

## 8.12 SMT – SMALL TUNAS

### *SMT-1. Generalities*

The species under the Small Tunas Species Group include the following tuna and tuna-like species:

–	BLF	Blackfin tuna ( <i>Thunnus atlanticus</i> )
–	BLT	Bullet tuna ( <i>Auxis rochei</i> )
–	BON	Atlantic bonito ( <i>Sarda sarda</i> )
–	BOP	Plain bonito ( <i>Orcynopsis unicolor</i> )
–	BRS	Serra Spanish mackerel ( <i>Scomberomorus brasiliensis</i> )
–	CER	Cero ( <i>Scomberomorus regalis</i> )
–	FRI	Frigate tuna ( <i>Auxis thazard</i> )
–	KGM	King mackerel ( <i>Scomberomorus cavalla</i> )
–	KGX	Scomberomorus unclassified ( <i>Scomberomorus</i> spp.)
–	LTA	Little tunny ( <i>Euthynnus alletteratus</i> )
–	MAW	West African Spanish mackerel ( <i>Scomberomorus tritor</i> )
–	SSM	Atlantic Spanish mackerel ( <i>Scomberomorus maculatus</i> )
–	WAH	Wahoo ( <i>Acanthocybium solandri</i> )
–	DOL	Dolphinfish ( <i>Coryphaena hippurus</i> )

Knowledge on the biology and fishery of small tunas is very fragmented. Furthermore, the quality of the knowledge varies according to the species concerned. This is due in large part to the fact that these species often being perceived to have little economic importance compared to other tunas and tuna-like species, and owing to the difficulties in conducting sampling of the landings from artisanal fisheries, which constitute a high proportion of the fisheries exploiting small tuna resources. The large industrial fleets often discard small tuna catches at sea or sell them on local markets mixed with other by-catches, especially in Africa. The amount caught is rarely reported in logbooks; however observer programs from purse seine fleets have recently provided estimates of catches of small tunas.

Small tuna species can reach high levels of catches and values in some years and have a very high relevance from a social and economic point of view, because they are important for many coastal communities in all areas and a main source of food. Their social and economic value is often not evident because of the underestimation of the total landing figures, due to the difficulties in data collection mentioned above. Several statistical problems are also caused by misidentification.

Scientific collaboration between ICCAT, Regional Fisheries Organizations (RFOs) and countries in the various regions is imperative to advance understanding of the distribution, biology and fisheries of these species.

### *SMT-2. Biology*

Small tuna species are widely distributed in the tropical and subtropical waters of the Atlantic Ocean and several are also distributed in the Mediterranean Sea and the Black Sea. Some species extend their range even into colder waters, like the North and South Atlantic Ocean. They often form large schools with other small sized tunas or related species in coastal and high seas waters.

Generally, the small tuna species have a varied diet with a preference for small pelagics (e.g., clupeids, mullets, carangids, etc.). Small tunas are the prey of large tunas, marlins, sharks and marine mammals which at the same time are predators of small pelagics. A recent document on the feeding habit of dolphin fish off the Brazilian coast showed that these species also feed on crustaceans, mollusks and cephalopods. The reproduction period varies according to species and areas and spawning generally takes place near the coast in oceanic areas, where the waters are warmer. A recent study conducted on the eastern coast of Tunisia has shown that the spawning area of the bullet tuna (*Auxis rochei*) is offshore at the limit of the continental shelf and related to the high abundance of the Zooplankton. A recent study based on the histological analysis and the gonado-somatic index of female gonads found that the spawning season of the West African Spanish mackerel extends from April to July in the Gulf of Guinea.

The growth rate currently estimated for these species is very rapid for the first two or three years, and then slows as they reach size-at-first maturity. Information on the migration patterns of small tuna species is very limited, due to low tagging levels of these species.

The bullet tuna caught in the Spanish Mediterranean coast showed a positive allometric growth with no effect of sex on growth. Another new study showed that the bullet tuna (age class 3+) caught in the same area had a better physical condition during years with positive NAO phase. These results could be explained by the environmental conditions during positive NAO phase that would enhance the migration process

Finally a new study conducted along the Gulf of Gabes (Ionian Sea-Mediterranean) indicated that the Larvae of *Auxis rochei* were mainly concentrated between the isobaths 50 and 200 m, and the spawning grounds of this species were mainly offshore

In general, biological information remain still incomplete for the majority of species in the main fishing area (**SMT-Table 2**).

### **SMT-3. Fisheries indicators**

Small tunas are exploited mainly by coastal fisheries and artisanal fisheries, although substantial catches are also made as target species and as by-catch by purse seine, mid-water trawl (i.e. pelagic fisheries of West Africa-Mauritania), handline and small scale gillnets. Unknown quantities of small tuna also comprise the incidental catches of some longline fisheries. The increasing importance of FAD fisheries in the eastern Caribbean and in other areas has improved the efficiency of artisanal fisheries in catching small tunas. Various species are also caught by the sport and recreational fisheries.

Despite the scarce monitoring of various fishing activities in some areas, all the small tuna fisheries have high social and economic relevance for most of the coastal countries concerned and for many local communities, particularly in the Mediterranean Sea, in the Caribbean region and in West Africa.

Recent information on small tuna catches and effort were presented from two observer programs activities in Venezuela: the National Observer Program in 2013 on industrial fleets, and the artisanal off-shore longline fleets that target tuna and tuna-like species. Important small tuna catches (in numbers and weight) observed consisted of blackfin tuna (BLF) and dolphinfish (DOL), and to a lesser degree, wahoo (WAH).

The standardized CPUE from the Moroccan artisanal gillnet fishery fishing for Atlantic bonito in the Atlantic did not show any trend from 2004 to 2010.

In the framework of the ICCAT SMTYP, new data from the Moroccan artisanal and coastal fleets fishing for small tunas caught in south of the Moroccan Atlantic coasts were made available. The results from this study showed that these species are caught by different gears, mainly gillnet. The catches and the fishing effort directed at small tunas have substantially fluctuated during the last decade, depending on the availability of these resources and the changes in the oceanographic conditions.

New documents updating the small tunas fisheries indicators using different gears in Algeria, Côte d'Ivoire, Mexico, Portugal, Senegal and Tunisia were presented.

**SMT-Table 1** shows historical landings of small tunas for the 1989 to 2014 period although the data for the last years are preliminary. This table does not include species reported as “mixed” or “unidentified”, as was the case in the previous years, since these categories include large tuna species. Seven (7) of 13 species represent more than 90% of small tuna Task I catches between 1950 and 2014: BON (*Sarda sarda*): 34%, LTA (*Euthynnus alletteratus*): 14%, FRI (*Auxis thazard*): 12%, KGM (*Scomberomorus cavalla*): 11%, SSM (*Scomberomorus maculatus*): 11%, BRS (*Scomberomorus brasiliensis*): 5% and BLT (*Auxis rochei*): 5%. In 1980, there was a marked increase in reported landings compared to previous years, reaching a peak of about 145,560 t in 1988 (**SMT-Figure 1**). The five species mentioned above are: Atlantic bonito (*Sarda sarda*), frigate tuna (*Auxis thazard*) which may include some catches of bullet tuna (*Auxis rochei*), little tunny (*Euthynnus alletteratus*), king mackerel (*Scomberomorus cavalla*), and Atlantic Spanish mackerel (*Scomberomorus maculatus*) (**SMT-Figure 2**). Reported landings for the 1989-1995 period decreased to approximately 91,764 t, and then an oscillation in the values in the following years, with a minimum of 64,450 t in 2008 and a maximum of 132,275 t in 2005. Overall trends in the small tuna catch may mask declining trends for individual species because annual landings are often dominated by the landings of a single species. These fluctuations seem to be related to unreported catches, as these species generally comprise part of the by-catch and are often discarded, and therefore do not reflect the real catch.

A preliminary estimate of the total nominal landings of small tunas in 2014 is 72,165 t. The Committee pointed out the relative importance of small tuna fisheries in the Mediterranean and the Black Sea, which account for about 28% of the total reported catches in the ICCAT area.

Despite the recent improvements in the statistical information provided to ICCAT by several countries, the Committee also noted that uncertainties remain regarding the accuracy and completeness of reported landings in all areas. There is a general lack of information on the mortality of these species as by-catch, exacerbated by the confusion regarding species identification.

However, after the adoption of the ICCAT Small Tunas Research Program (SMTYP) in 2012, new historical catch, effort and size data from the main artisanal fisheries in the west of Africa (Senegal, Côte d’Ivoire and Morocco) were recovered and made available to the Secretariat.

#### **SMT-4. State of the stocks**

There is little information available to determine the stock structure of many small tuna species. The Committee suggests that countries be requested to submit all available data to ICCAT as soon as possible, in order to be used in future meetings of the Committee.

Generally, current information does not allow the Committee to carry out an assessment of stock status of the majority of the species. Some analyses will be possible in future if data availability improves with the same trend of the latest years. Nevertheless, few regional assessments have been carried out. Assessments of stocks of small tunas are also important because of their position in the trophic chain. It may therefore be best to approach assessments of small tunas from the ecosystem and regional perspective since these species have limited movements as compared to the major tuna species.

The mean lengths obtained from length frequencies for the small tuna species in the Task II database, pooled by year and sampling strata, are plotted in **Figure 3**.  $L_{opt}$  is the length at which a cohort achieves its maximum biomass based on a yield per recruit analysis, i.e. the maximum catch would be taken at this size. However,  $L_{opt}$  is based on a per recruit analysis which ignores recruitment dynamics, for example the age/size structure and the distribution of a population which all determine productivity and hence sustainability and the formulation of robust management advice.

To better understand the appropriateness of indicators like  $L_{opt}$  the work proposed in the SMT recommendations is extremely important. It will not only help in the management of small tunas but be important in helping to move towards an EBFM and provide an example for the “data rich” stocks of how to incorporate biology and population dynamics into stock assessment.

In 2015, an Ecological Risk Analysis (ERA) was applied for the tuna longline fishery in the Southwestern Atlantic and Indian Oceans. Considering only the small tuna in the Atlantic Ocean, the study found that *Scomberomorus cavalla*, *Acanthocybium solandri* and *Scomberomorus brasiliensis* are of high risk relatively to other small tuna species and hence are priority for assessment for this region. *Euthynnus alletteratus*, *Auxis thazard*, *Auxis rochei* and *Sarda sarda* were assigned with moderate risk (**SMT-Table 3**).

Given the social and economic importance of *Sarda sarda*, *Auxis rochei*, *Auxis thazard* and *Euthynnus alletteratus*, the Committee also recommends these species as a priority for assessment.

***SMT-5. Outlook***

In the absence of any assessment, there is no projection made by the Committee.

Additional work is being carried out under the SMTYP to address knowledge gaps as regards size data and biological parameters, which are necessary for their assessment.

The Committee notes that the tropical tunas tagging programme adopted by ICCAT will also tag small tunas and may contribute to the collection of biological data of these species.

***SMT-6. Effect of current regulations***

There are no ICCAT regulations in effect for small tunas. Several regional and national regulations are in place.

***SMT-7. Management recommendations***

The provision of management advice by the SCRS relies on accurate reporting of Task I and II data. However, due to the nature of small tuna fisheries (i.e. multi-gear, multi-species, artisanal fisheries, etc.), information on fisheries data is difficult to collect. Therefore, the Committee has not been able to conduct any quantitative stock assessment for any of the small tunas stocks. However, work is currently being conducted on developing indicators that in the future could be used to provide management advice to the Commission.

SMT-Table 1. Reported landings (t) of small tuna species, by area and flag. (v2, 2015-09-25).

			1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
BLF	TOTAL	A+M	3888	4202	4353	3535	2719	4051	4488	3027	3238	3185	2465	4034	4756	1303	1926	1031	1937	1927	1669	1442	1548	1533	1529	1218	873
	Landings	All gears	3888	4202	4353	3535	2719	4051	4488	3027	3238	3185	2465	4034	4756	1303	1926	1031	1937	1927	1669	1442	1548	1533	1529	1218	873
	Landings	Angola	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Brazil	335	130	49	22	38	153	649	418	55	55	38	149	1669	1	118	91	242	233	266	10	9	46	124	102	299
		Cuba	487	318	196	54	223	156	287	287	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Curaçao	70	60	60	65	60	50	45	45	45	45	45	45	45	0	0	0	0	0	0	0	0	0	0	0	0
		Dominica	19	10	14	15	19	30	0	0	79	83	54	78	42	20	38	47	29	37	45	41	37	39	37	37	37
		Dominican Republic	520	536	110	133	239	892	892	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		EU.España	0	0	307	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		EU.France	865	1210	1170	1140	1330	1370	1040	1040	1040	1040	1040	1040	1040	0	0	0	0	0	0	0	32	19	26	0	14
		Grenada	293	195	146	253	189	123	164	126	233	94	164	223	255	335	268	306	371	291	290	291	291	291	291	291	291
		Jamaica	0	0	0	0	0	148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Liberia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Mexico	0	0	0	0	0	0	0	0	0	0	0	12	0	10	9	10	10	12	6	7	6	9	5	4	4
		NEI (ETRO)	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
		St. Vincent and Grenadines	38	11	7	53	19	20	18	22	17	15	23	24	24	0	0	0	0	0	0	0	0	0	0	0	11
		Sta. Lucia	17	14	13	16	82	47	35	40	100	41	45	108	96	169	96	126	182	151	179	165	203	229	192	147	104
		Trinidad and Tobago	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5
		U.S.A.	81	112	127	508	492	582	447	547	707	617	326	474	334	414	675	225	831	422	649	619	622	417	599	418	345
		UK.Bermuda	13	8	6	5	7	4	5	4	6	6	5	4	5	9	4	5	8	7	6	7	9	8	11	11	15
		UK.British Virgin Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	1
		UK.Turks and Caicos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Venezuela	1150	1598	2148	1224	21	624	758	498	1034	1192	696	1902	1210	319	732	225	237	777	231	293	331	473	237	191	88
BLT	TOTAL	A+M	11994	8777	5714	3420	5300	4301	5909	3070	2309	2646	3912	5796	6041	3794	6223	4231	4090	4877	6657	5557	7952	9483	6188	7247	3811
	Landings	All gears	11994	8777	5714	3420	5300	4301	5909	3070	2309	2646	3912	5796	6041	3794	6223	4231	4090	4877	6657	5557	7952	9483	6188	7247	3811
		Algeria	0	174	270	348	306	230	237	179	299	173	225	230	481	0	391	547	586	477	1134	806	970	1119	1236	577	1025
		Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	0	
		EU.Croatia	0	24	21	52	22	28	26	26	26	26	0	0	0	0	0	0	0	0	0	0	8	13	9	10	12
		EU.España	2985	2226	1210	648	1124	1472	2296	604	487	669	1024	861	493	495	1009	845	1101	3083	3389	726	3812	3227	1620	2654	749
		EU.France	0	8	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		EU.Greece	1400	1400	1400	1400	1400	1400	1426	1426	0	0	196	125	120	246	226	180	274	157	620	506	169	129	118	155	4
		EU.Italy	494	432	305	379	531	531	229	229	229	462	462	462	2452	1463	1819	866	0	342	732	574	653	613	892	892	
		EU.Lithuania	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		EU.Malta	21	20	10	9	1	2	3	6	1	3	1	1	0	2	8	4	11	14	12	7	11	23	3	85	14
		EU.Portugal	0	0	0	0	0	0	0	0	28	263	494	208	166	231	299	580	867	20	143	436	654	387	55	38	
		Maroc	2452	1289	1644	170	1726	621	1673	562	1140	682	763	256	621	246	326	50	199	35	83	336	525	237	194	237	171
		Russian Federation	0	2171	814	70	100	0	0	0	0	408	1028	460	122	102	139	22	0	23	48	67	119	366	703	352	
		Serbia & Montenegro	0	13	1	0	0	2	6	6	6	7	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0
		Syria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	75	87	81	84	83	83	
		Tunisia	985	985	35	20	13	14	13	32	93	45	15	2300	932	989	1760	0	0	0	0	0	0	940	935	938	920
		Turkey	0	35	0	324	77	0	0	0	0	316	316	316	316	0	284	1020	1031	993	836	1873	1081	2552	907	863	562
		U.S.S.R.	3634	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
		Yugoslavia Fed.	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BON	TOTAL		28908	33334	21992	30528	21719	21219	25134	24518	45253	37313	27151	27637	24581	14424	15832	78767	40095	14179	14964	21182	20864	24817	44852	24285	26214
		ATL	6811	8079	6881	4531	6037	6030	7939	10441	15523	9143	5179	5400	8864	3307	4584	4391	8345	5542	4922	11162	8281	10375	5531	5920	3392
		MED	22097	25255	15111	25997	15682	15189	17195	14078	29730	28170	21972	22237	15717	11117	11248	74376	31751	8637	10042	10019	12584	14442	39321	18365	22823
	Landings	ATL	6811	8079	6881	4531	6037	6030	7939	10441	15523	9143	5179	5400	8864	3307	4584	4391	8345	5542	4922	11162	8281	10375	5531	5920	3392
	Landings	MED	22097	25255	15111	25997	15682	15189	17195	14078	29730	28170	21972	22237	15717	11117	11248	74376	31751	8637	10042	10019	12584	14442	39321	18365	22823
		Angola	128	102	4	49	20	9	39	32	0	2	118	118	118	0	0	138	0	931	0	1962	1997	131	267	1373	2
		Argentina	1207	1794	1559	434	4	138	108	130	12	68	19	235	1	129	269	110	0	0	0	220	59	6	33	0	0
		Barbados	0	0	0	0	0	0	0	0	0	0	0	1	2	2	0	0	0	0	0						



			1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
		St. Vincent and Grenadines	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Sta. Lucia	0	0	0	0	0	0	0	0	0	0	3	5	1	2	0	1	0	0	0	0	0	1	0	0	0
FRI	TOTAL	ATL	16738	10356	6367	12678	8407	7535	13809	14954	15872	13004	12918	12788	11635	4527	6446	4905	6606	7368	6942	10465	10809	11121	11879	14522	11997
	Landings	All gears	16738	10356	6367	12678	8407	7535	13809	14954	15872	13004	12918	12788	11635	4527	6446	2933	5649	6431	5087	7878	7350	8550	9098	11937	9757
	Landings(FP)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1972	958	936	1855	2587	3459	2571	2780	2585	2240
	Landings	Angola	28	1	0	4	6	21	29	12	31	2	38	38	38	0	0	0	0	95	0	63	19	59	39	48	47
		Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Belize	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36
		Benin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Brazil	592	746	291	608	906	558	527	215	162	166	106	98	1117	860	414	532	603	202	149	313	204	347	306	444	293
		Cabo Verde	75	135	82	115	86	13	6	22	191	154	81	171	278	264	344	300	318	378	574	1312	711	853	1811	2461	5418
		Curacao	0	0	0	0	0	0	590	1157	1030	1159	1122	989	710	505	474	0	150	106	485	364	0	235	238	481	935
		Côte D'Ivoire	0	0	0	0	0	0	0	0	3	0	1	1	0	0	994	4	354	541	14	813	161	297	38	2837	261
		EU.Bulgaria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		EU.España	2240	541	228	362	297	386	947	581	570	23	17	722	438	635	34	166	73	278	631	1094	950	877	1708	1234	1200
		EU.Estonia	0	198	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		EU.France	3872	0	121	63	105	126	161	147	146	0	91	127	91	0	168	47	6	98	24	24	91	147	246	233	147
		EU.Latvia	0	243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		EU.Lithuania	0	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		EU.Netherlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	150	90	0	164	5	85	0
		EU.Portugal	26	3	0	0	0	0	0	1	31	5	9	28	5	4	7	212	3	832	181	0	0	0	0	0	0
		EU.United Kingdom	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	26	0	0	0
		Germany Democratic Rep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Ghana	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2577	2134	1496	2786	3604	2295	2469	2382	0
		Grenada	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
		Guatemala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98	74	81	78	48	63	0	26
		Guinea Ecuatorial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0
		Guinée Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	96	94	332	503	236
		Japan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Maroc	1045	1131	332	274	122	645	543	2614	2137	494	582	418	441	184	542	61	48	135	179	9	19	862	554	55	21
		Mixed flags (FR+ES)	1728	3633	4017	9674	3107	1919	7177	6063	6342	8012	9864	9104	7748	1623	1722	0	0	0	0	0	0	0	0	0	0
		NEI (ETRO)	237	1	4	32	68	70	180	120	309	491	291	420	186	71	180	166	4	0	0	0	0	0	0	0	0
		Panama	0	243	57	118	341	328	240	91	0	0	0	0	0	0	394	975	970	1349	411	439	425	339	463	504	905
		Rumania	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Russian Federation	0	1078	627	150	405	456	46	500	2433	477	12	25	308	56	56	63	6	6	12	113	270	912	113	217	139
		S. Tomé e Príncipe	35	41	39	33	37	48	79	223	197	209	200	200	200	200	234	215	290	0	275	282	290	286	288	287	0
		Senegal	1084	311	201	342	319	309	0	0	7	0	4	0	13	288	151	83	119	383	15	217	201	341	16	22	0
		Sta. Lucia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Trinidad and Tobago	0	0	0	17	0	56	199	368	127	138	245	0	0	414	0	0	0	0	0	0	0	0	0	0	0
		U.S.A.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		U.S.S.R.	2739	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Ukraine	0	0	0	0	0	0	0	0	0	36	48	0	43	0	0	0	0	0	0	0	0	0	0	0	0
		Venezuela	3037	1762	368	886	2609	2601	3083	2839	2164	1631	210	444	32	113	182	42	165	52	48	54	215	508	85	150	71
	Landings(FP)	Belize	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	154	71	86	78	107
		Cabo Verde	0	0	0	0	0	0	0	0	0	0	0	0	0	0	144	84	200	189	188	428	130	271	256	268	
		Curacao	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	55	29	36	225	233	139	214	149	224	
		Côte D'Ivoire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	177	81	236	
		EU.España	0	0	0	0	0	0	0	0	0	0	0	0	0	0	265	191	108	663	866	889	708	576	555	586	
		EU.France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	444	217	94	151	264	555	500	605	520	221	
		Guatemala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	142	75	69	99	53	105	25	150	42	65	
		Guinée Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	168	0	24	37	0	174	518	542	672	441	
		Mixed flags (EU tropical)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	507	105	161	383	631	764	247	0	0	0	
		Panama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	274	230	251	297	261	157	230	158	234	92	
DOL	TOTAL	A+M	260	291	188	174	334	334	307	295	363	349	234	303	347	564	2632	2772	1295	4753	1042	5381	9889	7187	3647	4471	5255
	Landings	All gears	260	291	188	174	334	334	307	295	363	349	234	303	347	564	2632	2772	1295	4753	1042	5381	9889	7187	3394	4245	5074
	Discards		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	253	226	181	0
	Landings	Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2159	2311	761	4270	472	4400	7990	4379	641	241	762
		Chinese Taipei	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	343	307	245
		Côte D'Ivoire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	199
		EU.España	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	54	73	73	0	85	166	113	102	
		EU.France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	372	819	1737	1360	1474	1473	
		EU.Italy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	700	525
		EU.Malta	260	291	188	174	334	334	307	295	363	349	234	303	347	507	473	447	517	274							







			1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
		Trinidad and Tobago	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		U.S.A.	2554	5655	5663	5143	4380	3363	2866	3509	2968	3282	3893	4524	4613	4552	4477	4747	2425	2147	1746	1946	1846	1896	1864	1877	0
WAH	TOTAL	A+M	1498	1721	1835	2671	2143	2408	2515	3085	2488	2957	2020	2296	2202	2049	2596	2456	1809	2568	2158	2354	2032	2228	3893	3499	2418
	Landings	All gears	1498	1721	1835	2671	2143	2408	2515	3085	2488	2957	2020	2296	2202	2049	2596	2099	1630	2283	1586	1883	1763	1750	3704	3392	2331
	Landings(FP)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	357	179	285	572	471	269	477	85	0	0
	Discards		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	104	108	86
	Landings	Antigua and Barbuda	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Aruba	70	60	50	50	125	40	50	50	50	50	50	50	50	0	0	0	0	0	0	0	0	0	0	0	0
		Barbados	51	60	51	91	82	42	35	52	52	41	41	0	0	34	45	26	41	36	27	17	30	29	22	21	17
		Benin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Brazil	52	64	71	33	26	1	16	58	41	0	0	0	0	405	519	449	111	75	76	70	19	357	213	73	153
		Cabo Verde	458	351	350	326	361	408	503	603	429	587	487	578	500	343	458	449	555	524	351	472	470	470	445	445	445
		Chinese Taipei	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1132	1012	810
		Curacao	280	250	260	270	250	230	230	230	230	230	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0
		Côte D'Ivoire	0	0	1	0	0	0	0	0	0	0	0	0	0	0	16	3	1	11	0	5	5	12	9	95	1
		Dominica	38	43	59	59	59	58	58	58	58	50	46	11	37	10	6	8	15	14	16	10	13	13	0	0	0
		Dominican Republic	6	9	13	7	0	0	0	325	112	31	35	35	35	0	0	0	0	0	0	0	0	0	0	0	0
		EU.España	23	28	32	22	20	15	25	25	29	28	32	38	46	48	305	237	110	66	38	73	53	87	35	50	41
		EU.France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4	0	0	46
		EU.Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	4	3	9	8	10	2	0	0
		Grenada	54	77	104	96	46	49	56	56	59	82	51	71	59	44	0	0	0	0	0	0	0	0	0	0	0
		Guinea Ecuatorial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	14
		Maroc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76	0	0	0	0
		Mexico	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	0	0	0	0	0	0	0	0	0	16
		Panama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	91	240	120	86	111	99	210	373	
		S. Tomé e Príncipe	28	34	27	36	39	46	80	52	56	62	52	52	52	52	94	88	76	0	131	235	241	238	479	359	0
		Saint Kitts and Nevis	0	0	0	0	0	0	0	0	0	0	0	0	0	7	6	7	0	0	0	0	0	0	0	0	0
		Senegal	0	0	0	64	0	0	1	0	0	5	0	0	0	5	0	1	1	0	0	2	6	0	11	24	0
		South Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		St. Vincent and Grenadines	28	33	33	41	28	16	23	10	65	52	46	311	17	40	60	0	241	29	24	31	40	31	5	32	24
		Sta. Lucia	77	79	150	141	98	80	221	223	223	310	243	213	217	169	238	169	187	0	171	195	199	0	148	155	0
		Suriname	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	588	415	0
		Trinidad and Tobago	0	118	1	0	0	0	0	1	1	1	2	1	9	7	6	6	7	6	6	5	5	7	9	9	9
		U.S.A.	82	134	203	827	391	764	608	750	614	858	640	633	846	789	712	558	89	1123	495	522	358	240	399	207	480
		UK.Bermuda	74	67	80	58	50	93	99	105	108	104	61	56	91	87	88	83	86	124	117	101	81	100	88	75	76
		UK.British Virgin Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	4	1
		UK.Sta Helena	18	12	17	35	26	25	23	0	0	0	0	0	0	0	0	0	0	0	0	29	19	31	12	16	16
		UK.Turks and Caicos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Venezuela	159	302	333	514	542	540	487	488	360	467	4	17	13	9	7	16	13	33	9	25	28	23	38	32	27
	Landings(FP)	Belize	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	40	0	0	0
		Cabo Verde	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92	9	55	60	22	29	25	4	0	0
		Curacao	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	7	31	57	23	78	9	0	0
		Côte D'Ivoire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
		EU.España	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92	63	44	224	262	136	240	56	0	0
		EU.France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	10	3	16	26	26	17	0	0	0
		Guatemala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	68	11	21	28	7	0	8	0	0	
		Guinée Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	8	15	7	0	0	0	0	0
		Mixed flags (EU tropical)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	30	44	97	26	39	0	0	0	0
		Panama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	44	104	102	65	13	66	15	0	0
	Discards	Chinese Taipei	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	104	108	86	0

1. Brazilian Task I catches from 2012 to 2014 are preliminary and under revision

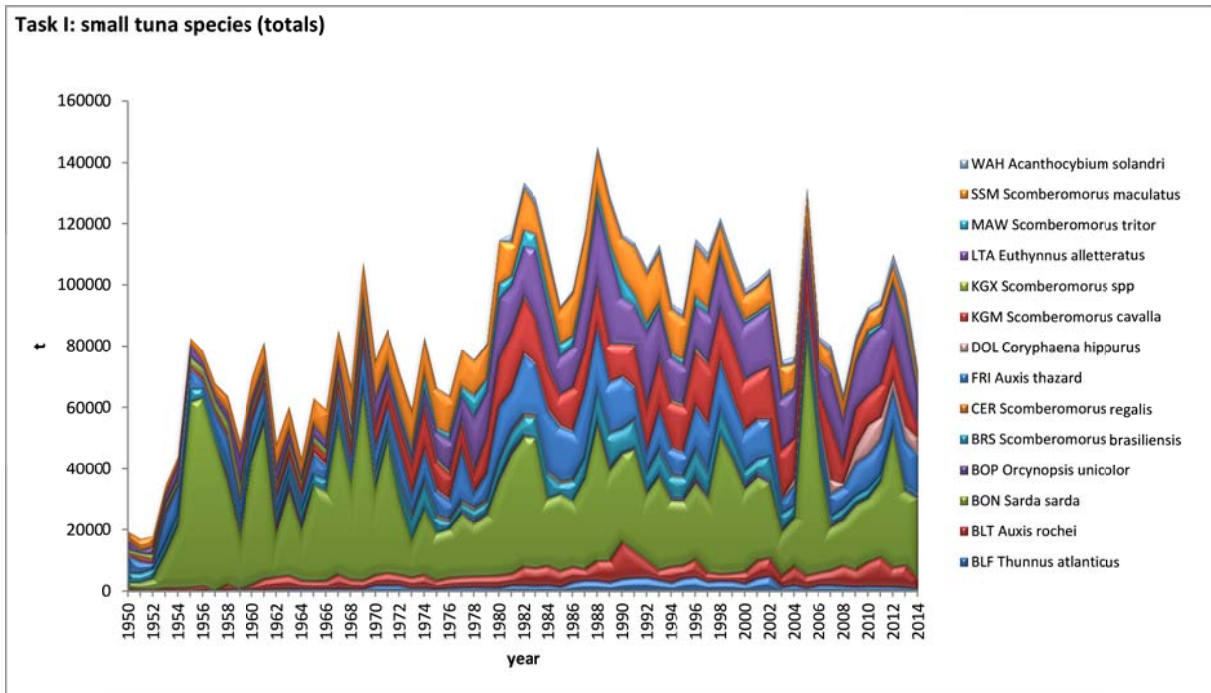
**SMT-Table 2.** Risk of the small tunas species caught by tuna longline fisheries in the Atlantic Ocean.

<b>Species</b>	<b>Risk</b>
<i>Scomberomorus cavalla</i>	High
<i>Acanthocybium solandri</i>	High
<i>Scomberomorus brasiliensis</i>	High
<i>Euthynnus alletteratus</i>	Moderate
<i>Auxis thazard</i>	Moderate
<i>Auxis rochei</i>	Moderate
<i>Sarda sarda</i>	Moderate
<i>Thunnus atlanticus</i>	Low
<i>Scomberomorus regalis</i>	Low

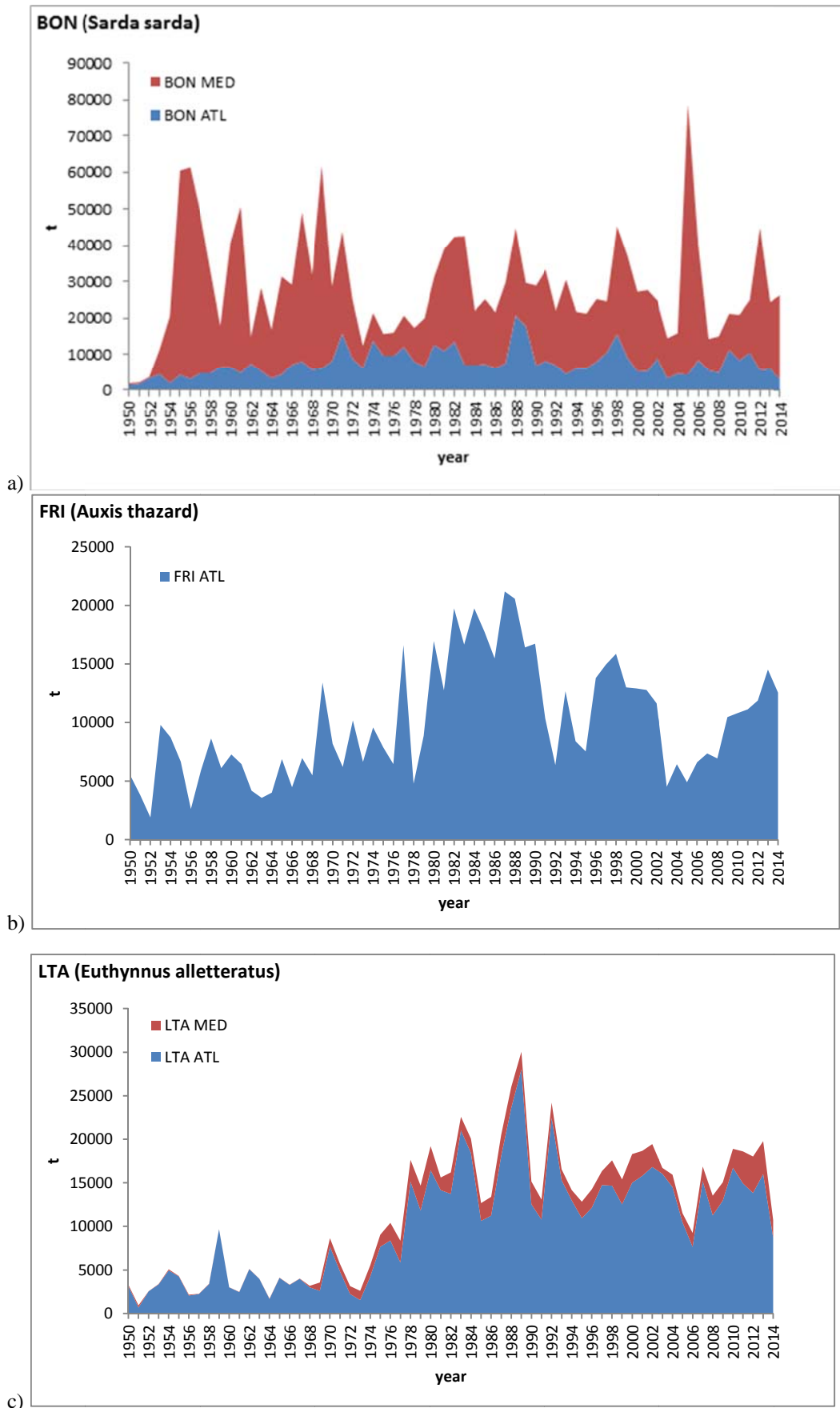
**SMT-Table 3.** Summary of life-history parameters currently available for the small tunas for the 5 major areas: North and South Atlantic Ocean (both Eastern and Western) and the Mediterranean Sea.

ZONES	NORTHEAST ATLANTIC		SOUTHEAST ATLANTIC		NORTHWEST ATLANTIC		SOUTHWEST ATLANTIC		MEDITERRANEAN	
	Growth Parameters	Reproduction parameter	Growth Parameters	Reproduction parameter	Growth Parameters	Reproduction parameter	Growth Parameters	Reproduction parameter	Growth Parameters	Reproduction parameter
LTA										
FRI										
BLT										
SSM										
MAW										
BON										
WAH										
BRS										
BLF										
KGM										

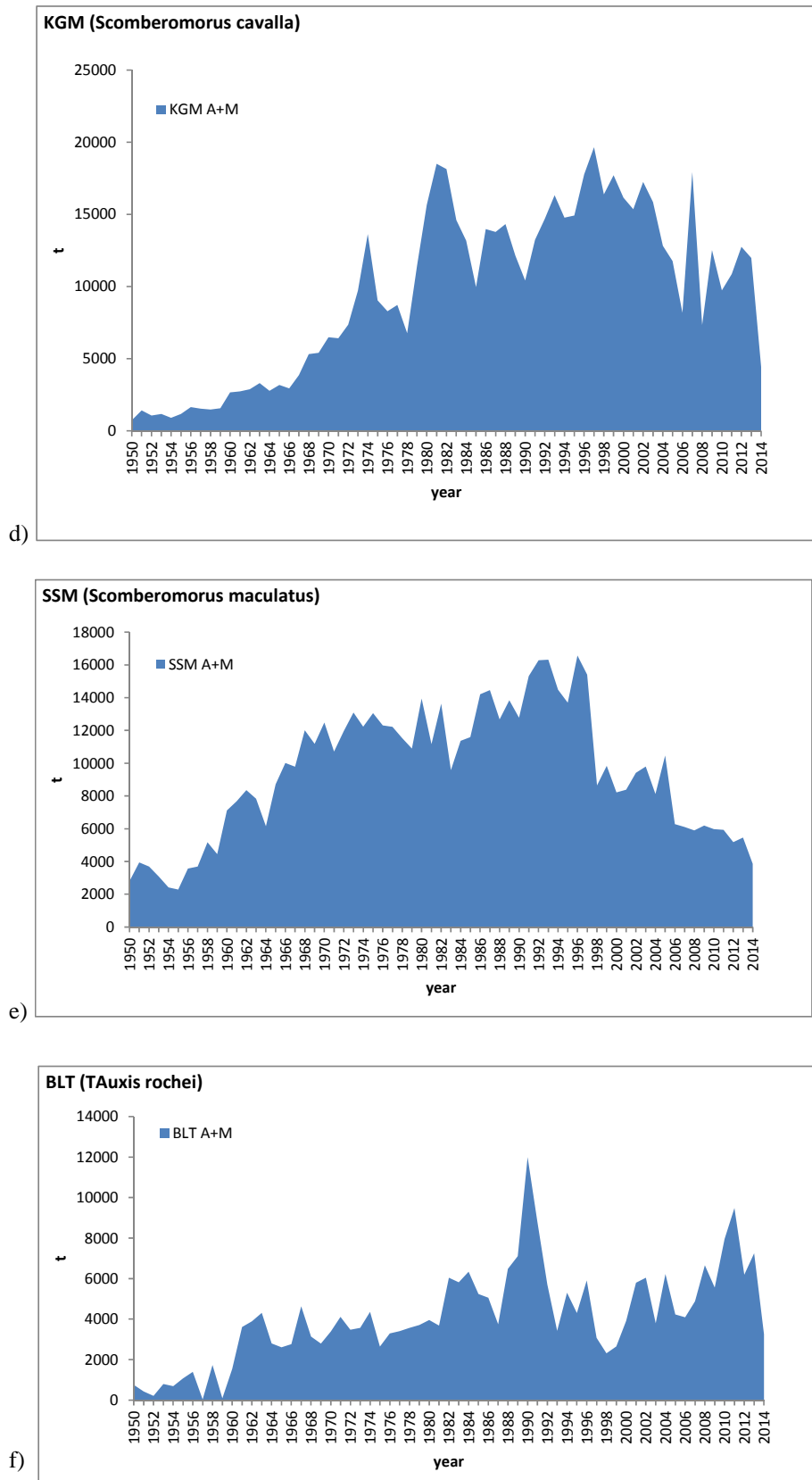
Data available but needed to be update  
 No existing data



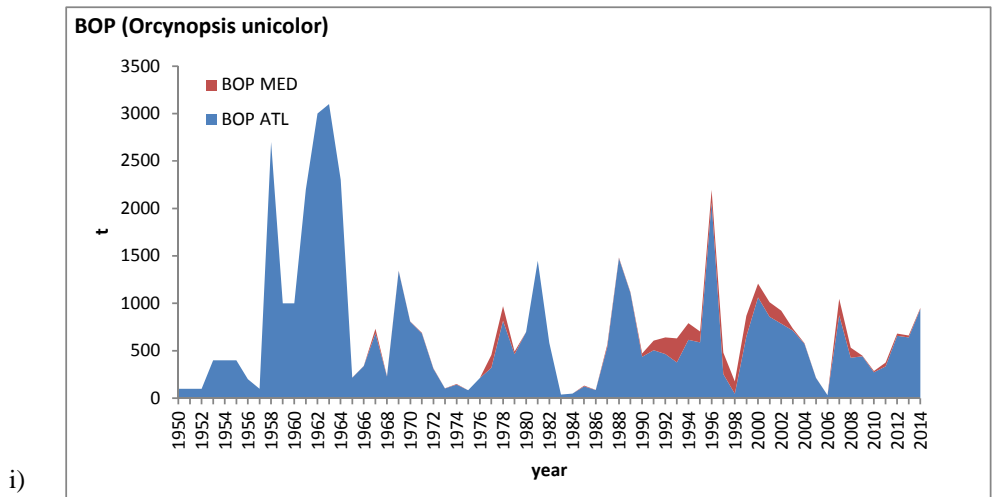
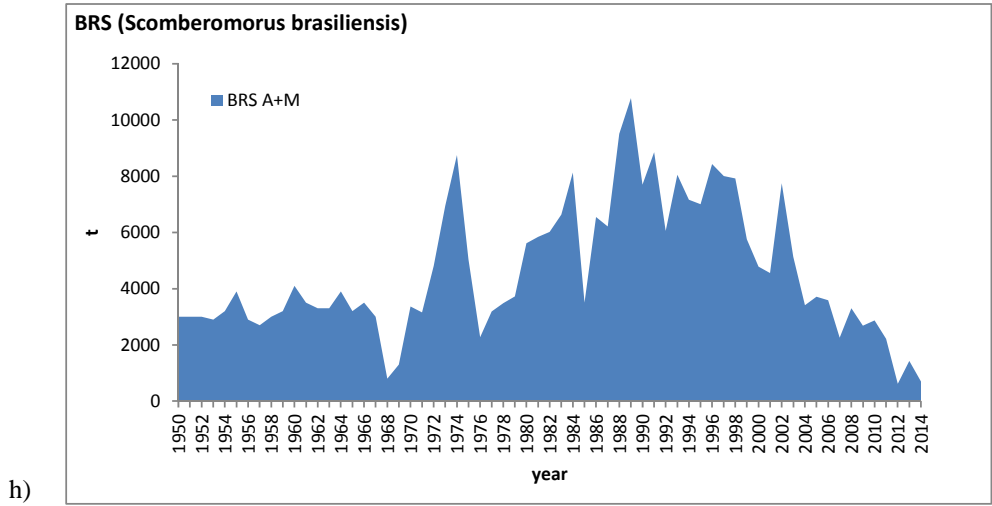
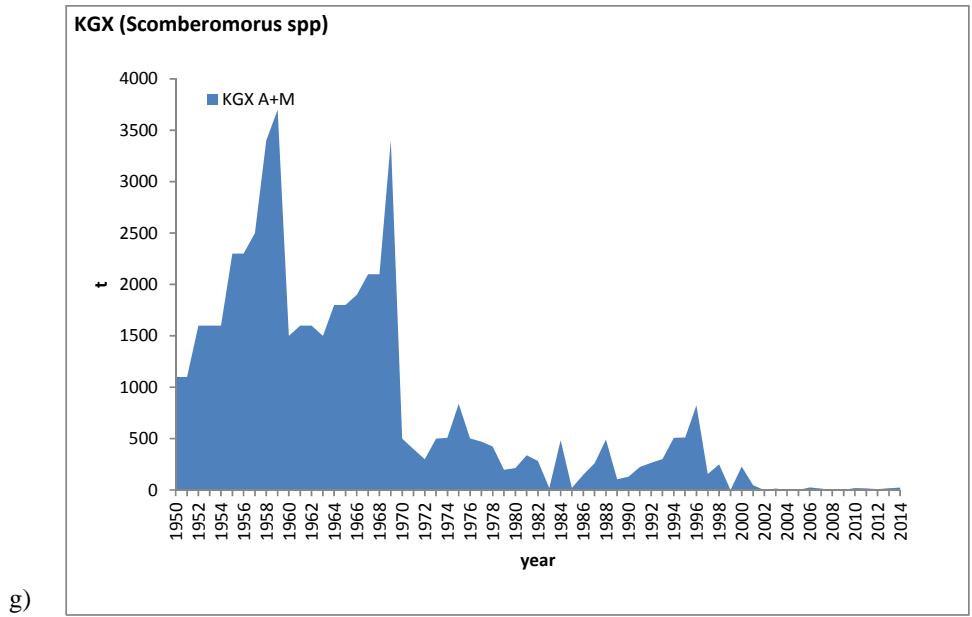
**SMT-Figure 1.** Estimated landings (t) of small tunas (combined) in the Atlantic and Mediterranean, 1950-2014. The data for the last three years are incomplete.



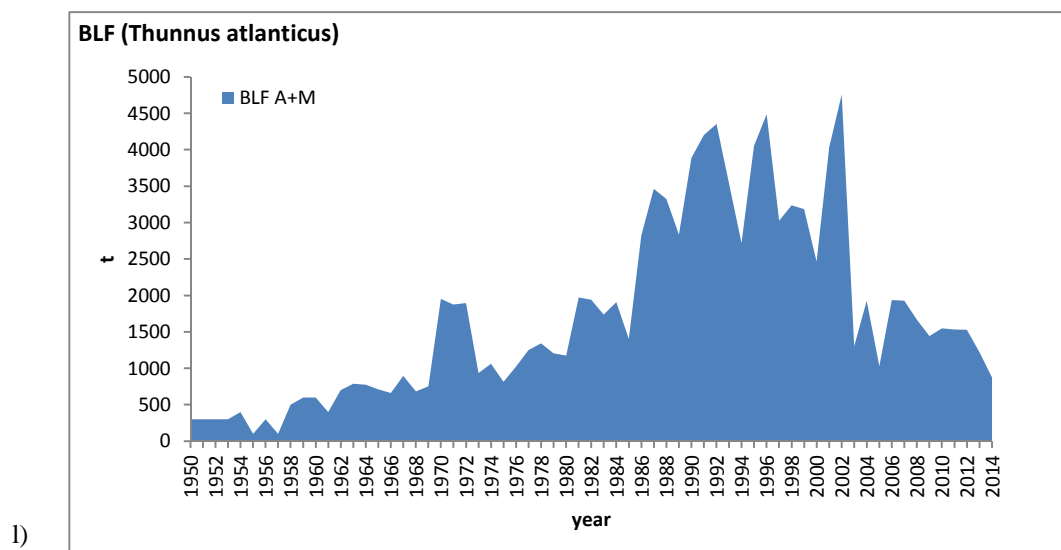
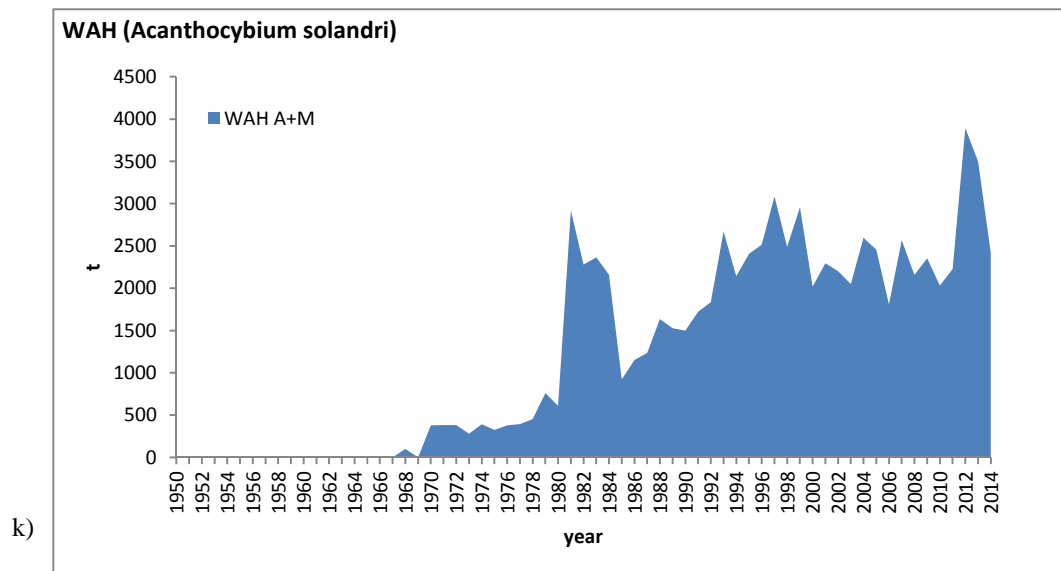
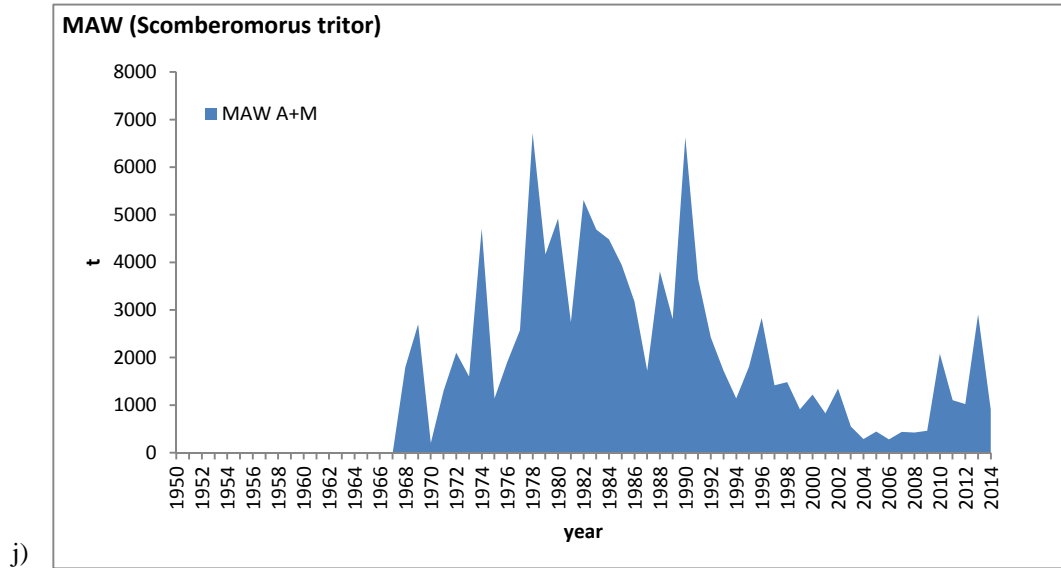
**SMT-Figure 2.** Estimated landings (t) of the major species of small tunas in the Atlantic and Mediterranean, 1950-2014. The data for the last years are incomplete.



**SMT-Figure 2.** Estimated landings (t) of the major species of small tunas in the Atlantic and Mediterranean, 1950-2014. The data for the last years are incomplete.

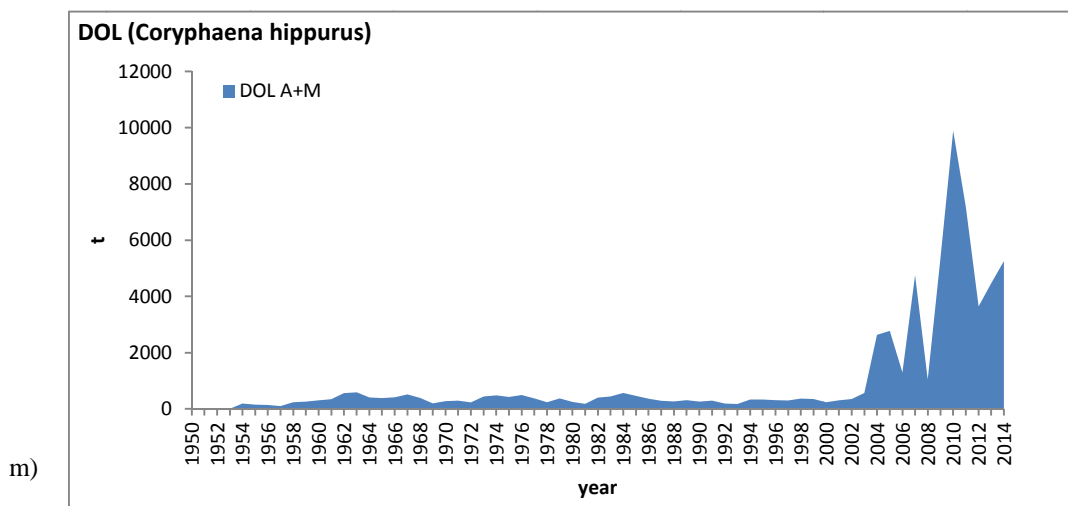


**SMT-Figure 2.** Estimated landings (t) of the major species of small tunas in the Atlantic and Mediterranean, 1950-2014. The data for the last years are incomplete.

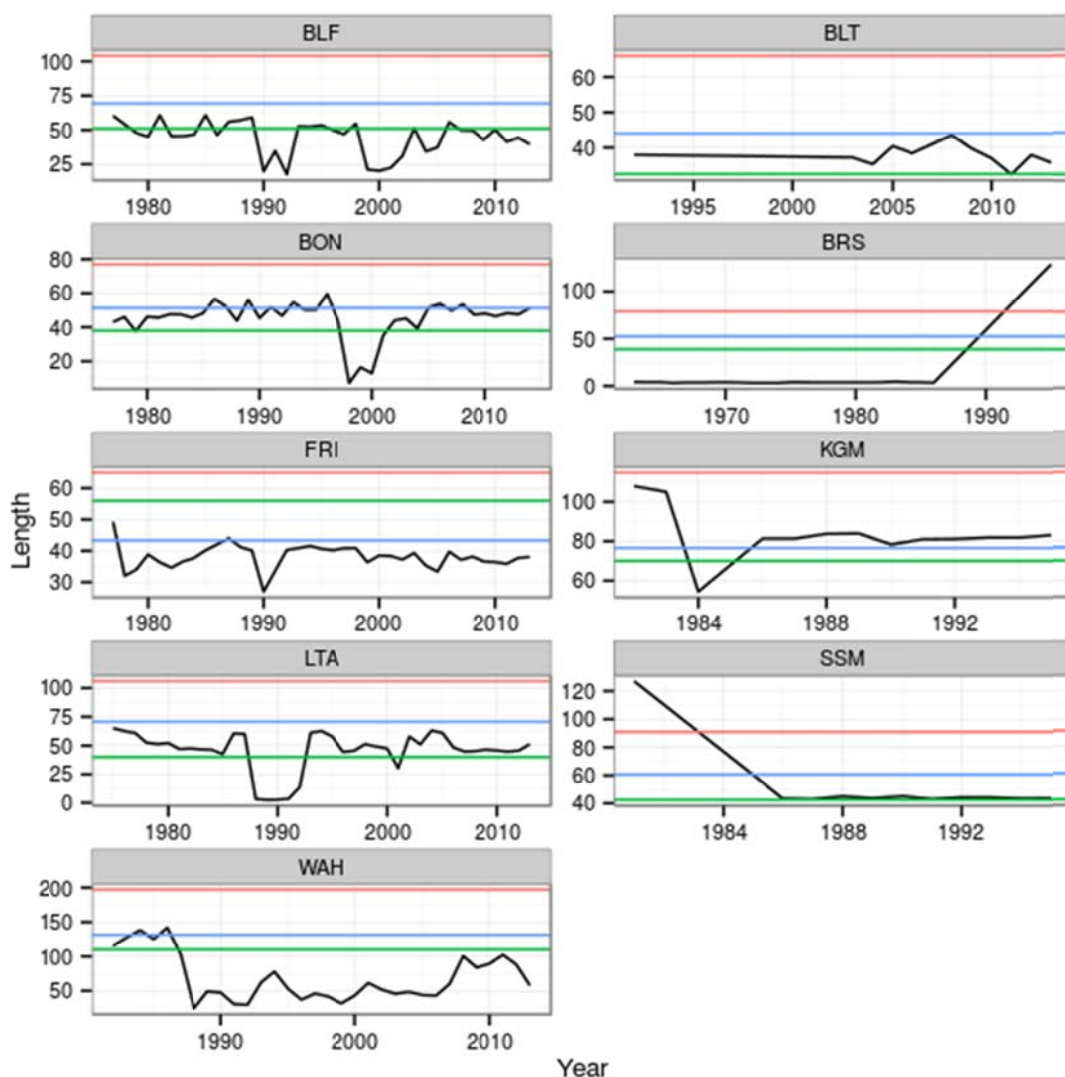


**SMT-Figure 2.** Estimated landings (t) of the major species of small tunas in the Atlantic and Mediterranean, 1950-2014. The data for the last years are incomplete.





**SMT-Figure 2.** Estimated landings (t) of the major species of small tunas in the Atlantic and Mediterranean, 1950-2014. The data for the last years are incomplete.



**SMT-Figure 3.** Time series of mean size, estimated from Task 2 data in the ICCAT database. The horizontal lines are  $L_{max}$  (red),  $L_{opt}$  (blue) and  $L_{50}$  (green).  $L_{opt}$  is the body length when an unfished age group reaches its maximum biomass and was estimated, in this case, as representing two thirds of  $L_{max}$ .