

HISTORY OF UNITED STATES ATLANTIC BLUEFIN TUNA SIZE CLASS CLASSIFICATION AND CHANGES

Final Report

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Introduction

Recently, U.S. landings of Atlantic bluefin tuna (BFT) have declined, particularly in the large fish commercial categories. This has prompted public inquiries from both commercial and recreational constituents regarding potential changes to the current size classifications (Table 1) and requests to allow access to size classes which are prohibited under current regulations. For example, one inquiry asked for the definition of “small medium” BFT and the rationale for its size classification. There have been requests to lower the current minimum size of commercial sized fish (73”) to provide greater commercial fishery access to the small medium BFT size category (59 to < 73”). In contrast, there have also been requests to raise the minimum size of the commercial fishery above the minimum size of 73” to more accurately represent the maturity of western Atlantic BFT. Recreational fishermen have requested greater quotas and larger retention limits for landings of school sized fish (27 to 47”).

These inquiries prompted our staff to investigate the rationale for the current and past size classifications via the historical record, specifically Federal Register notices. This document summarizes the findings of the HMS NE team’s search of the historical record for all changes to BFT length measurements and classification, and also documents the rationale for the change. A search was conducted, starting with Federal Register notices dating back to 1974, just prior to the passage of the Atlantic Tunas Convention Act of 1975 which authorizes the U.S to administer the International Commission for the Conservation of Atlantic Tunas (ICCAT). A brief summary of findings is provided in the following results section with a more complete description of the record in Appendix 2.

A necessary and useful by-product of the search was the preparation of Appendix 1, which summarizes as a “conversion table” the variety of measurement methods and units, in weights and lengths, using both U.S. and metric units, that are referred to throughout the Federal Register.

Finally, the discussion section highlights three findings regarding: (1) the result of the original investigation the meaning behind the classification of the “small medium” size class, (2) the historical rationale for the small or “school” fishery and current school BFT landings trends, and (3) the historical rationale for the commercial minimum size cut-off at 73” and current commercial landings trends.

Table 1: Current size classification: 60 FR 14387, March 17, 1995

Size class	Total curved fork length		Pectoral fin curved fork length		Approx. round weight	
	in	cm	in	cm	lb	kg
Young school	< 27	< 69	< 20	< 51	< 14	< 6.4
School	27 - < 47	69 - < 119	20 - < 35	52 - < 89	14 - < 66	6.4 - < 30
Large school	47 - < 59	119 - < 150	35 - < 44	89 - < 112	66 - < 135	30 - < 62
Small medium	59 - < 73	150 - < 185	44 - < 54	112 - < 137	135 - < 235	61 - < 107
Large medium	73 - < 81	185 - < 206	54 - < 60	137 - < 152	235 - < 310	107 - < 141
Giant	81 or >	206 or >	60 or >	152 or >	310 or >	141 or >

Results and Brief Summary of Final Rules*

- **1975** ICCAT set a 6.4 kg minimum size limit for Atlantic BFT. NMFS set assumptions that specific weights correspond to specific lengths (40 FR 33978, August 13, 1975)
- **1978** Class sizes introduced and length measurement methods set (43 FR 26581, June 21, 1978).
- **1980** NMFS decided against increasing the maximum size of young school BFT and finalized the use of length as an exclusive indicator of class sizes (45 FR 40122, June 13, 1980).
- **1982** NMFS determined that the term “recreational fishery” didn’t need to be defined (47 FR 25350, June 11, 1982).
- **1984** Fork length was accepted as the single criterion to determine size classes (49 FR 29796, July 24, 1984).
- **1992** Head and gills may only be removed for giant BFT tuna (over 77”), and only if the total length is recorded prior to the heading and reported to the dealer. Total fork length was implemented as the sole criterion for determining the size class of a whole BFT. The pectoral fin fork length was implemented as the sole criterion for determining the size class of a beheaded Atlantic BFT (57 FR 373, January 6, 1992).
- **1992** NMFS subdivided the medium size class to prohibit the sale of BFT less than 70” but allow “large medium” fish to be sold. The retention of young school bluefin (less than 26”) was also prohibited. NMFS stated that giant BFT (77”) or more should remain the target for directed fisheries and commercial sale (57 FR 32905, July 24, 1992).
- **1994** NMFS determined that total straight fork length would be the sole criterion for determining the size class of whole Atlantic BFT. The pectoral fin straight fork length would be the sole criterion for determining the size class of a beheaded Atlantic BFT (59 FR 17726, April 14, 1994).
- **1995** NMFS determined that total curved fork length would be the sole criterion for determining the size class of whole Atlantic bluefin tuna. The pectoral fin curved fork length will be the sole criterion for determining the size class of a beheaded Atlantic bluefin tuna (60 FR 14387, March 17, 1995).

** Many other Federal Register notices including proposed and final rules, specifications, and FMP & FMP amendments with BFT regulations were implemented during this period. Only Final FR actions specific to size classifications are listed above.*

Discussion:

The regulatory history of BFT size classes is characterized by an extensive record of management changes starting in the mid 1970s through the mid 1990s. The current management scheme, set forth in Table 1, was published in the 1995 Federal Register and been implemented ever since. Generally, size classes have been instituted to protect the overall health and breeding viability of the species, as well as to distribute fishing opportunities among both recreational and commercial fishermen along the entire eastern seaboard, year-round.

Changes to size classifications have resulted from new biological information, new ICCAT recommendations, conservation concerns, requests of industry (both recreational and commercial) and also for domestic management needs (i.e., enforcement and administrative monitoring).

The specific methodology of BFT measurement has varied considerably from use of weights to lengths and with varying disposition of fish i.e., whether total, whole fish or dressed in various forms (i.e., headed and/or gutted, etc.). The technical units chosen for BFT measurement varies with the use of straight length measurement in metric units by scientists, to curved lengths in inches for management purposes and dressed lengths and weights by fishermen and dealers. Appendix 1 provides a conversion table among units including approximate ages.

1) Finding re: Small Medium BFT (59 – 73”):

In July 1992 NMFS subdivided the medium size class (57 to 77” straight fork length) to prohibit the sale of BFT less than 178 cm (70”) and/or weighing less than 235 lb, but allowed fish from the “large medium” class to be sold. The result was a new “small medium” size class (57 to 70” total fork length) for recreational use only and a new “large medium” category size class (>70” to 77”) for commercial sale.

The ban on the sale of “small medium” BFT was applied to help reduce fishing mortality rate for immature BFT, and assist in enhancing the spawning potential by assuming the 235 lb (107 kg) limit would protect all of the immature 6-year-olds, and some of the immature 7-year-old BFT. In 1995, all BFT length measurements changed from a straight to curved length measurement resulting in the current small medium size category length range used today (i.e., 59” to 73”).

2) Finding re: School BFT (27” - 47”):

One of the themes that emerges from the Federal Register record is the ongoing efforts by the agency to adequately protect and classify small BFT so that adequate management measures can be enforced to balance the changing needs of the small fish fishery and the biological or conservation value of these immature fish. The Federal Register documents a dramatic change in the exploitation of these small fish transitioning from an extensive commercial Purse Seine cannery fishery in the 1970s to the current no-sale, recreational, fishery only.

A snapshot of the 2005 recreational fishery for school and large school/small medium (LS/SM) BFT compared to the commercial large medium and giant (LM/G) fishery is provided in Figure 1. The figure illustrates the difference between small BFT and large BFT when weights of quota and landings (Fig 1 a) are compared to the same quotas and landings in numbers of fish (Fig 1 b). As expected, the numbers of small fish per metric ton (i.e., school fish) greatly exceeds the numbers of large fish per metric ton (i.e., large mediums and giants). Adding to the increase in relative difference in overall numbers landed between school and giant fish is the decline in landings of large commercial fish.

Coincident with the decline in landings of large fish, the number of recreational permits has increased to almost double mid-1990 levels. The increase in recreational permits is due to several factors including changes in regulatory driven requirements (i.e. expansion of the recreational permit requirements from just BFT to all regulated tuna and later to cover all HMS species) as well as a change in fishermen's interest from the larger General Category sized fish in the commercial fishery to the more available smaller fish in the recreational fishery, particularly in New England. School sized fish have historically represented the predominant catch and interest of U.S. BFT recreational fishermen. The Federal Register record shows it is a likely assumption that this increase in participation and interest by recreational fishermen for the smaller BFT will also mean increasing requests for the agency to consider changes in the management measures for small fish (i.e., increase in quota, changes to lengths, etc.) to provide greater access to, and landings of, these small fish.

Natural mortality of small, school sized fish is assumed to be low. These fish have not yet spawned and contributed to the spawning stock biomass, therefore they are specifically protected by an ICCAT recommendation prohibiting the metric tonnage landed from exceeding 10% of the US quota over a 4-year average. The Federal Register extensively documents the balancing of industry requests to harvest these small fish with the biological impacts of landing increased numbers of immature BFT.

Fig 1 a): 2005 Quota and landings of BFT in metric tons by size class
 *[Total LS/SM mt landed=89mt of which 62 mt (70%) = LS, and 27 mt (30%) = SM

Size Class	2005 Avg Wt
School	14 kg
Large School (LS)	37 kg
Small Medium (SM)	68 kg
Large Medium (LM)/Giant	196 kg

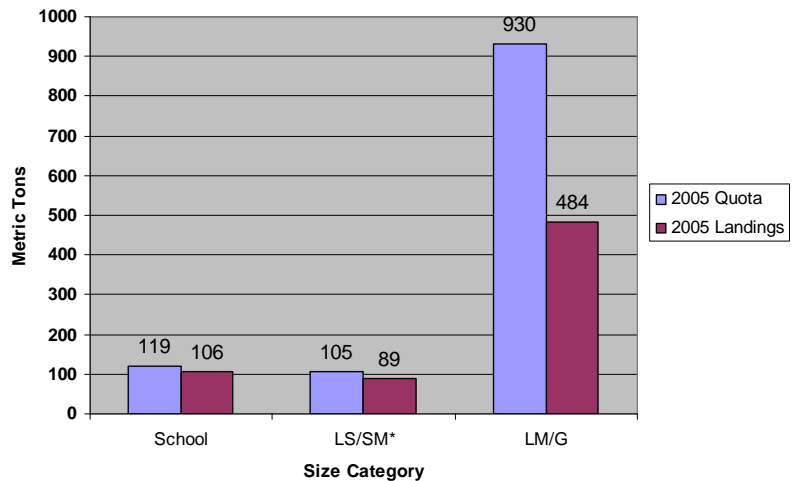
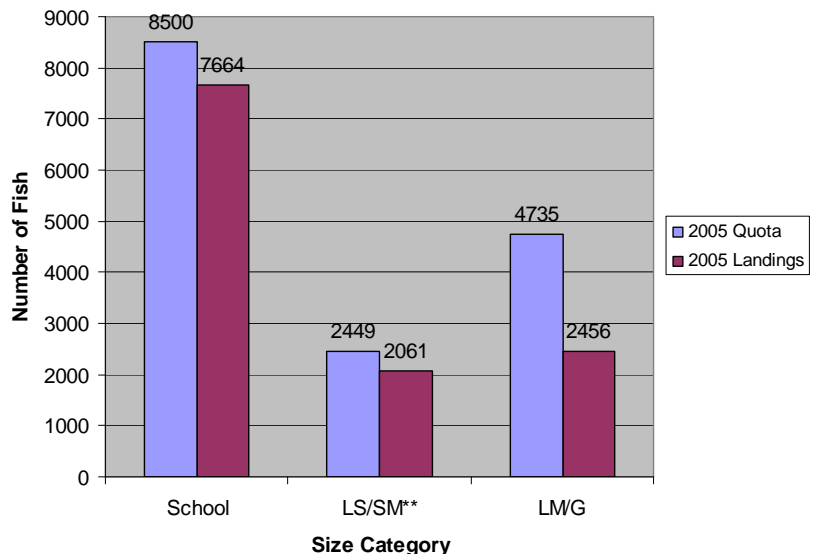


Fig 1 b) 2005 Quota and landings of BFT in numbers of fish by size class
 **[Total number LS/SM landed=2061 of which 1669 (81%) = LS, and 392 (19%) = SM



3) Finding re: Large Medium and Giant BFT (> 73”):

Another major theme of the Federal Register demonstrates NMFS effort to classify and manage the large fish fishery to balance the needs of the commercial industry with the reproductive and spawning capacity of the stock. A relatively recent publication by Diaz and Turner, (SCRS, 2006/90) examined BFT size frequency data from U.S. and Japanese pelagic longline fleets in the Gulf of Mexico and specifically examined the age composition and maturity of landed fish. Results indicated that approximately 98 % of all fish landed from the Gulf of Mexico were 9 years or older, that a negligible proportion of fish (0.6%) attained sexual maturity prior to age 9 (based on data from the U.S. fleet), and that age of 50% maturity was estimated to be around 12 years. See figure below.

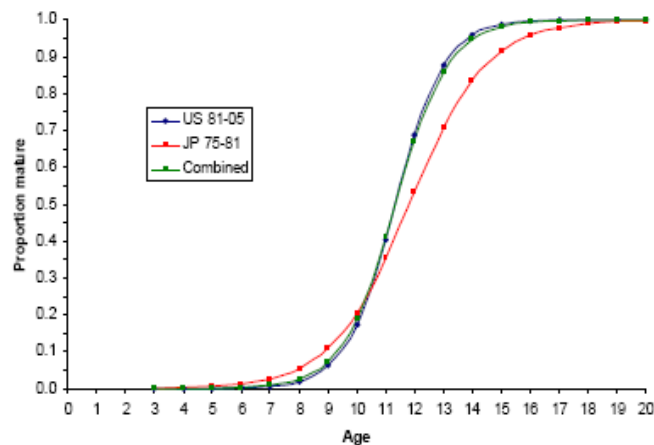


Figure 5: Estimated maturity curves for western bluefin from U.S. landings (blue line), Japanese data (red line) and both fleets combined (green line)

Based on the growth model adopted by the SCRS for western Atlantic BFT assessments, age 9 fish are approximately 207 cm (straight fork length), and age 12 fish are innately 244 cm (straight fork length). These equivalent measurements in curved fork length in inches are 86” and 101” respectively. **See Appendix 1 for conversion table.**

The commercial fishery lower limit for large medium BFT is currently set at 73” curved fork length for western Atlantic BFT. In the graph above 73” fish would make up approximately one half of one percent of spawning stock biomass. In 2006, 814 BFT greater than 73” were landed commercially by rod and reel gear. Approximately one quarter of these fish (203) were the large medium size class (i.e., 73 to 81”). In addition, in recent years, the commercial fishery has experienced not only a drop in landings but a decrease in the average size of fish landed from approximately 526 lb in 2006 to 449 lb in 2007. From Appendix 1, 449 lb fish lie within the 9 to 10 year old age range whereas 526 lb fish are likely to be a full year older. Declining landings in the commercial fishery has prompted requests from industry to decrease the minimum size below 73” to provide commercial access to the small medium size class. There have also been requests and discussion of “conservation equivalent” trades of smaller fish with larger fish and vice versa for additional quota access to respective size classes. The Federal Register extensively documents the balancing of industry requests to harvest these large fish with the biological considerations of their reproductive potential and spawning capacity for the stock.

Appendix 1: West Atlantic Bluefin Tuna Lengths and Weights at Age

Current Size Classifications	Length				Weight		Age*
	Curved Fork Length		Straight Fork Length		Pounds	Kilograms	
	Inches	Centimeters	Inches	Centimeters			
Young School (0 to 27" CFL)	12	30	11	28	1	1	0
	23	58	22	55	8	4	1
School (27 to 47" CFL)	33	84	31	80	23	11	2
	42	108	40	103	49	22	3
Large School (47 to 59" CFL)	51	130	49	124	85	38	4
	59	150	56	143	130	59	5
Small Medium (59 to 73" CFL)	67	169	63	161	184	83	6
	74	187	70	178	245	111	7
Large Medium (73 to 81" CFL)	80	203	76	193	313	142	8
	86	218	82	207	385	175	9
Giant (81" or greater CFL)	91	232	87	221	461	209	10
	96	244	92	233	539	245	11
	101	256	96	244	618	281	12
	105	267	100	254	699	317	13
	109	277	104	264	778	353	14
	113	286	107	273	857	389	15
	116	295	111	281	935	424	16
	119	303	114	288	1010	458	17
	122	310	116	295	1084	492	18
	125	317	119	302	1154	524	19
	127	323	121	308	1222	555	20
	144	365	137	347	1742	791	30
	151	384	144	365	2020	916	40

Note: To convert dressed length to whole length multiply dressed length in inches by 1.35.

*Approximate averages

Appendix 2: Detailed summary of results from Federal Register

a) **1974**, June 24: (39 FR 22444): Notice. NMFS proposed that BFT taken in the waters of the mid-Atlantic coastal states south of Cape Cod should not weigh less than 14 lb or exceed 115 lb. These guidelines were proposed in response to a “comprehensive scientific study” of Atlantic BFT stocks adjacent to the coast of the United States. conducted to determine the status of the stocks, effects of fishing on the stocks, and a “suitable management program”. See Table 2 for summary.

Table 2:

Size Classifications	Total length		Weight	
	in	cm	lb	kg
Prohibited	-	-	< 14	< 6.4
Allowed	-	-	14 - < 115	6.4 - < 52.3
Prohibited	-	-	115 or >	52.3 or >

b) **1975**, April 2: (40 FR 11777): Proposed Rule. In anticipation of Atlantic BFT being listed as a threatened species under the Endangered Species Act by the Department of Interior (April 2, 1975), NMFS proposed that taking an Atlantic BFT weighing less than 14 lb (6.4 kg) round weight or measuring less than 27 inches (68 cm) in length measured by a straight line from the tip of the nose to the fork of the tail, should be illegal, with allowances for incidental catch, as summarized in Table 3.

Table 3:

Size Classifications	Total length*		Weight**	
	in	cm	lb	kg
Prohibited	< 27	< 68	< 14	< 6.4
Allowed	27 - < ?	68 - < ?	14 - < 115	6.4 - < 52.3

* Total length is measured in a straight fork length from the tip of the nose to the fork of the tail. ** Round Weight

c) **1975**, August 13: (40 FR 33978): **Final rule**. After ICCAT adopted a regulatory measure to set a 6.4 kg minimum size limit for Atlantic BFT, NMFS implemented a final rule that implemented the ICCAT measure, allowed fishing on certain ranges of weights of BFT and provided as a rebuttable presumption that listed lengths would correspond to the appropriate weight class (See Table 4).

Table 4:

Size Classifications	Total length*		Weight	
	in	cm	lb	kg
Prohibited	< 27	< 68	< 14	< 6.4
Allowed	27 - < 56	68 - < 142	14 - < 115	6.4 - < 52.3
Prohibited	56 - < 75	142 - < 191	115 - < 300	52.3 - < 136.4
Allowed	75 or >	191 or >	300 or >	136.4 or >

*Measured in a straight line from the tip of the nose to the fork of the tail

d) **1976**, March 30: (41 FR 13364): **Proposed**. NMFS proposed reductions in quota allocation due to concern about a decline of important components of the population, especially of giant BFT (larger than 300 lb). Mid-sized fish that were just reaching spawning size (at this point prohibited from being taken), were reduced in numbers and NMFS was concerned that BFT between 14 and 115 lb would take at least 3 years or more to reach maturity and start to spawn. NMFS was concerned that the population was almost totally dependent on giant BFT for spawning.

e) **1976**, May 18: (41 FR 20411): **Final**. NMFS proceeded with implementation of quota reductions of giant fish as “these fish comprise the major reproductive capacity of the species, our objective, in the short term”, and “by reducing the harvest of small fish over the long term we hope to provide the stock with a steady influx of mature young fish in order to assure continued productive capacity”.

f) **1978**, June 21: (43 FR 26581): **Final**. Size classifications were introduced and lengths were officially measured by a straight line from the tip of the snout (or the middle of the gillarch if the fish is beheaded) to the fork of the tail, as summarized in Table 5.

Table 5:

Size Classifications	Head on length		Head off length		Weight	
	in	cm	in	cm	lb	kg
Young School	< 26	< 66	< 18	< 46	< 14	< 6.4
School	26 - < 55	66 - < 141	18 - < 39	46 - < 100	14 - < 115	6.4 - < 52.3
Medium	55 - < 73	141 - < 185	39 - < 53	100 - < 135	115 - < 300	52.3 - < 136.4
Giant	73 or >	185 or >	53 or >	135 or >	300 or >	136.4 or >

g) **1979**, June 20: (44 FR 36043): **Final**. Measurements for the length with the head off were defined as a straight line from the middle of the lateral surface, of a beheaded fish, to the fork of the tail.

h) **1980**, March 14: (45 FR 16506): **Proposed**. NMFS proposed to redefine the size categories due to new biological data. ICCAT recommended prohibiting the taking and landing of BFT weighing less than 6.4 kg (14 lb) to protect young-of-the-year (age 0) and age one BFT. However, western BFT were found to have an earlier spawning time and a faster growth rate than eastern BFT, so western BFT are larger in size at the end of each year than eastern BFT. Therefore the ICCAT conservation measure did not fully protect western BFT young-of-the-year and those of age one, so size classes were redefined to take this into account. In this proposed rule, the use of lengths instead of weight to determine size classes was

proposed (Table 6) to be consistent with original management objectives of conservation, since length is a much more accurate indicator of age than weight. Measurements in length are defined as a straight line from the middle of the lateral surface (even if fish has been beheaded) to the fork of the tail.

Table 6: Proposed (NOT implemented)

Size Classification	Length		Weight	
	in	cm	lb	kg
Young school *	< 28	< 72	< 19	< 8.7
School **	28 - < 57	72 - < 145	19 - < 135	8.7 - < 61
Medium	57 - < 77	145 - < 196	135 - < 310	61 - < 142
Giant***	77 or >	196 or >	310 or >	142 or >

* Young school are defined as those presumed to be less than one year old. ** School BFT are those that are between one and five years old. *** Giant BFT are presumed to be 10 years or older.

i) **1980**, June 13: (45 FR 40122): **Final**. NMFS decided against increasing the maximum size of young school BFT. This was partially because purse seine vessel operators were concerned that although they didn't catch many BFT between 14 and 19 lb previously, they would find more of the proposed prohibited size BFT schooling with the bigger fish because their season was being pushed back earlier in the year. NMFS also finalized the proposal to use length as an exclusive indicator of size class for BFT. Measurements in length are defined as a straight line from the middle of the lateral surface (even if the fish has been beheaded) to the fork of the tail. Final size classes are shown in Table 7.

Table 7:

Original size class	Total Length		Length with head off		Total Weight	
	in	cm	in	cm	lb	kg
Young school	< 26	< 67	< 18	< 46	< 14	< 6.4
School	26 - < 57	67 - < 145	18 - < 40	46 - < 102	14 - < 135	
Medium	57 - < 77	145 - < 196	40 - < 54	102 - < 137	135 - < 310	
Giant	77 or >	196 or >	54 or >	137 or >	310 or >	

j) **1982**, April 21: (47 FR 17086): Proposed. ICCAT (SCRS) sampled length frequencies from the recreational fishery for young school, school, and medium tuna, which showed that ages one through five made up the majority of the catch, but ages six to ten and some age zero fish were also taken. The range of ages taken in this fishery encompasses all of the small and medium age groups, making the recreational fishery unique.

k) **1982**, June 11: (47 FR 25350): **Final**. NMFS addressed a request that the term “recreational fisherman,” which was used in the preamble to describe the rod and reel fishery which catches young school, school, and medium sized BFT, be defined. NMFS replied that although most of the taken in that

fishery are not sold, the regulations themselves made no distinction between a ‘commercial’ and a ‘recreational’ fisherman, so the definition of the term was unnecessary.

l) **1984**, May 1: (49 FR 18576): Proposed. NMFS proposed fork length as the single criterion to determine size classes for BFT to remove ambiguity. Measurements would be taken in a straight line along the middle of the lateral surface from the forward most part of the beheaded fish to fork of the tail.

m) **1984**, July 24: (49 FR 29796): **Final**. NMFS defined the BFT measurement as a straight line along the middle of the lateral surface from the forward-most part of the beheaded fish to the fork of the tail.

n) **1991**, March 11: (56 FR 10227) Proposed. Proposed rule mentions that the lack of a uniform heading practice results in measurements that may not accurately reflect the overall length of the fish.

o) **1992**, January 6: (57 FR 373): **Final**. In order to facilitate proper identification NMFS effected regulations so that:

- The head and gills may not be removed for young school, school, or medium size categories (smaller than 77 inches or 196 cm fork length).
- The head and gills may be removed for giant tuna (over 77 inches) if the total length is recorded prior to the heading and reported to the dealer.
- For enforcement purposes, a headed fish with a pectoral fin to fork of tail length of 57 inches (145 cm) or greater will be considered a giant Atlantic BFT.
- Total fork length, defined as being equal to pectoral fin fork length multiplied by a factor of 1.35, was implemented as the sole criterion for determining the size class of whole (head on) BFT.
- All measurements must be taken along the middle of the lateral surface from dorsal insertion of the pectoral fin of the beheaded fish to the fork of the tail.
- The pectoral fin fork length will be the sole criterion for determining the size class of a beheaded Atlantic BFT.

Size classes resulting from this rule are summarized in Table 8.

Table 8:

Size class	Total fork length		Pectoral fin fork length		Approx. Round Weight*	
	in	cm	in	cm	lb	kg
Young school	< 26	< 66	< 19	< 48	< 14	< 6.4
School	26 - < 57	66 - < 145	19 - < 42	48 - < 107	14 - < 135	6.4 - < 61
Medium	57 - < 77	145 - < 196	42 - < 57	107 - < 145	135 - < 310	61 - < 140
Giant	77 or >	196 or >	57 or >	145 or >	310 or >	140 or >

*These approximate round weights are given in the Federal Register for illustrative purposes only

p) **1992**, April 28: (57 FR 17872): Proposed. See Table 9. NMFS proposed to prohibit retention of BFT less than 26 inches in accordance with an ICCAT recommendation, which stipulates that no economic gain may be derived from the catch of bluefin less than 45 inches.

- The preferred alternative would prohibit the sale of all BFT smaller than giant (77”), which would discourage the development of a commercial fishery for small fish (a lower-value product) and increase the yield-per-recruit.
- Other propositions included restrictions against retaining young school BFT for any reason; a prohibition against selling, attempting to sell, deriving economic gain, trading, or bartering for any BFT other than a giant; and a prohibition against retaining or landing any BFT less than 77” by commercial or recreationally permitted vessels.

Table 9:

Size class	Total fork length		Pectoral fin fork length		Approx. Round Weight*	
	in	cm	in	cm	lb	kg
Young school	< 26	< 66	< 19	< 48	< 14	< 6.4
School	26 - < 45	66 - < 115	19 - < 33	48 - < 84	14 - < 66	6.4 - < 30
Large school	45 - < 57	114 - < 145	33 - < 42	84 - < 107	66 - < 135	30 - < 61
Medium	57 - < 77	145 - < 196	42 - < 57	107 - < 145	135 - < 310	61 - < 140
Giant	77 or >	196 or >	57 or >	145 or >	310 or >	140 or >

- q) **1992**, July 24: (57 FR 32905): **Final**. NMFS subdivided the medium size class to prohibit the sale of BFT less than 178 cm (70 in) and/or weighing less than 235 lb, but allowed fish from the “large medium” class to be sold.
- Because any cut-off means fish just below the minimum size will be caught and released with some mortality, by allowing the landing and sale of fish that could be mistaken at sea for giants provides fishermen with a margin of error. This margin of error may reduce incidental mortality because the fish can be kept and counted against the quota.
 - The 235 lb (107 kg) limit was implemented to protect all of the immature 6-year-olds, and some of the immature 7-year-old BFT.
 - The ban on the sale of ‘small medium’ BFT was applied to help reduce fishing mortality rate for immature BFT, and assist in enhancing the spawning potential.
 - The retention of young school bluefin (less than 66 cm (26 inches)) was also prohibited.
 - NMFS stated that giant BFT (77 inches (196 cm)) or more should remain the target for directed fisheries and commercial sale. This would also increase the “future economic value” of the fish since economically and biologically the smaller the fish, the less the fish is worth per pound and the greater the probability that the fish can be released alive.
 - NMFS tried to determine if there are any natural breaks in size distribution for fish landed that would be an appropriate cut off to help reduce incidental take of medium bluefin. The size distribution for fish sold in 1990 and 1991 showed that there were some size ranges in which substantially fewer fish were landed (between 211 and 250 lb (96 and 113 kg)). Information from scientists supports the break between immature bluefin and spawners at about 196 cm, with the smallest size for possible first spawning at 190 cm.
 - One comment requested that a biological criterion limiting the smallest size at which a BFT may be sold be instituted, referencing Baglin (1982, Reproductive biology of western Atlantic bluefin tuna,

Fish. Bull., U.S. 80:121-133). One of Baglin's tables suggests that the minimum reproductive size may be as small as 74.8 inches snout to fork length. The new size classifications are summarized in Table 10.

Table 10:

Size class	Total fork length		Pectoral fin fork length		Weight	
	in	cm	in	cm	lb	kg
Young school	< 26	< 66	< 19	< 49	< 14	< 6.4
School	26 - < 45	66 - < 115	19 - < 33	49 - < 85	14 - < 66	6.4 - < 30
Large school	45 - < 57	115 - < 145	33 - < 42	85 - < 108	66 - < 135	30 - < 62*
Small medium	57 - < 70	145 - < 178	42 - < 52	108 - < 132	135 - < 235	61* - < 107
Large medium	70 - < 77	178 - < 196	52 - < 57	132 - < 145	235 - < 310	107 - < 141
Giant	77 or >	196 or >	57 or >	145 or >	310 or >	141 or >

*Sic. As printed in Federal Register notice.

1994, April 14: (59 FR 17726): Interim Final. NMFS determined that *total straight fork length* would be the sole criterion for determining the size class of whole (head on) BFT, defined as equaling pectoral fin straight fork length multiplied by a factor of 1.35. For this purpose, NMFS stated that all measurements must be taken in a straight line along the middle of the lateral surface from a line perpendicular to the dorsal insertion of the pectoral fin of the beheaded fish to a line perpendicular to the fork of the tail. The pectoral fin straight fork length would be the sole criterion for determining the size class of a beheaded BFT.

1995, March 17: (60 FR 14387): Final. NMFS determined that *total curved fork length* would be the sole criterion for determining the size class of whole (head on) BFT (Table 1). For this purpose, all measurements must be taken in a line tracing the contour of the body along the middle of the lateral surface from the tip of the snout to the fork of the tail. For a BFT with its head removed, the total curved fork length equals pectoral fin curved fork length multiplied by a factor of 1.35. NMFS determined that the pectoral fin curved fork length will be the sole criterion for determining the size class of a beheaded BFT. For this purpose, all measurements must be taken in a line tracing the contour of the body along the middle of the lateral surface from the dorsal insertion of the pectoral fin of the beheaded fish to the fork of the tail. The curved fork length measurement makes it more applicable at the dock and easier to enforce.

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