conditions. Then, length and weight measurements are usually very accurate, also because these data will be used as reference for biological analyses (including ageing). Only in very few cases, when small juveniles of age 0 were sampled, the weight was provided in total for fish having exactly the same fork length. For these reasons, size and weight data from RMA certificates can be used not only for having a general overview of the size and weight frequencies (**Figure 6**), but also for improving the number of reliable samples which can be used for L/W correlations (**Figure 7**).

5. Discussion

After these first five years of experience about the enforcement of Rec.11-06, it is very evident that the provisions included in this recommendation were extremely useful and well thought. The practical aspect of the mortality happening during some GBYP research activities is showing a full and easy enforcement of the Rec. 11-06, with certificates issued, checked and confirmed in real time by GBYP, while all files are available at the Secretariat for all possible uses.

The opportunity for improving available data for SCRS uses was not considered at the beginning, but it is now to be taken into account, because of the high quality of the size and weight data reported by the certificates.

The mortality caused by the use of RMA, regularly reported by GBYP to the ICCAT Secretariat and now included also in the GBYP detailed annual report (Di Natale *et al.*, in press), shall be included in the ICCAT statistics and in the tables provided to SCRS.

² It seems that only fertilised eggs do not need an ICCAT BCD or certificate, while larvae, being already fish, need certificates for being exported and, as a consequence, sampling larvae for genetic analyses generated a RMA certificate.

³ In some CPCs or ports local rules made sometimes impossible a donation of fresh fish for charity; there is clearly room for improving rules and provisions about charity donations.

Bibliography

Anonymous, 2012. Recommendation by ICCAT concerning the Atlantic-wide Research Programme for Bluefin Tuna. ICCAT Report for Biennial Period, Part II (2011), vol. 1: 231.

Di Natale, A., Tensek, S., Pagá García, A. (in press). ICCAT Atlantic-Wide Research Programme for Bluefin Tuna (GBYP) Activity report for the last part of Phase 6 and the first part of the Phase 7. Document SCRS/2017/139: 72 p.

Table 1. ICCAT GBYP Research Mortality Allowance used from 2012 to 24 August 2017 (in kg and number of fish) and related number of RMA certificates issued in the various years.

	2012	2013	2014	2015	2016	2017	TOTAL
kg	5.039,49	4.392,76	887,78	324,71	874,86	838,55	12.358,15
no. Fish	662	279	96	302	576	89	2.004
no. Forms	94	60	11	55	81	14	315

Table 2. ICCAT GBYP Research Mortality Allowance as originated by the two main field research activities (tagging and sampling) from 2012 to 24 August 2017, in weight (kg), number of fish and number of certificates, by year and in total.

	2012	2013	2014	2015	2016	2017 (part)	TOTAL
kg							
Sampling	2.438,42	137,61	163,48	228,71	450,66	838,55	4.257,43
Tagging	2.601,07	4.255,15	724,30	96,00	424,20		8.100,72
no. Fish							
Sampling	438	52	90	298	573	89	1.540
Tagging	224	227	6	4	3		464
no. Forms							
Sampling	36	5	9	54	79	14	197
Tagging	58	55	2	1	2		118
	2012	2013	2014	2015	2016	2017 (part)	TOTAL
kg							
Sampling	48,39%	3,13%	18,41%	70,44%	51,51%	100,00%	34,45%
Tagging	51,61%	96,87%	81,59%	29,56%	48,49%	0,00%	65,55%
no. Fish							
Sampling	66,16%	18,64%	93,75%	98,68%	99,48%	100,00%	76,85%
Tagging	33,84%	81,36%	6,25%	1,32%	0,52%	0,00%	23,15%
no. Forms							
Sampling	38,30%	8,33%	81,82%	98,18%	97,53%	100,00%	62,54%
Tagging	61,70%	91,67%	18,18%	1,82%	2,47%	0,00%	37,46%

Table 3. Final destination of the quantities derived from the ICCAT GBYP Research Mortality Allowance, in percentage over the total, in kg and in number of fish, for the period 2012 to 24 August 2017.

RMA BY DESTINATION	charity	consumption	discarded	mixed uses, other	scientific
kg	4.443,32	4.072,69	1.188,68	715,81	1.937,65
kg (%)	35,95%	32,96%	9,62%	5,79%	15,68%
no. Fish	270	179	100	129	1146
no. Fish (%)	14,80%	9,81%	5,48%	7,07%	62,83%

Table 4. Origin of the various fish included in the ICCAT GBYP RMA, in percentage over the total for the period 2012 to 24 August 2017, in kg and in number of fish; the table shows also the average weight by area.

RMA by Fishing Area	Canada	NE Atlantic	Bay of Biscay	Gibraltar Strait	West Med	Central Med	Eastern Med
kg	225,00	221,20	1.715,24	3.968,90	1.037,96	5.079,27	110,58
kg (%)	1,82%	1,79%	13,88%	32,12%	8,40%	41,10%	0,89%
no. Fish	1	1	231	107	666	621	377
no. Fish (%)	0,05%	0,05%	11,53%	5,34%	33,23%	30,99%	18,81%
no. Forms	1	1	45	63	87	91	27
no. Forms (%)	0,32%	0,32%	14,29%	20,00%	27,62%	28,89%	8,57%
Avr. Weight (kg)	225,00	221,20	7,43	37,09	1,56	8,18	0,29

Table 5. Origin by fishing gear of the various quantities included in the ICCAT GBYP RMA during the period 2012 to 24 August 2017. The table also shows the average weight by area.

	BB	Bongo Net	Cage	FAD	HL	LL	LLSWO	PS	RR	TP	TR
kg	5.524,08	0,02	1.833,90	13,61	554,90	1.732,60	53,92	1.034,39	249,11	1.039,60	322,01
kg (%)	44,70%	0,00%	14,84%	0,11%	4,49%	14,02%	0,44%	8,37%	2,02%	8,41%	2,61%
no. Fish	373	39	155	50	810	181	2	147	40	9	198
no. Fish (%)	18,61%	1,95%	7,73%	2,50%	40,42%	9,03%	0,10%	7,34%	2,00%	0,45%	9,88%
mean weight (kg)	14,81	0,00	11,83	0,27	0,69	9,57	26,96	7,04	6,23	115,51	1,63

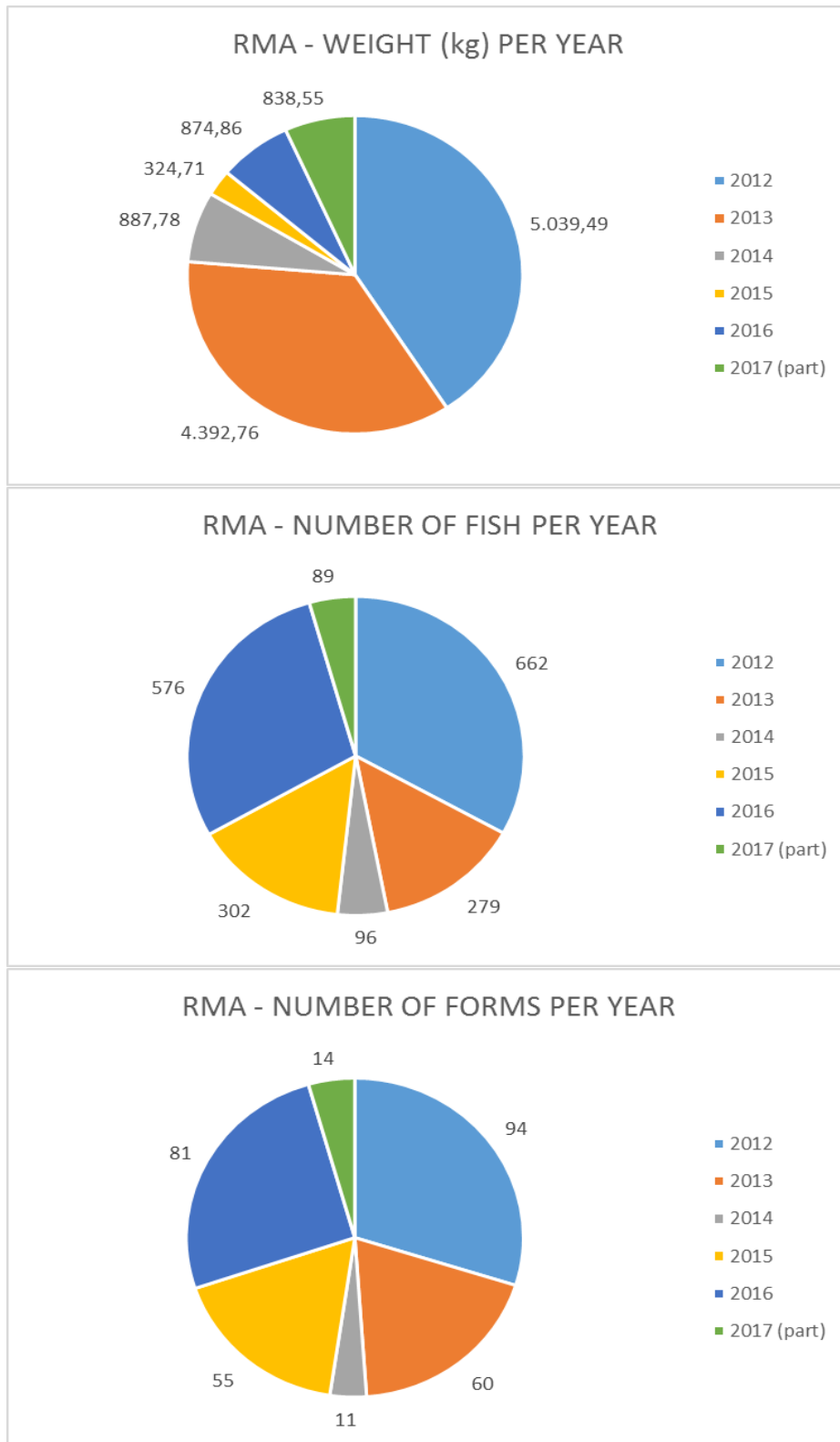


Figure 1 – 1a) graph of the total quantities in kg of RMA used from 2012 to 24 August 2017; **1b)** RMA used from 2012 to 24 August 2017 in number of fish, and **1c)** graph showing the total number of ICCAT GBYP RMA certificates issued yearly from 2012 to 24 August 2017.

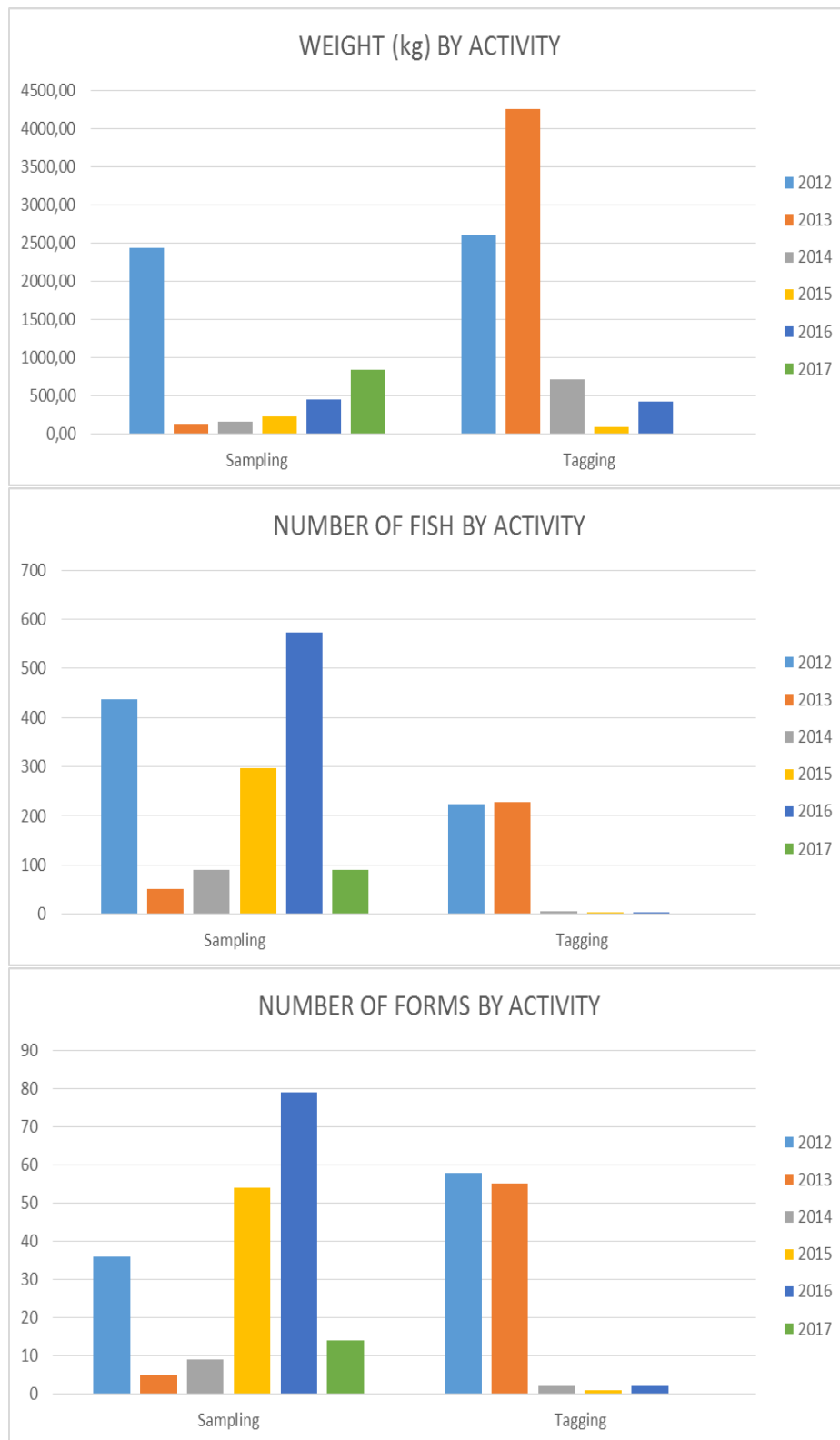


Figure 2 – ICCAT GBYP RMA as originated by the two main field research activities (tagging and sampling) from 2012 to 24 August 2017, in weight (kg), number of fish and number of certificates, by year.

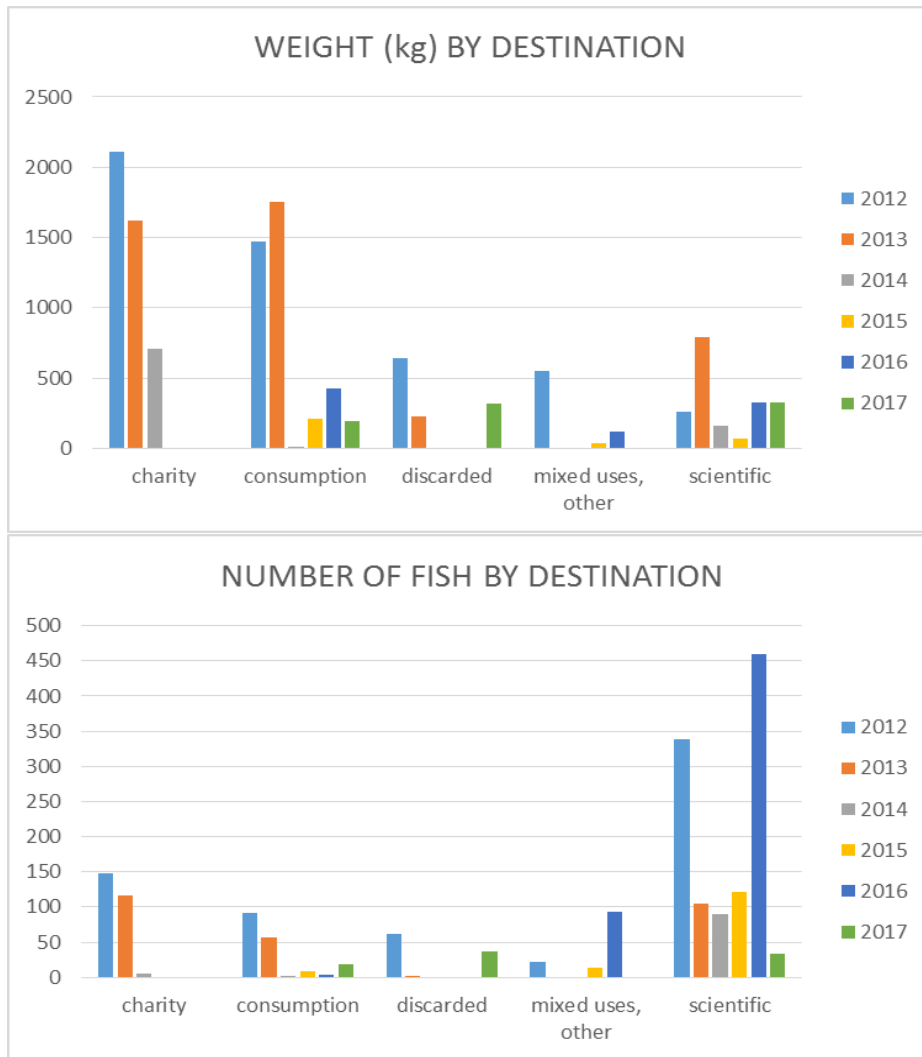


Figure 3 – Various destinations of the RMA from 2012 to 24 August 2017, in kg and number of fish.

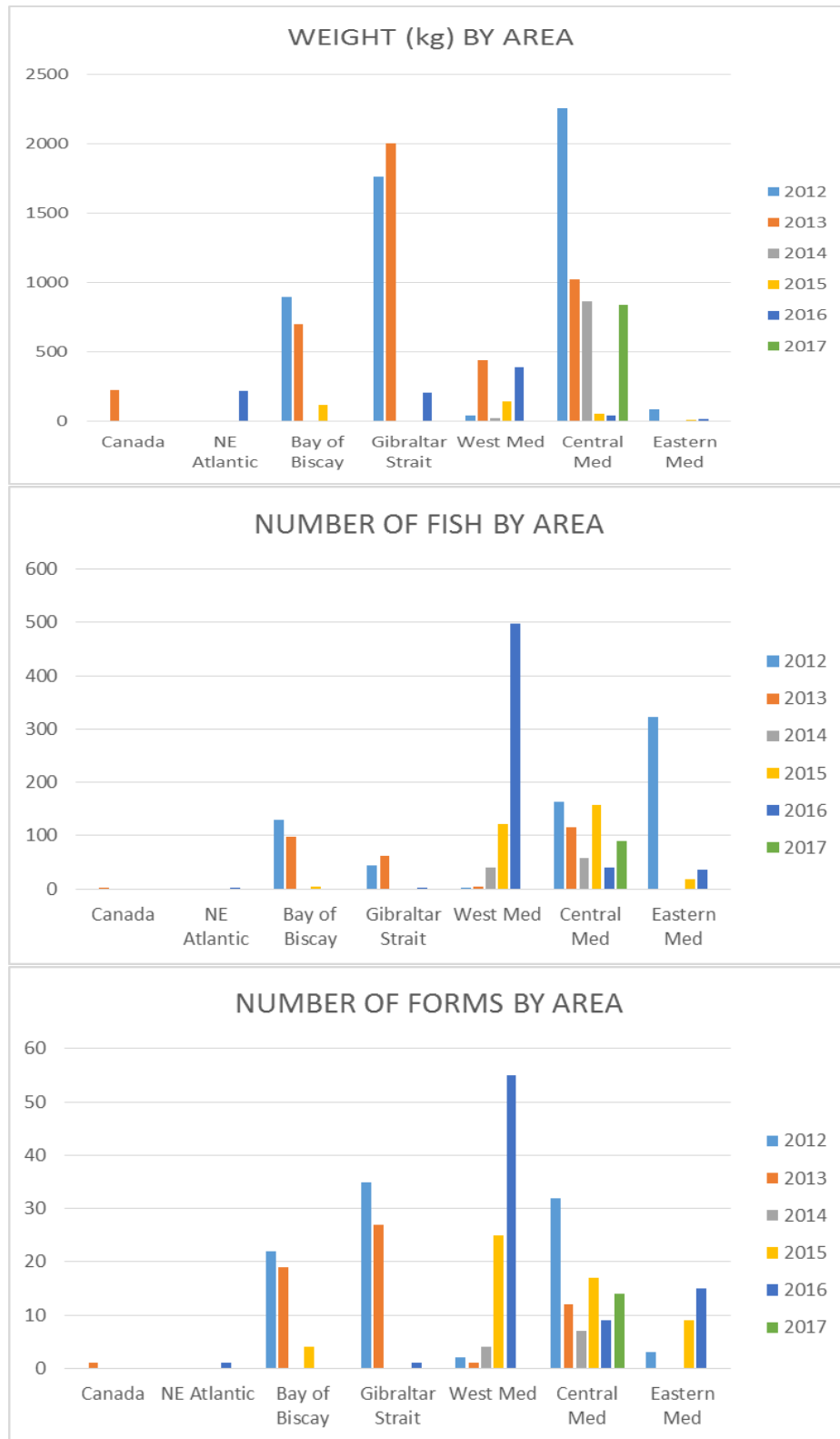


Figure 4 – Origin by fishing area of the quantities used by ICCAT GBYP RMA, from 2012 to 24 August 2017, in weight (kg), number of fish and number of certificates, by year.

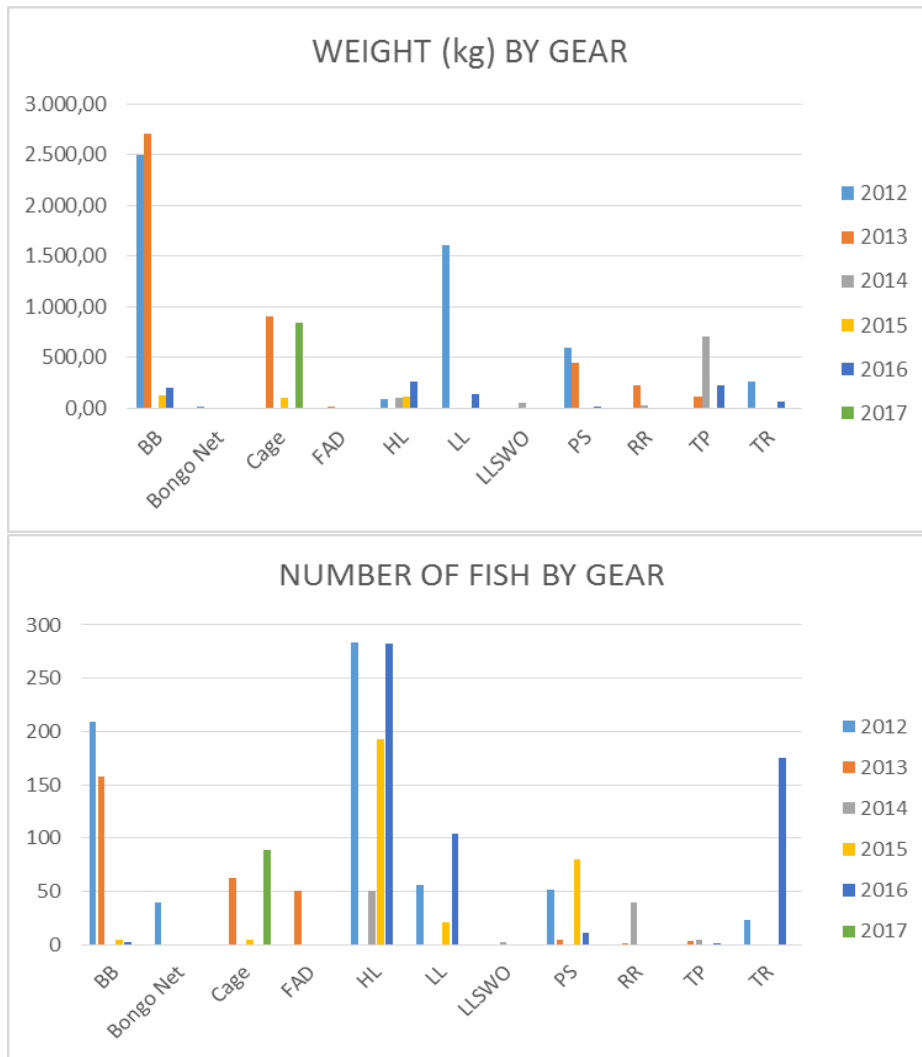


Figure 5. Distribution of ICCAT GBYP RMA by gear (from 2012 to 24 August 2017), in kg and number of fish.

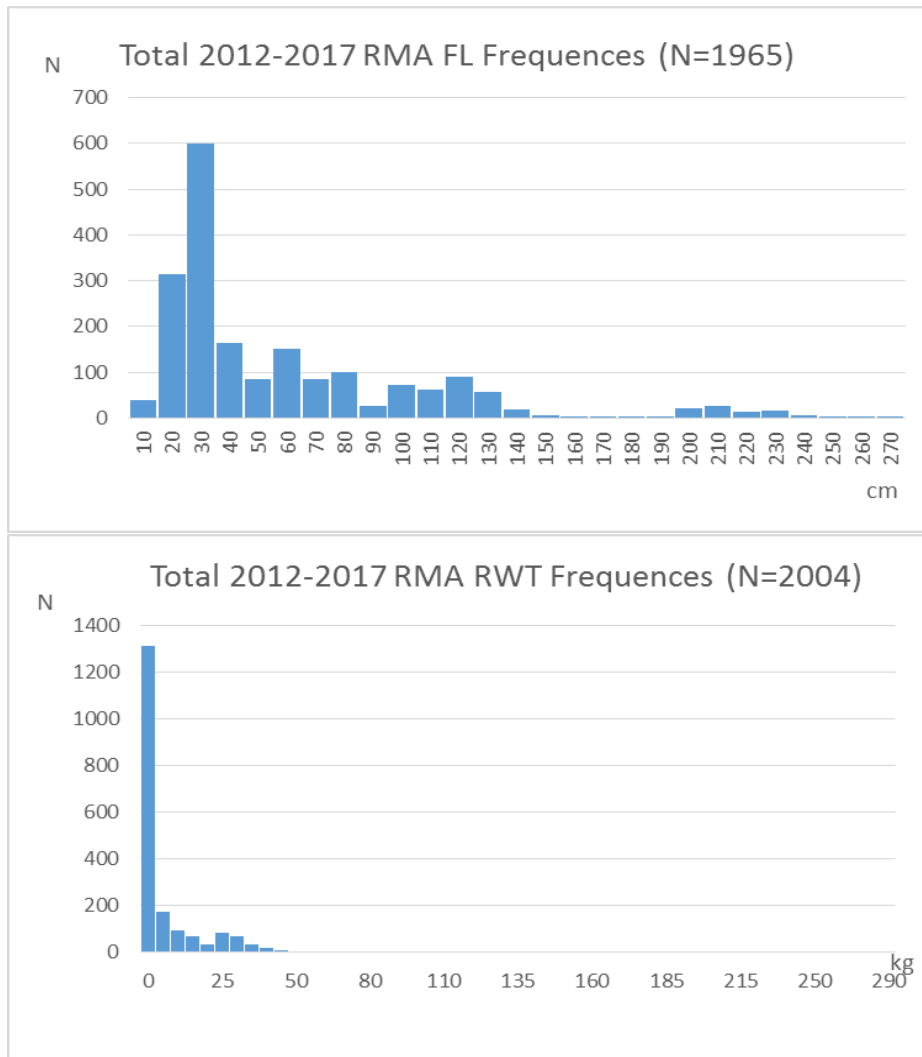


Figure 6. FL frequencies in cm (6a) and RWT in kg frequencies (6b) of RMA specimens for the total period 2012 to 24 August 2017. FL for larvae were not included in the upper graph for obvious reasons.

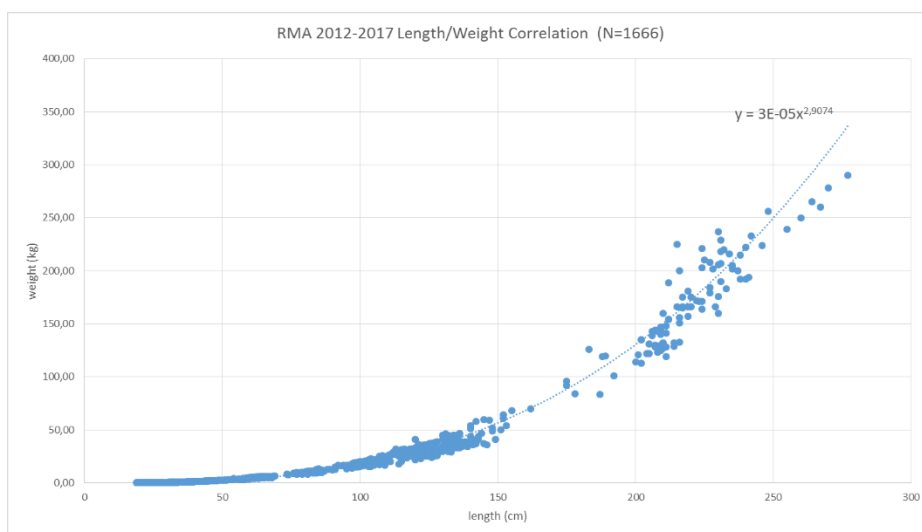


Figure 7. Length/weight correlation for the total period 2012 to 24 August 2017 for the bluefin tuna reported by ICCAT GBYP RMA, from all areas.