Report of the 8th meeting of the Mediterranean Planning Group for Methodological Development

(PGMed)

Data Collection Framework (DCF)
Council Regulation (EC) No 199/2008
Commission Decision 2010/93/EU

Zagreb, $1^{st} - 2^{nd}$ of September 2014

Contents

Chapter 1

Background

Origin During the 2006 Regional Coordination Meeting for the Mediterranean area (Malta, 26th-28th of April 2006, 3rd RCM Med) the creation of a Planning Group for the Mediterranean (Mediterranean Planning Group for Methodological Development - PGMed) was recommended, as a forum similar to the ICES Planning Group on Commercial Catch, Discards and Biological Sampling (PGCCDBS) for discussing methodological matters related to data collection referring particularly to the Mediterranean area.

During the 4th RCM Med (Cyprus, 2007) it was clarified that PGMed operates under the umbrella of the RCM Med, and it was recommended that the chairman of the PGMed participates in the RCM Med. The need for maintaining strong links with the General Commission for Fisheries in the Mediterranean (GFCM) and the PGCCDBS was strongly supported.

Following the proposal of the 2006 3rd Liaison Meeting, the first meeting of the PGMed was arranged to take place jointly with the 2007 PGCCDBS meeting in Malta (5th – 9th of March 2007).

Organisation and relation to PGCCDBS Although organized in an autonomous group, it was agreed among all scientists that the contact and cooperation between the Mediterranean area and the ICES area (PGCCDBS) should be promoted and maintained. The link between the two planning groups (PGs) would be maintained through:

1. the inclusion of each group's report as an annex of the other;
2. the organization of parallel meetings;
3. the organization of joint plenary for generic issues;
4. the organization of joint workshops.

In 2012, this link was reviewed in plenary by the PGs. Although points *2* and *3* have been fulfilled since the beginning, each group's report is not usually included as annex of the other, mainly due to practical issues, so both reports are very independent. The organization of joint workshops has been done, although the participation of experts both from ICES and Mediterranean is not always as common as expected.

The divergence of both PGs is not a real problem, as they both work under different umbrellas (ICES in the case of PGCCDBS and RCMMed&BS in the case of PGMed). However, the rest of the problems should be solved. For that reason, PGMed 2012 proposed the following points to be taken into account in following meetings and reports in order to increase and improve the links between the groups. These points were agreed in a plenary with the PGCCDBS.

Regarding the meetings (*i*) when possible, join all presentations of potential interests for the Mediterranean together, in order to be able to split in PGs sooner and, thus, having more time to work in their specific ToRs; (*ii*) exposition of PGMed main results and discussions in plenary on the last day.

For the report (*i*) include a summary of relevant issues discussed in plenary in the PGMed report; (*ii*) include the list of ToRs of each group in the other's report; (*iii*) include the list of participants of each group in the other's report; (*iv*) add a link to the online report; (*v*) include the list of workshops of potential interest of each PG.

New organisation In 2013, it has been proposed that meetings for both PGs would be held separately given the uncertainty about the future role of PGCCDBS, and since then both PGs are held at different time and locations. The PGMed is now held 2 days before the RCM Med & BS.

Chapter 2

Introduction

The 8th Meeting of the Mediterranean Planning Group for Methodological Development (PGMed) was arranged to be held just before the RCM Med & BS, in Zagreb 1st-2nd of September 2014. This was the first time that the meeting was organised this way.

Attendance The 2014 PGMed was attended by 7 Mediterranean member states (Greece, Cyprus, France, Spain, Malta, Slovenia and Croatia), but none of the Black Sea Member States. The list of PGMed participants is provided in Annex 1. The ToRs of the 2014 PGCCDBS report are provided in Annex 6 and the report report can be found at `http://www.ices.dk/sites/pub/PublicationReports/ExpertGroupReport/acom/2014/PGCCDBS/PGCCDBSReport2014.pdf`.

Chapter 3

ToR 1) Ranking system for the whole Mediterranean and for the Black Sea

3.1 Mediterranean

3.1.1 Ranking

During PGMed 2010, a first ranking system for the Mediterranean Sea was conducted to anticipate the regional approach to sampling. MS had to provide catch, effort and value data by metier from the year 2007. The data was used to rank the metiers at level 6. During 2010, the RCMMed&BS carried out the same exercise with an updated data set. Taking into account both exercises, the RCMMed&BS 2010 recommended to PGMed to re-perform this exercise on a yearly basis for both the Mediterranean and Black Sea region.

During PGMed 2012, it was apparent that the metiers selected at regional level were the same as the previous years, both for the Mediterranean and the Black Sea. For this reason, it was agreed that the ranking system would be done every other year instead of on a yearly basis. However, during the RCM Med&BS, it was considered that, as the ranking system is included in the generic ToRs of the RCMs, the ranking system should continue to be performed on an annual basis, although the results of the ranking system may be the same or very similar compared with the previous years as it is shown in this section.

Thus, PGMed 2013 re-performed this exercise and came up with a regional ranking system for the Mediterranean Sea and the Black Sea separately. The ranking system described in the DCF (2010/93/EU) was applied. The data on landings, effort and value for the different countries were collated in order to identify the major metiers present in the Mediterranean and Black Sea Regions.

Member state	Landings	Effort	Value
Bulgaria	2009, 2010	2009, 2010	2009, 2010
Croatia	2010	2010	2010
Cyprus	2009, 2010, 2011, 2012, 2013	2009, 2010, 2011, 2012, 2013	2009, 2010, 2011, 2012, 2013
France	2009, 2010	2009, 2010	NA
Greece	2008	2008	2008
Italy	2010, 2012, 2013	2010, 2012, 2013	2010, 2012, 2013
Malta	2009, 2010, 2011, 2012, 2013	2009, 2010, 2011, 2012, 2013	2009, 2010, 2011, 2012, 2013
Romania	2010, 2011	2010, 2011	2010, 2011
Slovenia	2009, 2010, 2011	2009, 2010, 2011	2009, 2010, 2011

Spain	2009, 2010, 2011, 2012, 2013	2009, 2010, 2011, 2012, 2013	2009, 2010, 2011, 2012, 2013

Table 3.1: Available years of data in the data set for each member state and each variable

For the Mediterranean, besides France, Croatia and Greece, most of the countries made available landings, effort and value data from 2009 until 2013 (Table 13.1). The ranking system was performed at the regional level using as reference the average values over the available data between 2012 and 2013. The MISC metiers were ignored because they differ among countries and because they are of importance at the national level but not at the regional level. The metiers were first ranked according to their share in the total catch. These shares were then cumulated by decreasing order until a cut-off level of 90% was reached. The same ranking procedure of the metiers was applied to effort data (days at sea) and value (euros) data.

Level 4	Level 5	Level 6	Total landings (t)	Percentage
OTB	DEF	>=40	76022	28
PS	SPF	>=14	69768	25
PTM	SPF	>=20	42719	16
DRB	MOL	0	20151	7
GTR	DEF	>=16	12737	5
OTB	MDD	>=40	10189	4
GNS	DEF	>=16	9111	3
LLD	LPF	0	8365	3

Table 3.2: Results of the ranking system at a cut-off level of 90 percent, based on total landings (tons) over the period 2012-2013 for the Mediterranean region and segmented according to Appendix VII of 2010/93/EU.

Level 4	Level 5	Level 6	Total effort (days)	Percentage
GTR	DEF	>=16	579241	30
GNS	DEF	>=16	348804	18
OTB	DEF	>=40	337982	17
FPO	DEF	0	108157	6
LLS	DEF	0	105668	5
LLD	LPF	0	66805	3
OTB	MDD	>=40	66482	3
DRB	MOL	0	59373	3
PS	SPF	>=14	53322	3

Table 3.3: Results of the ranking system at a cut-off level of 90 percent, based on total effort (days) over the period 2012-2013 for the Mediterranean region and segmented according to Appendix VII of 2010/93/EU.

Level 4	Level 5	Level 6	Total value (euros)	Percentage
OTB	DEF	>=40	406388349	36
PS	SPF	>=14	111182268	10
GTR	DEF	>=16	104283744	9
OTB	MDD	>=40	83170272	7
OTB	DWS	>=40	78811405	7
GNS	DEF	>=16	74943891	7
LLD	LPF	0	60962838	5
DRB	MOL	0	46448446	4

PTM	SPF	>=20	45052325	4

Table 3.4: Results of the ranking system at a cut-off level of 90 percent, based on total value (euros) over the period 2012-2013 for the Mediterranean region and segmented according to Appendix VII of 2010/93/*EU*.

The results of the ranking system based on landings selected 9 metiers at the Mediterranean level (Table 3.2), while the results of the ranking system based on effort selected 9 metiers (Table 3.3) and the ranking system based on value selected 9 metiers.

3.1.2 Comparison to previous years

Level 4	Level 5	Level 6	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
PS	SPF	>=14	x	x	x	x	x
OTB	DEF	>=40	x	x	x	x	x
GTR	DEF	>=16	x	x	x	x	x
OTM	MPD	>=20	x	x	x	-	-
LLS	DEF	0	x	-	-	-	-
GNS	DEF	>=16	x	x	x	x	x
PS	LPF	14	x	-	-	-	-
LLD	LPF	0	x	x	x	x	x
PTM	SPF	>=20	-	x	x	x	x
DRB	MOL	0	-	x	x	x	x
OTB	MDD	>=40	-	x	x	x	x

Table 3.5: Summary showing metiers selected by the ranking systems based on landings for the Mediterranean region and segmented according to Appendix VII of EC 2010/93/EU for the different pairs of years.

Comparing the rankings based on landings (Table 3.5), on effort (Table 3.6) and value (Table 3.7) displayed a clear stability over time, as the same metiers were always selected, with little variation from one year to the next.

Level 4	Level 5	Level 6	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
GTR	DEF	>=16	x	x	x	x	x
LLS	DEF	0	x	x	x	x	x
GNS	DEF	>=16	x	x	x	x	x
GNS	SLP	>=16	x	-	-	-	-
OTB	DEF	>=40	x	x	x	x	x
FPO	DEF	0	x	x	x	x	x
PS	SPF	>=14	-	x	x	x	x
OTB	MDD	>=40	-	x	x	x	x
DRB	MOL	0	-	x	x	x	x
OTB	DWS	>=40	-	x	x	x	-
LHP-LHM	CEP	0	-	x	x	-	-
LLD	LPF	0	-	-	-	x	x

Table 3.6: Summary showing metiers selected by the ranking systems based on effort for the Mediterranean region and segmented according to Appendix VII of EC 2010/93/EU for the different pairs of years.

Level 4	Level 5	Level 6	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
GTR	DEF	>=16	x	x	x	x	x
OTB	DEF	>=40	x	x	x	x	x
PS	SPF	>=14	x	x	x	x	x
LLS	DEF	0	x	-	-	x	-
OTB	DWS	>=40	x	x	x	x	x
LLD	LPF	0	x	x	x	x	x
GNS	DEF	>=16	x	x	x	x	x
OTB	MDD	>=40	-	x	x	x	x
DRB	MOL	0	-	x	x	x	x
PTM	SPF	>=20	-	x	x	x	x

Table 3.7: Summary showing metiers selected by the ranking systems based on value for the Mediterranean region and segmented according to Appendix VII of EC 2010/93/EU for the different pairs of years.

3.1.3 Average over available years

The data not being available for all the countries for all the years, the group decided to run the ranking over the data averaged over the available years. The results displayed a selection of metiers for landings (Table 3.8), effort (Table 3.9) and value (Table 3.10) that was similar to the selection obtained using averages over two consecutive years.

Level 4	Level 5	Level 6	Total landings (t)	Percentage
OTB	DEF	>=40	55922	31
PS	SPF	>=14	53421	29
PTM	SPF	>=20	19910	11
DRB	MOL	0	9031	5
GTR	DEF	>=16	8284	5
GNS	DEF	>=16	5481	3
LLD	LPF	0	5213	3
OTB	MDD	>=40	5159	3

Table 3.8: Results of the ranking system at a cut-off level of 90 percent, based on total landings (tons) averaged over the available years for the Mediterranean region and segmented according to Appendix VII of 2010/93/EU.

Level 4	Level 5	Level 6	Total effort (days)	Percentage
GTR	DEF	>=16	372081	31
OTB	DEF	>=40	230574	19
GNS	DEF	>=16	208078	17
LLS	DEF	0	62715	5
FPO	DEF	0	55229	5
PS	SPF	>=14	40062	3
OTB	DWS	>=40	38256	3
LLD	LPF	0	36884	3
OTB	MDD	>=40	36059	3

Table 3.9: Results of the ranking system at a cut-off level of 90 percent, based on total effort (days) averaged over the available years for the Mediterranean region and segmented according to Appendix VII of 2010/93/EU.

Level 4	Level 5	Level 6	Total value (euros)	Percentage
OTB	DEF	>=40	406388349	36
PS	SPF	>=14	111182268	10
GTR	DEF	>=16	104283744	9
OTB	MDD	>=40	83170272	7
OTB	DWS	>=40	78811405	7
GNS	DEF	>=16	74943891	7
LLD	LPF	0	60962838	5
DRB	MOL	0	46448446	4
PTM	SPF	>=20	45052325	4

Table 3.10: Results of the ranking system at a cut-off level of 90 percent, based on total value (euros) averaged over the available years for the Mediterranean region and segmented according to Appendix VII of 2010/93/*EU*.

3.2 Black Sea

For the Black sea, no data was made available this year, so the following tables just present the ranking based on the data available to the group from 2009 and 2010.

3.2.1 Ranking

Level 4	Level 5	Level 6	Total landings (t)	Percentage
OTM	MPD	>=13-19	2233	86
FPN	LPF	0	194	7

Table 3.11: Results of the ranking system at a cut-off level of 90 percent, based on total landings (tons) over the period 2009-2010 for the Black Sea and segmented according to Appendix VII of 2010/93/*EU*.

Level 4	Level 5	Level 6	Total effort (days)	Percentage
FPN	LPF	0	1656	27
OTM	MPD	>=13-19	1590	26
GNS	DEF	360-400	1134	18
GNS	SLP	>=16	888	14
LHP-LHM	FIF	0	376	6

Table 3.12: Results of the ranking system at a cut-off level of 90 percent, based on total effort (days) over the period 2009-2010 for the Black Sea and segmented according to Appendix VII of 2010/93/*EU*.

Level 4	Level 5	Level 6	Total value (euros)	Percentage
OTM	MPD	>=13-19	758910	52
GNS	DEF	360-400	305678	21
FPN	LPF	0	195510	13

Table 3.13: Results of the ranking system at a cut-off level of 90 percent, based on total value (euros) over the period 2009-2010 for the Black Sea and segmented according to Appendix VII of 2010/93/*EU*.

3.2.2 Comparison to previous years

Level 4	Level 5	Level 6	2009-2010	2010-2011
OTM	MPD	>=13-19	x	x
FPN	LPF	0	-	x

Table 3.14: Summary showing metiers selected by the ranking systems based on landings for the Black Sea region and segmented according to Appendix VII of EC 2010/93/EU for the different pairs of years.

Level 4	Level 5	Level 6	2009-2010	2010-2011
OTM	MPD	>=13-19	x	x
FPN	LPF	0	x	x
GNS	SLP	>=16	x	x
LHP-LHM	FIF	0	x	x
GNS	DEF	360-400	x	x

Table 3.15: Summary showing metiers selected by the ranking systems based on effort for the Black Sea region and segmented according to Appendix VII of EC 2010/93/EU for the different pairs of years.

Chapter 4

ToR 2) Review and update of the landing template for the Mediterranean and for the Black Sea

4.1 For the year 2012

In accordance with 2007 RCM recommendation (4th RCMMed Report - Cyprus, 2007), for the purpose of exchanging landings data, the MS should provide landing data for the species presented in Appendix VII of the Commission Decision 2010/93/EU for the 3 years preceding the PGMed meeting. A common template was circulated before the PGMed meeting to collate all the 2012 and 2013 landing data per country. The available years for the different member states in the dataset are presented in Table 4.1.

Member state	Years
Bulgaria	2009, 2010
Croatia	2010, 2011, 2012, 2013
Cyprus	2008, 2009, 2010, 2011, 2012, 2013
France	2008, 2009, 2013
Greece	2008, 2009
Italy	2008, 2009, 2012, 2013
Malta	2008, 2009, 2010, 2011, 2012, 2013
Romania	2009, 2010, 2011
Slovenia	2009, 2010, 2011
Spain	2008, 2009, 2010, 2011, 2012, 2013

Table 4.1: Available years of data in the PGMed data set for each member state.

For 2012, the results are shown in Table 4.2 for the raw values.

Species	Croatia	Cyprus	Italy	Malta	Spain
Alopias superciliosus	0	0	0	0	0
Alopias vulpinus	0	0	5	0	0
Anguilla anguilla	0	0	3	0	25
Aristeomorpha foliacea	0	0	2377	48	1
Aristeus antennatus	0	0	674	2	1131
Boops boops	0	111	2137	52	409
Carcharhinus plumbeus	0	0	0	0	0
Carcharias taurus	0	0	0	0	0

Centrophorus granulosus	0	0	0	0	2
Cetorhinus maximus	0	0	0	0	0
Coryphaena equiselis	0	0	1106	0	78
Coryphaena hippurus	0	0	0	181	0
Dalathias licha	0	0	4	0	4
Dicentrarchus labrax	0	3	184	0	110
Dipturus batis	0	0	0	0	0
Dipturus oxyrinchus	0	0	0	2	0
Eledone cirrhosa	454	0	1820	1	1566
Eledone moschata	0	0	2217	5	72
Engraulis encrasicolus	8290	0	42800	0	12482
Etmopterus spinax	0	0	0	0	0
Eutrigla gurnardus	0	0	466	5	30
Galeorhinus galeus	0	0	0	0	29
Galeus melastomus	0	0	7	0	91
Gymnura altavela	0	0	0	0	0
Heptranchias perlo	0	0	8	0	1
Hexanchus griseus	0	0	3	10	1
Illex spp., Todarodes spp.	0	0	0	8	1085
Istiophoridae	0	0	36	4	0
Isurus oxyrinchus	0	0	0	0	11
Lamna nasus	0	0	0	2	0
Leucoraja circularis	0	0	0	0	0
Leucoraja melitensis	0	0	0	0	0
Loligo vulgaris	0	14	1114	9	710
Lophius budegassa	0	0	328	5	1049
Lophius piscatorius	0	0	1318	1	461
Merluccius merluccius	888	11	9393	25	3346
Micromesistius poutassou	0	0	464	4	1375
Mugilidae	0	4	4874	0	293
Mullus barbatus	1240	22	5861	24	1225
Mullus surmuletus	0	42	1642	75	753
Mustelus asterias	0	0	0	1	0
Mustelus mustelus	0	0	2	2	25
Mustelus punctulatus	0	0	204	0	0
Myliobatis aquila	0	0	0	0	9
Nephrops norvegicus	229	0	2051	1	612
Octopus vulgaris	0	41	3010	40	3308
Odantaspis ferox	0	0	0	0	0
Oxynotus centrina	0	0	0	0	1
Pagellus erythrinus	0	13	750	22	738
Parapenaeus longirostris	0	0	8267	32	334
Penaeus kerathurus	0	0	577	0	0
Prionace glauca	0	0	64	2	39
Pristis pectinata	0	0	0	0	0
Pristis pristis	0	0	0	0	0
Psetta maxima	0	0	0	0	37
Pteroplatytrygon violacea	0	0	0	0	0
Raja asterias	0	0	0	0	146
Raja clavata	0	0	314	39	73
Raja miraletus	0	0	31	0	0
Raja undulata	0	0	0	0	0
Rhinobatos cemiculus	0	0	0	0	0
Rhinobatos rhinobatos	0	0	0	0	0
Rostroraja alba	0	0	0	2	0
Sarda sarda	0	0	1359	2	442

Sardina pilchardus	43770	3	19947	33	15935
Scomber spp.	0	20	1858	249	5417
Scyliorhinus canicula	0	0	116	1	295
Scyliorhinus stellaris	0	0	1	0	0
Sepia officinalis	0	24	5079	24	941
Shark-like Selachii	0	0	47	0	34
Solea vulgaris	0	0	2081	0	173
Sparus aurata	0	52	672	13	885
Sphyrna lewini	0	0	1	0	0
Sphyrna mokarran	0	0	0	0	0
Sphyrna tudes	0	0	0	0	0
Sphyrna zygaena	0	4	0	0	0
Spicara smaris	176	124	165	0	196
Sprattus sprattus	0	0	0	0	0
Squalus acanthias	0	0	38	6	6
Squalus blainvillei	0	0	0	47	9
Squatina aculeata	0	0	0	0	0
Squatina oculata	0	0	0	0	0
Squatina squatina	0	0	0	0	0
Squilla mantis	0	0	4751	0	760
Thunnus alalunga	0	318	1154	19	389
Thunnus thynnus	7	18	0	121	25
Torpedo marmorata	0	0	0	0	0
Trachurus mediterraneus	0	7	460	6	3601
Trachurus trachurus	0	0	3032	12	2198
Trigla lucerna	0	0	453	0	22
Veneridae	0	0	20028	0	26
Xiphias gladius	4	35	4018	503	1591

Table 4.2: Landing values (in tons) from 2012 for each species from Appendix VII of Commission Decision 2010/93/EU and for each Mediterranean and Black Sea Member State.

4.2 Average over the past years

Since in 2014 only limited data were available for 2012, it was decided to make a similar table, but using the average of the landings over available years for each member state, so that a general overview would be available. The years used for this analysis are presented in table 4.1. The results are shown in Table 4.4 for the raw values and in Table 4.5 for the percentages.

Species	Bulgaria	Croatia	Cyprus	France	Greece	Italy	Malta	Romania	Slovenia	Spain
Alopias superciliosus	0	0	0	0	0	14	0	0	0	2
Alopias vulpinus	0	0	0	6	0	13	0	0	0	0
Anguilla anguilla	0	0	0	139	6	12	0	0	0	10
Aristeomorpha foliacea	0	0	0	1	0	2464	37	0	0	1
Aristeus antennatus	0	0	0	0	0	662	2	0	0	961
Boops boops	0	0	134	162	7964	2122	45	0	2	284
Carcharhinus plumbeus	0	0	0	0	0	0	0	0	0	0
Carcharias taurus	0	0	0	0	0	0	0	0	0	2
Centrophorus granulosus	0	0	0	0	0	0	0	0	0	5
Cetorhinus maximus	0	0	0	0	0	0	0	0	0	0
Coryphaena equiselis	0	0	0	0	0	903	0	0	0	114
Coryphaena hippurus	0	0	0	1	4	2136	370	0	0	27
Dalathias licha	0	0	0	0	0	7	0	0	0	3
Dicentrarchus labrax	0	0	3	283	145	152	0	0	5	82

Dipturus batis	0	0	0	0	0	0	0	0	0	0
Dipturus oxyrinchus	0	0	0	0	0	0	1	0	0	0
Eledone cirrhosa	0	483	0	803	577	2353	0	0	0	798
Eledone moschata	0	0	0	0	486	3310	3	0	21	99
Engraulis encrasicolus	54	11343	0	2945	20481	48396	5	37	186	10641
Etmopterus spinax	0	0	0	0	0	0	0	0	0	3
Eutrigla gurnardus	0	0	0	22	0	549	3	0	0	23
Galeorhinus galeus	0	0	0	0	0	0	0	0	0	26
Galeus melastomus	0	0	0	0	0	6	0	0	0	58
Gymnura altavela	0	0	0	0	0	0	0	0	0	0
Heptranchias perlo	0	0	0	0	0	12	1	0	0	1
Hexanchus griseus	0	0	0	24	0	1	4	0	0	1
Illex spp., Todarodes spp.	0	0	0	171	1752	4077	4	0	0	902
Istiophoridae	0	0	0	0	0	157	3	0	0	0
Isurus oxyrinchus	0	0	0	0	0	0	0	0	0	6
Lamna nasus	0	0	0	0	0	0	1	0	0	0
Leucoraja circularis	0	0	0	0	0	0	0	0	0	0
Leucoraja melitensis	0	0	0	0	0	0	0	0	0	0
Loligo vulgaris	0	0	16	274	1072	1387	11	0	12	382
Lophius budegassa	0	0	0	326	2578	398	3	0	0	921
Lophius piscatorius	0	0	0	0	0	1334	2	0	0	494
Merluccius merluccius	0	866	13	1770	12386	11694	14	0	1	3683
Micromesistius poutassou	0	0	0	13	400	752	7	8	0	2540
Mugilidae	26	0	2	543	141	3680	9	6	27	228
Mullus barbatus	80	1051	28	219	4048	6523	20	2	4	1190
Mullus surmuletus	24	0	63	248	2458	2394	39	0	0	509
Mustelus asterias	0	0	0	0	0	11	1	0	0	0
Mustelus mustelus	0	0	0	1	0	5	1	0	2	16
Mustelus punctulatus	0	0	0	0	0	251	0	0	0	0
Myliobatis aquila	0	0	0	0	0	0	2	0	0	5
Nephrops norvegicus	0	283	0	3	1007	2979	2	0	0	530
Octopus vulgaris	0	0	53	1212	4853	3234	34	0	0	2556
Odantaspis ferox	0	0	0	0	0	0	0	0	0	0
Oxynotus centrina	0	0	0	0	0	0	0	0	0	1
Pagellus erythrinus	0	0	16	157	1487	1027	14	0	6	419
Parapenaeus longirostris	0	0	3	0	4206	9375	18	0	0	232
Penaeus kerathurus	0	0	3	2	2832	645	0	0	0	94
Prionace glauca	0	0	0	1	0	99	2	0	0	37
Pristis pectinata	0	0	0	0	0	0	0	0	0	0
Pristis pristis	0	0	0	0	0	0	0	0	0	0
Psetta maxima	50	0	0	11	0	0	0	47	1	10
Pteroplatytrygon violacea	0	0	0	0	0	0	0	0	0	0
Raja asterias	0	0	0	6	0	0	12	0	0	69
Raja clavata	60	0	0	16	378	365	21	0	0	37
Raja miraletus	0	0	0	0	0	29	0	0	0	42
Raja undulata	0	0	0	0	0	0	0	0	0	0
Rhinobatos cemiculus	0	0	0	0	0	0	0	0	0	0
Rhinobatos rhinobatos	0	0	0	0	0	0	0	0	0	0
Rostroraja alba	0	0	0	0	0	0	2	0	0	0
Sarda sarda	11	0	2	37	1316	1315	4	0	2	429
Sardina pilchardus	0	41945	3	6130	20388	17829	10	0	347	16481
Scomber spp.	0	0	9	1251	4148	2367	163	0	5	4279
Scyliorhinus canicula	0	0	0	32	0	122	1	0	0	198
Scyliorhinus stellaris	0	0	0	0	0	0	1	0	0	0
Sepia officinalis	0	0	26	83	3553	7444	23	0	12	579
Shark-like Selachii	0	0	19	6	636	591	22	0	0	76

Solea vulgaris	0	0	0	294	1460	1983	0	1	10	85
Sparus aurata	0	0	18	448	101	531	3	1	4	603
Sphyrna lewini	0	0	0	0	0	1	6	0	0	0
Sphyrna mokarran	0	0	0	0	0	0	0	0	0	0
Sphyrna tudes	0	0	0	0	0	0	0	0	0	0
Sphyrna zygaena	0	0	8	0	0	0	0	0	0	0
Spicara smaris	0	173	142	23	4816	690	6	0	0	133
Sprattus sprattus	4296	0	0	0	0	124	0	84	12	2
Squalus acanthias	43	0	0	2	0	52	3	4	0	3
Squalus blainvillei	0	0	0	0	0	0	22	0	0	3
Squatina aculeata	0	0	0	0	0	0	0	0	0	0
Squatina oculata	0	0	0	0	0	0	0	0	0	0
Squatina squatina	0	0	0	0	0	0	0	0	0	0
Squilla mantis	0	0	0	38	116	5676	0	0	5	582
Thunnus alalunga	0	0	312	1	236	2043	11	0	0	295
Thunnus thynnus	0	11	21	819	159	3012	187	0	0	842
Torpedo marmorata	0	0	0	1	0	0	0	0	0	1
Trachurus mediterraneus	171	0	6	0	0	452	12	15	7	2623
Trachurus trachurus	0	0	0	495	7047	3436	27	0	4	3676
Trigla lucerna	0	0	0	26	81	347	2	0	1	44
Veneridae	0	0	0	0	0	15296	0	0	3	20
Xiphias gladius	0	6	39	8	1192	4774	392	0	0	1530

Table 4.3: Average landing values (in tons) for each species from Appendix VII of Commission Decision 2010/93/EU and for each Mediterranean and Black Sea Member State.

Species	Bulgaria	Croatia	Cyprus	France	Greece	Italy	Malta	Romania	Slovenia	Spain
Alopias superciliosus	0.00	0.00	0.00	0.00	0.00	88.54	0.00	0.00	0.00	11.46
Alopias vulpinus	0.00	0.00	0.00	30.01	0.00	69.12	0.87	0.00	0.00	0.00
Anguilla anguilla	0.00	0.00	0.00	82.97	3.62	7.21	0.00	0.00	0.00	6.20
Aristeomorpha foliacea	0.00	0.00	0.00	0.06	0.00	98.45	1.48	0.00	0.00	0.02
Aristeus antennatus	0.00	0.00	0.00	0.00	0.00	40.74	0.14	0.00	0.00	59.11
Boops boops	0.00	0.00	1.25	1.51	74.34	19.80	0.42	0.00	0.02	2.65
Carcharhinus plumbeus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carcharias taurus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Centrophorus granulosus	0.00	0.00	0.00	0.00	0.00	0.00	5.72	0.00	0.00	94.28
Cetorhinus maximus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Coryphaena equiselis	0.00	0.00	0.00	0.00	0.00	88.79	0.00	0.00	0.00	11.21
Coryphaena hippurus	0.00	0.00	0.01	0.04	0.15	84.15	14.58	0.00	0.00	1.07
Dalathias licha	0.00	0.00	0.00	1.03	0.00	72.31	0.00	0.00	0.00	26.67
Dicentrarchus labrax	0.00	0.00	0.52	42.16	21.58	22.71	0.01	0.00	0.74	12.28
Dipturus batis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dipturus oxyrinchus	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Eledone cirrhosa	0.00	9.64	0.00	16.02	11.51	46.92	0.01	0.00	0.00	15.90
Eledone moschata	0.00	0.00	0.00	0.00	12.40	84.47	0.07	0.00	0.54	2.51
Engraulis encrasicolus	0.06	12.06	0.00	3.13	21.77	51.44	0.01	0.04	0.20	11.31
Etmopterus spinax	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Eutrigla gurnardus	0.00	0.00	0.00	3.73	0.00	91.93	0.44	0.00	0.00	3.90
Galeorhinus galeus	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	99.25
Galeus melastomus	0.00	0.00	0.00	0.00	0.00	8.67	0.00	0.00	0.00	91.33
Gymnura altavela	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Heptranchias perlo	0.00	0.00	0.00	0.00	0.00	87.22	7.37	0.00	0.00	5.41
Hexanchus griseus	0.00	0.00	0.00	80.04	0.00	4.14	12.28	0.00	0.00	3.54
Illex spp., Todarodes spp.	0.00	0.00	0.00	2.48	25.37	59.04	0.06	0.00	0.00	13.06
Istiophoridae	0.00	0.00	0.00	0.00	0.00	98.04	1.83	0.00	0.00	0.12

Isurus oxyrinchus	0.00	0.00	0.00	0.00	0.00	0.00	3.18	0.00	0.00	96.82
Lamna nasus	0.00	0.00	0.00	0.00	0.00	0.00	71.05	0.00	0.00	28.95
Leucoraja circularis	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Leucoraja melitensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loligo vulgaris	0.00	0.00	0.51	8.67	33.99	43.98	0.35	0.00	0.38	12.10
Lophius budegassa	0.00	0.00	0.01	7.70	61.00	9.41	0.07	0.00	0.00	21.80
Lophius piscatorius	0.00	0.00	0.00	0.00	0.00	72.89	0.09	0.00	0.00	27.02
Merluccius merluccius	0.00	2.85	0.04	5.82	40.71	38.43	0.05	0.00	0.00	12.10
Micromesistius poutassou	0.00	0.00	0.00	0.34	10.76	20.21	0.20	0.22	0.00	68.29
Mugilidae	0.57	0.00	0.05	11.65	3.02	78.92	0.18	0.14	0.58	4.89
Mullus barbatus	0.60	7.99	0.21	1.66	30.75	49.55	0.15	0.01	0.03	9.04
Mullus surmuletus	0.42	0.00	1.09	4.32	42.86	41.75	0.68	0.00	0.00	8.87
Mustelus asterias	0.00	0.00	0.00	0.00	0.00	89.56	10.44	0.00	0.00	0.00
Mustelus mustelus	0.00	0.00	0.00	4.08	0.00	19.85	5.91	0.00	6.12	64.04
Mustelus punctulatus	0.00	0.00	0.00	0.00	0.00	99.92	0.08	0.00	0.00	0.00
Myliobatis aquila	0.00	0.00	0.00	5.63	0.00	0.00	30.21	0.00	0.00	64.15
Nephrops norvegicus	0.00	5.90	0.00	0.06	20.96	62.01	0.04	0.00	0.00	11.04
Octopus vulgaris	0.00	0.00	0.44	10.15	40.64	27.08	0.28	0.00	0.00	21.40
Odantaspis ferox	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oxynotus centrina	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Pagellus erythrinus	0.00	0.00	0.50	5.01	47.60	32.88	0.43	0.00	0.18	13.40
Parapenaeus longirostris	0.00	0.00	0.02	0.00	30.40	67.76	0.13	0.00	0.00	1.68
Penaeus kerathurus	0.00	0.00	0.09	0.06	79.18	18.03	0.00	0.00	0.01	2.63
Prionace glauca	0.00	0.00	0.00	0.69	0.00	71.60	1.25	0.00	0.00	26.46
Pristis pectinata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pristis pristis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Psetta maxima	41.95	0.00	0.00	9.62	0.00	0.00	0.00	39.55	0.76	8.11
Pteroplatytrygon violacea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Raja asterias	0.00	0.00	0.00	7.04	0.00	0.00	14.24	0.00	0.00	78.73
Raja clavata	6.79	0.00	0.00	1.81	43.15	41.61	2.36	0.00	0.02	4.27
Raja miraletus	0.00	0.00	0.00	0.00	0.00	40.95	0.21	0.00	0.00	58.84
Raja undulata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rhinobatos cemiculus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rhinobatos rhinobatos	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rostroraja alba	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Sarda sarda	0.34	0.00	0.07	1.17	42.25	42.20	0.11	0.00	0.08	13.77
Sardina pilchardus	0.00	40.67	0.00	5.94	19.77	17.29	0.01	0.00	0.34	15.98
Scomber spp.	0.00	0.00	0.07	10.24	33.94	19.36	1.33	0.00	0.04	35.01
Scyliorhinus canicula	0.00	0.00	0.00	9.06	0.00	34.52	0.21	0.00	0.00	56.21
Scyliorhinus stellaris	0.00	0.00	0.00	17.75	0.00	20.71	43.79	0.00	0.00	17.75
Sepia officinalis	0.00	0.00	0.22	0.71	30.32	63.52	0.19	0.00	0.10	4.94
Shark-like Selachii	0.00	0.00	1.40	0.41	47.12	43.81	1.60	0.00	0.00	5.66
Solea vulgaris	0.01	0.00	0.00	7.66	38.09	51.74	0.01	0.02	0.27	2.21
Sparus aurata	0.00	0.00	1.07	26.20	5.91	31.10	0.15	0.06	0.23	35.29
Sphyrna lewini	0.00	0.00	0.00	0.00	0.00	18.42	81.58	0.00	0.00	0.00
Sphyrna mokarran	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sphyrna tudes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sphyrna zygaena	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spicara smaris	0.00	2.90	2.38	0.38	80.49	11.53	0.09	0.00	0.00	2.23
Sprattus sprattus	95.08	0.00	0.00	0.00	0.00	2.74	0.00	1.87	0.26	0.04
Squalus acanthias	40.38	0.00	0.00	2.11	0.00	48.09	2.75	3.51	0.00	3.17
Squalus blainvillei	0.00	0.00	0.00	0.00	0.00	0.00	87.55	0.00	0.00	12.45
Squatina aculeata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Squatina oculata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Squatina squatina	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Squilla mantis	0.00	0.00	0.00	0.59	1.81	88.45	0.00	0.00	0.07	9.07

Thunnus alalunga	0.00	0.00	10.77	0.02	8.14	70.51	0.38	0.00	0.00	10.17
Thunnus thynnus	0.00	0.22	0.42	16.21	3.15	59.63	3.70	0.00	0.00	16.67
Torpedo marmorata	0.00	0.00	0.00	52.94	0.00	0.00	0.00	0.00	0.00	47.06
Trachurus mediterraneus	5.21	0.00	0.19	0.01	0.00	13.74	0.37	0.47	0.21	79.80
Trachurus trachurus	0.00	0.00	0.00	3.37	47.99	23.40	0.19	0.00	0.02	25.03
Trigla lucerna	0.00	0.00	0.00	5.20	16.19	69.20	0.49	0.00	0.20	8.71
Veneridae	0.00	0.00	0.00	0.00	0.00	99.85	0.00	0.00	0.02	0.13
Xiphias gladius	0.00	0.08	0.49	0.10	15.01	60.12	4.94	0.00	0.00	19.26

Table 4.4: Contribution (percent) of each member state to the average landings for each species from Appendix VII of Commission Decision 2010/93/EU.

Chapter 5

ToR 3) For the metiers which are exploiting a shared stock and selected by the ranking system, the number of sampling trips by metier at the GSA level can be determined.

The group examined the métiers exploiting shared stocks between different Member States (MS). The métiers selected in the ranking system are sampled by different MS. For the present ToR, the share of the different MS for the sampling effort of these métiers was investigated. The number of trips to be sampled by métier and MS was estimated as the proportion of the total number of samples, accounting for both landing (in tons) and effort (in days) of every MS in the shared area. The group considered the following cases:

- Gulf of Lions (GSA 7): Shared stock between France and Spain. Only Spanish data was available. No analysis could be run.
- Strait of Sicily (GSA 15 & 16): Shared stock between Italy and Malta. Only Maltese data was available. No analysis could be run.
- Northern Adriatic Sea (GSA 17, Table 3.1): Shared stock among Italy, Slovenia and Croatia. Data from Italy covered 2010-2013, whereas data from Slovenia covered 2010-2011 and data from Croatia covered 2010. Values were computed considering an average over the available years for each MS.
- Black Sea (GSA 29): Shared stock between Bulgaria and Romania. No data was available during the meeting. No analysis could be run.

Level 4	Level 5	Level 6	MS	C (kg)	E (days)	N	C (pcent)	E (pcent)	Estim N (C)	Estim N (E)
OTB	Demersal species	>=40	Italy	14904870	66715	78	80	60	137	103
			Slovenia	133957	1151	8	1	1	1	2
			Croatia	3513988	42537	85	19	38	32	66
PS	Small pelagic fish	>=14	Italy	1659019	1933	12	4	6	3	5
			Slovenia	175777	394	20	0	1	0	1
			Croatia	45860886	32341	60	96	93	88	86
GNS	Demersal species	>=16	Italy	2929373	85879	61	86	69	80	64
			Slovenia	17620	1559	8	0	1	0	1
			Croatia	457609	37296	24	13	30	13	28

PTM	Small pelagic fish	>=20	Italy	35846755	16203	14	99	99	34	34
			Slovenia	379173	223	20	1	1	0	0
			Croatia	0	0		0	0	0	0
GTR	Demersal species	>=16	Italy	1215254	22351		77	44	25	14
			Slovenia	24795	2334	8	2	4	1	1
			Croatia	341519	26699	24	22	52	7	17

Table 5.1: Estimated number of samples to be taken by MS considering catches (Estim. N (C)) and effort (Estim. N (E)) for the shared métiers in the Northern Adriatic (GSA 17). N: number of planned samples to be taken in accordance to National Programs (2011-2013).

The number of trips to sample by MS for each métier were generally found to be consistent between the calculus made on catches and the calculus made on effort. When they differed, it was usually explained by the large difference in catches and effort among MS and the need for each MS to ensure a minimum number of samples in order to cover each métier along the year. For GTR, Italian catches represented up to 77% of catches and 43% in effort; however, this métier is not selected for Italy at the GSA-national level. In such a case, the PGMed recommends the MS to consider the possibility of including such métier in their sampling programme.

Chapter 6

ToR 4) Assess the CVs of the length frequency distributions for shared stocks at the GSA level.

Foreword ToR 4 issue was to analyse the benefit brought by merging all information available at the GSA level to calculate the precision level, coefficient of variation (CV), achieved for shared stocks for length measurements. The precision was assessed using the methodology described by Vigneau and Mahevas (2007). It is based on the comparison of the number at length in the sample with the number at length of all samples rescaled to the sampled weight. This method allows the estimation of the precision for each length class and for the whole LFD at stock or métier level. However, the group considers that the computation of the CV should be made by properly accounting for the stratification of the data and that it should be made sure that the precision levels provided in the Commission decision 2010/93/EU is adapted to the delta statistics used here.

Data The data requested were length frequency distributions, number of individuals measured by length class, by sampling trip and métier for the year 2012. Shared stocks provided were to be coherent to those listed in table III C 5 of the MS technical report 2011. For example, in GSA 7, both Spain and France participate to the sampling of *Merluccius merluccius* and both MS should thus provide information for this stock.

MS	GSA	Species	Metier	Number of individuals	Number of sampled trips
Croatia	17	Mullus barbatus	OTB_DEF	13535	95
France	7	Lophius budegassa	GNS_DEF	8	3
France	7	Merluccius merluccius	GNS_DEF	711	21
France	7	Merluccius merluccius	GTR_DEF	284	20
France	7	Mullus barbatus	GTR_DEF	123	4
France	7	Lophius budegassa	OTB_DEF	1264	150
France	7	Merluccius merluccius	OTB_DEF	12008	295
France	7	Mullus barbatus	OTB_DEF	4167	118
France	7	Lophius budegassa	OTM_SPF	4	2
France	7	Merluccius merluccius	OTM_SPF	811	24
France	7	Mullus barbatus	OTM_SPF	264	5
Slovenia	17	Alloteuthis media	OTB_DEF	10	2
Slovenia	17	Alosa fallax	OTB_DEF	9	2
Slovenia	17	Arnoglossus laterna	OTB_DEF	11	3
Slovenia	17	Boops boops	OTB_DEF	10	4
Slovenia	17	Cepola macrophthalma	OTB_DEF	72	3
Slovenia	17	Chelidonichthys lucerna	OTB_DEF	6	2
Slovenia	17	Diplodus annularis	OTB_DEF	19	4

Slovenia	17	Eledone moschata	OTB_DEF	28	3
Slovenia	17	Engraulis encrasicolus	OTB_DEF	33	3
Slovenia	17	Gobius niger	OTB_DEF	14	3
Slovenia	17	Lepidotrigla cavillone	OTB_DEF	9	4
Slovenia	17	Loligo vulgaris	OTB_DEF	57	4
Slovenia	17	Merlangius merlangus	OTB_DEF	318	4
Slovenia	17	Merluccius merluccius	OTB_DEF	7	2
Slovenia	17	Mullus barbatus	OTB_DEF	15	3
Slovenia	17	Pagellus acarne	OTB_DEF	11	3
Slovenia	17	Platichthys flesus	OTB_DEF	8	2
Slovenia	17	Pomatoschistus	OTB_DEF	4	2
Slovenia	17	Sardina pilchardus	OTB_DEF	45	3
Slovenia	17	Scomber scombrus	OTB_DEF	3	2
Slovenia	17	Sepia officinalis	OTB_DEF	6	3
Slovenia	17	Serranus hepatus	OTB_DEF	66	4
Slovenia	17	Spicara flexuosa	OTB_DEF	75	4
Slovenia	17	Sprattus sprattus	OTB_DEF	72	4
Slovenia	17	Trachinus draco	OTB_DEF	6	3
Slovenia	17	Trachurus mediterraneus	OTB_DEF	79	4
Slovenia	17	Trisopterus minutus	OTB_DEF	15	2
Slovenia	17	Zeus faber	OTB_DEF	9	3
Slovenia	17	Belone belone	PS_SPF	19	2
Slovenia	17	Boops boops	PS_SPF	18	2
Slovenia	17	Engraulis encrasicolus	PS_SPF	1648	9
Slovenia	17	Loligo vulgaris	PS_SPF	35	2
Slovenia	17	Sardina pilchardus	PS_SPF	2109	11
Slovenia	17	Scomber colias	PS_SPF	24	2
Slovenia	17	Trachurus mediterraneus	PS_SPF	171	2
Slovenia	17	Engraulis encrasicolus	PTM_SPF	3139	15
Slovenia	17	Merlangius merlangus	PTM_SPF	29	2
Slovenia	17	Sardina pilchardus	PTM_SPF	3064	14
Slovenia	17	Sardinella aurita	PTM_SPF	6	2
Slovenia	17	Trigloporus lastoviza	PTM_SPF	2	2
Spain	7	Merluccius merluccius	LLS_DEF	6001	266
Spain	7	Lophius budegassa	OTB_DEF	567	19
Spain	7	Merluccius merluccius	OTB_DEF	2433	19
Spain	7	Mullus barbatus	OTB_DEF	1116	12
Spain	7	Lophius budegassa	OTB_DWS	14	7
Spain	7	Merluccius merluccius	OTB_DWS	186	12

Table 6.1: Number of individuals and trips sampled by member state, GSA, species and gear available. Only the cases with more than one trip sampled are presented.

Case studies The group expected to be able to cover GSAs 7, 15 and 17. The data made available to the meeting (Table 6.1) enabled the group to calculate the CVs for the cases described in Table 6.2. It has to be noted that Italian data have been provided, but that it unfortunately did not contain codes for the sampled trips, which made the group unable to use it for computing the CVs.

MS	GSA	Species	Metier
All countries	7	Merluccius merluccius	All gears
All countries	7	Merluccius merluccius	All OT
All countries	7	Lophius budegassa	All gears
All countries	7	Mullus barbatus	All gears
All countries	17	Mullus barbatus	All gears (OTB)

Table 6.2: Cases analyzed in TOR 4).

Results Results are summarized in Table 6.3. The CVs were calculated for 90% of the number of individuals by removing the tails (5% on each side) according to the Commission Decision 949/2008. The results (Table 6.3) showed that the 12.5% level was achieved for Hake in GSA 7 and for Mullus barbatus in GSA 17.

MS	GSA	Species	Metier	CV	Number of sampled trips
All countries	7.0	Merluccius merluccius	All gears	10.6	641
All countries	7.0	Merluccius merluccius	All OT	11.5	344
All countries	7.0	Lophius budegassa	All gears	26.4	155
All countries	7.0	Mullus barbatus	All gears	14.4	135
All countries	17.0	Mullus barbatus	All gears (OTB)	5.9	98

Table 6.3: CV and number of sampled trips for the different case studies available

Chapter 7

ToR 5) Analyse the extension of the problem concerning the fishing performed in a different GSA than their original one

Data were made available by Cyprus, Spain, Slovenia and Croatia. For both Slovenia and Croatia this ToR was not applicable as fishing is operated within the limits of their territorial waters in GSA 17. For the other MS, no information was made available.

The following tables describe the situation for those countries that made information available to the group. In general, the case studies available during PGMed did not show any remarkable issues. However, the lack of information for the rest of the countries prevented a deeper discussion about the extension of this problem in the Mediterranean. Some of the PGMed participants stressed the importance of addressing the extension of this problem for the Italian fleet, as the presence of Italian boats in the Eastern Mediterranean, south of Cyprus and south of Greece; is known but no information is available. This information is important to localize where these catches and effort are declared, in order to establish sampling programmes of biological information on the catches made by these fleets.

MS	Spain	**Métier**	OTB DWS
Original GSA	1 (North Alboran Sea)	**Fishing GSA**	2 (Alboran Island)
Description of the Fisheries An annually fixed number of boats from 1 port (Almeria) of GSA 1 perform five-day trips in GSA 2, during 6 months each year and land their catches in GSA 1 ports. In 2013, 214 trips were carried out.			
Catches and effort assignment Information on the origin is available through the daily sale bills. Sampling is carried out on board (concurrent sampling).			

MS	Cyprus	**Métier**	OTB MDD / OTB DEF
Original GSA	25 (Cyprus Island)	**Fishing GSA**	14 (Gulf of Gabes), 15 (Malta Island), 21 (Southern Ionian Sea)
Description of the Fisheries 1 bottom trawler operating in central Mediterranean all year round, landing the catches both in original GSA (25) or in GSA 15. Main species landed in GSA 25 are *Mullus spp.*			
Catches and effort assignment Information (including sampling) is obtained by Malta (GSA 15) in the framework of a bi-lateral agreement with Cyprus.			

MS	Cyprus	**Métier**	OTB DEF
Original GSA	25 (Cyprus Island)	**Fishing GSA**	24 (North Levant), 26 (South Levant)
Description of the Fisheries 3 bottom otter trawls operating in eastern Mediterranean international waters all year round. Catches are landed in GSA 25.			
Catches and effort assignment Information is obtained in GSA 25. As the fishing GSAs are non-EU waters, no sampling is carried out.			

MS	Spain	**Métier**	OTB DEF / OTB DWS / OTB MDD
Original GSA	6 (Northern Spain)	**Fishing GSA**	7 (Gulf of Lions)
Description of the Fisheries An annually fixed number of boats from 1 port (Rosas) of GSA 6 perform their trips in GSA 7, and land their catches in GSA 6. In 2013, the number of trips by metier were: 56 OTB DEF, 44 OTB DWS and 11 OTB MDD.			
Catches and effort assignment Information on the origin is available through the daily sale bills. For OTB DEF and OTB DWS no sampling is carried out in this port but in a different one whose fleets always operates in GSA 7. For OTB MDD, no sampling is carried out because this metier is not selected in GSA 7 in the ranking system. No specific comment. Information is obtained in GSA 25. As the fishing GSAs are non-EU waters, no sampling is carried out.			

MS	Spain	**Métier**	OTB DWS
Original GSA	6 (Northern Spain)	**Fishing GSA**	5 (Balearic Islands)
Description of the Fisheries An annually fixed number of boats from 3 ports of GSA 6 perform five-day long trips in GSA 5, during 2 months each year and land their catches in GSA 6 ports. In 2013 227 trips were carried out.			
Catches and effort assignment Information on the origin is available through the daily sale bills. Sampling was performed on board, but due to its high cost and to the fact that these data were not used in the stock assessment, the sampling is no longer carried out.			

Chapter 8

ToR 6) Update the work conducted in the PGMed 2013 for large pelagic species on sampling of length and stock related variables by using 2012 (or 2013) data

PGMed continued the exercise carried out previous years and calculated the number of samples to be taken by the relevant Member States concerning métier- and stock-related variables for large pelagics. The data used were the most recent available (2013). All Member States but France provided data, in advance or during the meeting. This is the first year that Croatian data are included in the PGMed proposed allocation of samples among the MS.

8.1 Métier-related variables

The minimum number of fish to be sampled for métier-related variables (length) by Member State was updated for bluefin tuna (*Thunnus thynnus*, table 8.1), swordfish (*Xiphias gladius*, table 8.2), albacore (*Thunnus alalunga*, table 8.3), dolphinfish (*Coryphaena hippurus*, table 8.4) and bonito (*Sarda sarda*, table 8.5).

For bluefin tuna, the proposed minimum number of fish to be sampled should be provided separately for landed and caged catches, since for the caged catches the Member State responsible for sampling is the flag country of the cages receiving the catches, and not the flag country of the catching vessels. Furthermore, according to the provisions of EC Regulation 302/2009, sampling in cages is carried out on the basis of a sample of 100 individuals per 100 tonnes of fish or on the basis of a sample of 10% of the total number of caged fish. However, the percentage of the french and spanish catches caged in the different countries was not made available to the group. As last year, the group was thus unable to properly account for caged catches and thus to propose a table of minimum sampling numbers for it. The proposed minimum number of fish was provided for landed catches and small sampling numbers (*i.e.* below ten) were re-assigned to other MS.

T. thynnus	N PGMed 2013	N in NP for 2013	Landings 2013 (t)	Landings 2013 (%)	N PGMed 2014
Croatia	-	400	9	0.3	23.25
Cyprus	19	30	13	0.5	33.59
France	1307	110	474	17.5	1224.60
Greece	686	465	86	3.2	222.19
Italy	2974	1071	463	17.1	1196.18
Malta	266	1622	89	3.3	229.94

Slovenia	0	0	0	0	0
Spain	1752	2000	1576	58.1	4071.67
Total	7004	5298	2711	100	7004

Table 8.1: Minimum number of specimens (N) proposed by PGMed 2013, N proposed in national programmes 2011-2013, total landings (2013) and their proportion and minimum number of bluefin tuna individuals (T. thynnus) proposed by PGMed 2014 to be sampled for metier-related variables by MS following the regional sampling approach.

X. gladius	N PGMed 2013	N in NP for 2013	Landings 2013 (t)	Landings 2013 (%)	N PGMed 2014
Croatia		6	6.24	0.1	0
Cyprus	-	180	52	0.8	12
France	0	0	0	0	0
Greece	210	189	1731	27.7	419
Italy	865	864	2862	45.7	695
Malta	102	147	0	0	0
Slovenia	0	0	0	0	0
Spain	338	1500	1607	25.7	389
Total	1515	2886	6257	100	1515

Table 8.2: Minimum number of specimens (N) proposed by PGMed 2013, N proposed in national programmes 2011-2013, total landings (2013) and their proportion and minimum number of swordfish individuals (X. gladius) proposed by PGMed 2014 to be sampled for metier-related variables by MS following the regional sampling approach.

T. alalunga	N PGMed 2013	N in NP for 2013	Landings 2013 (t)	Landings 2013 (%)	N PGMed 2014
Croatia	-	0	12	0.9	0
Cyprus	56	400	350	26.1	152
France	0	0	0	0	0
Greece	20	200	93	6.9	40
Italy	411	470	615	45.8	265
Malta	0	1	29	2.2	12
Slovenia	0	0	0	0	0
Spain	87	1000	244	18.2	105
Total	574	2071	1344	100	574

Table 8.3: Minimum number of specimens (N) proposed by PGMed 2013, N proposed in national programmes 2011-2013, total landings (2013) and their proportion and minimum number of albacore individuals (T. alalunga) proposed by PGMed 2014 to be sampled for metier-related variables by MS following the regional sampling approach.

C. hippurus	N PGMed 2013	N in NP for 2013	Landings 2013 (t)	Landings 2013 (%)	N PGMed 2014
Croatia	-	0	0	0	0
Cyprus	0	0	0	0	0
France	0	0	0	0	0
Greece	0	0	0	0	0
Italy	927	1336	700	64.7	969

Malta	374	429	382	35.3	529
Slovenia	0	0	0	0	0
Spain	197	0	1	0.1	0
Total	1498	1765	1083	100	1498

Table 8.4: Minimum number of specimens (N) proposed by PGMed 2013, N proposed in national programmes 2011-2013, total landings (2013) and their proportion and minimum number of dolphinfish individuals (C. hippurus) proposed by PGMed 2014 to be sampled for metier-related variables by MS following the regional sampling approach.

S. sarda	N PGMed 2013	N in NP for 2013	Landings 2013 (t)	Landings 2013 (%)	N PGMed 2014
Croatia	-	0	41	1.3	0
Cyprus	0	0	0	0	0
France	0	0	0	0	0
Greece	89	30	842	28	100
Italy	128	194	1245	41.4	148
Malta	0	1	2	0.1	0
Slovenia	0	0	0	0	0
Spain	136	150	881	29.3	105
Total	353	375	3011	100	353

Table 8.5: Minimum number of specimens (N) proposed by PGMed 2013, N proposed in national programmes 2011-2013, total landings (2013) and their proportion and minimum number of bonito individuals (S. sarda) proposed by PGMed 2014 to be sampled for metier-related variables by MS following the regional sampling approach.

The group recalled the RCM Med & BS 2012 agreement that regional sampling of large pelagic should be restricted to the collection of stock-related variables, since the number of individuals that are measured depends on the number of sampling trips of the métiers that are selected by the ranking system at the national level. Therefore, PGMed considers that calculating the minimum number of fishes to be sampled by each Member State is unnecessary, and that the relevant ToR should be modified according to the RCM Med & BS decision on that matter.

8.2 Stock-related variables

The minimum number of fish to be sampled for stock-related variables (age, weight, sex and maturity) for the period 2014-2016 was calculated for bluefin tuna (*Thunnus thynnus*, table 8.6), swordfish (*Xiphias gladius*, table 8.7), albacore (*Thunnus alalunga*, table 8.8), dophinfish (*Coryphaena hippurus*, table 8.9) and bonito (*Sarda sarda*, table 8.10). When the number of individuals to be sampled by MS was low, it was redistributed among other countries.

T. thynnus	N PGMed 2013	N in NP for 2013	Landings 2013 (t)	Landings 2013 (%)	N PGMed 2014
Croatia	-	60	9	0.3	0
Cyprus	3	0	13	0.5	0
France	201	30	474	17.5	189
Greece	94	70	86	3.2	35
Italy	458	198	463	17.1	184
Malta	41	247	89	3.3	36
Slovenia	0	0	0	0	0
Spain	270	100	1576	58.13	623

Total	1067	705	2711	100	1067

Table 8.6: Minimum number of specimens (N) proposed by PGMed 2013, N proposed in national programmes 2011-2013, total landings (2013) and their proportion and minimum number of bluefin tuna individuals (T. thynnus) proposed by PGMed 2014 to be sampled for stock-related variables by MS following the regional sampling approach.

X. gladius	N PGMed 2013	N in NP for 2013	Landings 2013 (t)	Landings 2013 (%)	N PGMed 2014
Croatia	-	6	6.24	0.1	0
Cyprus	4	0	52	0.8	0
France	0	0	0	0	0
Greece	135	125	1731	27.7	279
Italy	571	569	2862	45.7	460
Malta	66	31	0	0	0
Slovenia	0	0	0	0	0
Spain	221	100	1607	25.7	258
Total	997	831	6257	100	997

Table 8.7: Minimum number of specimens (N) proposed by PGMed 2013, N proposed in national programmes 2011-2013, total landings (2013) and their proportion and minimum number of swordfish individuals (X. gladius) proposed by PGMed 2014 to be sampled for stock-related variables by MS following the regional sampling approach.

T. alalunga	N PGMed 2013	N in NP for 2013	Landings 2013 (t)	Landings 2013 (%)	N PGMed 2014
Croatia	-	0	12	0.9	0
Cyprus	33	29	350	26.1	93
France	0	0	0	0	0
Greece	0	10	93	6.9	0
Italy	238	263	615	45.8	164
Malta	1	0	29	2.2	0
Slovenia	0	0	0	0	0
Spain	50	50	244	18.2	65
Total	322	352	1344	100	322

Table 8.8: Minimum number of specimens (N) proposed by PGMed 2013, N proposed in national programmes 2011-2013, total landings (2013) and their proportion and minimum number of albacore individuals (T. alalunga) proposed by PGMed 2014 to be sampled for stock-related variables by MS following the regional sampling approach.

C. hippurus	N PGMed 2013	N in NP for 2013	Landings 2013 (t)	Landings 2013 (%)	N PGMed 2014
Croatia	-	0	0	0	0
Cyprus	0	0	0	0	0
France	0	0	0	0	0
Greece	0	0	0	0	0
Italy	822	1183	700	64.7	860
Malta	332	214	382	35.3	469
Slovenia	0	0	0	0	0

Spain	175	0	1	0.1	0
Total	1329	1397	1083	100	1329

Table 8.9: Minimum number of specimens (N) proposed by PGMed 2013, N proposed in national programmes 2011-2013, total landings (2013) and their proportion and minimum number of dolphinfish individuals (C. hippurus) proposed by PGMed 2014 to be sampled for stock-related variables by MS following the regional sampling approach.

S. sarda	N PGMed 2013	N in NP for 2013	Landings 2013 (t)	Landings 2013 (%)	N PGMed 2014
Croatia	-	0	41	1.3	0
Cyprus	0	0	0	0	0
France	0	0	0	0	0
Greece	30	30	842	28	34
Italy	44	66	1245	41.4	50
Malta	0	0	2	0.1	0
Slovenia	0	0	0	0	0
Spain	46	50	881	29.3	36
Total	120	146	3011	100	120

Table 8.10: Minimum number of specimens (N) proposed by PGMed 2013, N proposed in national programmes 2011-2013, total landings (2013) and their proportion and minimum number of bonito individuals (S. sarda) proposed by PGMed 2014 to be sampled for stock-related variables by MS following the regional sampling approach.

Chapter 9

ToR 7) Assess the CV of large pelagics for length

Foreword ToR 7 consists in calculating the precision level achieved for the sampling of large pelagics stocks. The precision, the Coefficient of Variation (CV) of the Length Frequency Distributions (LFDs), was assessed using the methodology described by Vigneau and Mahevas (2007). It is based on the comparison of the number at length in the sample with the number at length of all samples rescaled to the sampled weight. This method allows the estimation of the precision for each length class and for the whole LFD at the stock level. However, the group considers that the computation of the CV should be made by properly accounting for the stratification of the data and that it should be made sure that the precision levels provided in the Commission decision 2010/93/EU is adapted to the delta statistics used here.

Data The data made available to PGMed 2014 to complete this TOR is listed in Table 9.1.

Species	Metier	MS	Number of individuals	Number of sampled trips
Auxis rochei	FPN_LPF	Spain	651	16
Coryphaena hippurus	LA	Malta	590	39
Coryphaena hippurus	LLD	Malta	58	33
Coryphaena hippurus	SP	Italy	408	27
Euthynnus alletteratus	FPN_LPF	Spain	300	12
Euthynnus alletteratus	LTR_LPF	Spain	41	10
Hexanchus griseus	LLD	Malta	2	2
Hexanchus griseus	LLS	Malta	27	11
Hexanchus griseus	OTB	Malta	5	2
Prionace glauca	LLD	Malta	47	35
Prionace glauca	LLD_LPF	Spain	5	5
Prionace glauca	LLS	Malta	7	7
Sarda sarda	BON_SP_MIS	Italy	87	6
Sarda sarda	FPN_LPF	Spain	999	23
Sarda sarda	SP_LLD	Italy	1700	23
Tetrapturus belone	LLD	Malta	117	65
Thunnus alalunga	LLD	Malta	2	2
Thunnus alalunga	LLD_LPF	Spain	2639	208
Thunnus alalunga	LTR_LPF	Spain	832	15
Thunnus alalunga	SP	Italy	72	14
Thunnus thynnus	FPN_LPF	Spain	1037	16
Thunnus thynnus	LHM_LPF	Spain	436	133
Thunnus thynnus	LHP_LPF	Spain	546	73
Thunnus thynnus	LLD	Malta	481	137
Thunnus thynnus	LLD_LPF	Spain,Cyprus,Croatia	1245	126

Thunnus thynnus	LLS	Malta	3	3
Thunnus thynnus	PS_LPF	Croatia	394	32
Thunnus thynnus	PS_SPF	Malta	3736	69
Thunnus thynnus	SP_LLD	Italy	341	27
Thunnus thynnus	Unknown	Malta	5	5
Xiphias gladius	FPN_LPF	Spain	18	14
Xiphias gladius	LLD	Malta	16716	1492
Xiphias gladius	LLD_LPF	Spain,Cyprus,Croatia	29423	812
Xiphias gladius	LLS	Malta	12	2
Xiphias gladius	SP_LLD	Italy	3117	141

Table 9.1: Number of individuals and trips sampled by member state, GSA, species and gear available. Only the cases with more than one trip sampled are presented.

9.1 CV by metiers

Case studies The PGMed 2014 examined the data available during the meeting (Table 9.1) and decided to calculate the Coefficient of Variation (CV) for the cases described in Table 9.2.

Species	Metier	MS
Auxis rochei	FPN_LPF	Spain
Coryphaena hippurus	LA	Malta
Coryphaena hippurus	SP	Italy
Euthynnus alletteratus	FPN_LPF	Spain
Sarda sarda	FPN_LPF	Spain
Sarda sarda	SP_LLD	Italy
Tetrapturus belone	LLD	Malta
Thunnus alalunga	LLD_LPF	Spain
Thunnus alalunga	LTR_LPF	Spain
Thunnus thynnus	FPN_LPF	Spain
Thunnus thynnus	LHM_LPF	Spain
Thunnus thynnus	LHP_LPF	Spain
Thunnus thynnus	LLD	Malta
Thunnus thynnus	LLD_LPF	Spain, Cyprus, Croatia
Thunnus thynnus	PS_LPF	Croatia
Thunnus thynnus	PS_SPF	Malta
Thunnus thynnus	SP_LLD	Italy
Xiphias gladius	LLD	Malta
Xiphias gladius	LLD_LPF	Spain, Cyprus, Croatia
Xiphias gladius	SP_LLD	Italy

Table 9.2: Cases analyzed in TOR 7).

Results Results are summarized in Table 9.3. The CVs were calculated for 90% of the number of individuals by removing the tails (5% on each side) according to the Commission Decision 949.2008. The results showed that the 12.5% level was achieved for *Sarda sarda* and *Xiphias gladius* at the Metier level (Table 9.3).

Species	Metier	MS	CV	Number of sampled trips
Auxis rochei	FPN_LPF	Spain	41.7	16
Coryphaena hippurus	LA	Malta	60.2	36
Coryphaena hippurus	SP	Italy	47.5	25
Euthynnus alletteratus	FPN_LPF	Spain	41.8	12

Sarda sarda	FPN_LPF	Spain	22.7	23
Sarda sarda	SP_LLD	Italy	6.6	22
Tetrapturus belone	LLD	Malta	73.3	57
Thunnus alalunga	LLD_LPF	Spain	32.6	197
Thunnus alalunga	LTR_LPF	Spain	39.1	15
Thunnus thynnus	FPN_LPF	Spain	23.9	16
Thunnus thynnus	LHM_LPF	Spain	28.4	125
Thunnus thynnus	LHP_LPF	Spain	20.2	72
Thunnus thynnus	LLD	Malta	45.4	123
Thunnus thynnus	LLD_LPF	Spain, Cyprus, Croatia	27.1	109
Thunnus thynnus	PS_LPF	Croatia	31.1	32
Thunnus thynnus	PS_SPF	Malta	26.1	69
Thunnus thynnus	SP_LLD	Italy	52.8	27
Xiphias gladius	LLD	Malta	11.3	1472
Xiphias gladius	LLD_LPF	Spain, Cyprus, Croatia	7.7	804
Xiphias gladius	SP_LLD	Italy	11.7	141

Table 9.3: CV, number of individuals and number of sampled trips for the different case studies available

9.2 CV Species by species

Since the data was made available for different size-classes aggregation, 5cm, 2cm and 1cm, the data was re-aggregated to 5cm length classes before the CV was calculated by species. The results showed that at regional level the 12.5% level was achieved for *Auxis rochei* and for *Xiphias gladius* (Table 9.4).

Species	CV	Number of sampled trips
Auxis rochei	6.1	13
Coryphaena hippurus	36.3	95
Euthynnus alletteratus	29.9	19
Hexanchus griseus	88.0	14
Sarda sarda	20.0	50
Tetrapturus belone	42.4	58
Thunnus alalunga	23.3	222
Thunnus thynnus	16.6	581
Xiphias gladius	5.2	2429

Table 9.4: CV and number of sampled trips for the different species

9.3 Checking the CV computation

This year, an R script was written to compute the CVs for ToR 4 and ToR 7. It was decided to compare the results obtained by this algorithm to those obtained using the excel spreadsheet template used in the past to make sure results were consistent.

The estimation was realised by each species for Cyprus, Italy and Malta. The precision, in terms of Coefficient of Variation (CV) of the Length Frequency Distributions (LFDs) was assessed using two different approaches, excel spreadsheet and R scripts, both based on the delta method (Vigneau and Mahevas, 2007).

Only CVs for bluefin tuna and swordfish were computed at regional level, combining data from 2013 of all the available métiers, considering 5 cm as length range and the following MS: Italy,

Spain and Cyprus. Sampled trips were considered as strata.

Results by species are summarized in Table 9.5. The CVs were calculated for 90% of the individuals by removing the tails (5% on each side) according to the Commission Decision 949/2008. The only differences in the data used were the parameters of the length-weight relationship. It has to be noted that the dataset used for this section differs from the dataset used for the final CV computation in the previous section.

Species	MS	Metier	CV Excel	CV R	Number of Individuals
Auxis rochei	Spain	ALL	43	42	2819
Euthynus aletteratus	Spain	ALL	55	51	103
Sarda sarda	Spain	ALL	23	23	857
Thunnus thynnus	Cyprus, Spain	ALL	24	24	3258
Thunnus alalunga	Spain	ALL	30	29	8511
Xiphias gladius	Cyprus, Italy, Spain	ALL	11	8	29508

Table 9.5: CV calculated at regional level using two different approaches, one in an excel spreadsheet (CV Excel) and libraries in R (CV R).

Results CV values obtained with the two methods were found similar. The results were believed two differ mainly because of the discard of trips with a reduced number of samples in the case of the R script.

Chapter 10

ToR 8) Review WK on data quality carried out until now: state of guidelines of statistically sound sampling methodologies

ICES planning groups Other groups and workshops on data collection organized under ICES are perform work of high interest for the Mediterranean. These workshops are very much opened to Mediterranean participants, which are encouraged to participate to it to foster exchanges on methods and approaches. The following has been directly taken from the 2014 PGCCDBS report as it addresses ToR 8. The workshops cited in the following, WGKPICS and SGPIDS, accurately propose guidelines and best practices for sampling and their reports are available on the ICES websites. Future workshops proposed by PGCCDBS are listed in Annex 7.

10.1 Review key outcomes of the 2013 fleet based sampling workshops (WKPICS; SGPIDS) from the PGCCDBS 2014 report.

The ICES Workshop on Practical Implementation of Statistically Sound Catch Sampling Programs (WKPICS) and the Study Group on Practical Implementation of Discard Sampling Programmes (SGPIDS) completed their three-year terms in 2013. The work done over the three years, and the achievements of these two groups, are reviewed below.

WKPICS and SGPIDS followed from the 2009 ICES "Workshop on Methods of Merging Métiers for Fishery Based Sampling" (WKMERGE; ICES, 2010). WKMERGE explored how at-sea and on-shore sampling of fisheries can be carried out using statistically-sound, probability-based methods, and the problems associated with ad-hoc approaches and quota sampling based on highly resolved, dynamic fleet métiers. WKPICS (ICES, 2011a, 2012a, 2013a) and SGPIDS (ICES, 2011b, 2012b, 2013b) were initially developed independently to improve the design, implementation and documentation of catch sampling programmes to standardise processes and assure the quality of catch data, taking account of the practical problems that sampling staff are often confronted with. The topics covered by the workshops included:

- Developing sampling design guidelines
- Practical implementation of statistically-sound programmes

- Raising data according to the sampling design
- Developing a quality assurance framework for improving data for stock assessment and management advice

Using case studies, each of these series have been able to demonstrate the practical issues in trying to implement probability based approach and have been able to provide guidelines and standards which allow countries to optimise their resources to provide quality-assured, harmonised data. Many countries have gradually improved their programmes based on these workshops within the limitations of their DCF programmes but this process is not finished yet and the baton will be picked up by WGCATCH. The case study approach will continue to be useful to focus on common issues and the different processes and experiences arising from national sampling and raising schemes within multinational shared stocks. A summary of each of these workshops and their key achievements is provided below. SGPIDS1 (ICES 2011b) provided useful overviews about discard sampling plans by country in terms of sampling techniques, legal conditions, sampling protocols, data storage procedures, ways to improve cooperation with the fishermen, training procedures for sampling and safety and data delivery issues to end users. Its main achievements were:

- Identifying the main discard sampling techniques by country and their sources of error in discard sampling programmes (both onboard, self-sampling, reference fleets and onboard CCTV sampling)
- Reviewing the legal framework under which discard sampling is taking place and the impacts of a discard ban in onboard observer programmes and discard estimation
- Describing sampling protocols and highlighting the aspects that required standartization in the collection of the raw data used in discard estimates
- Evaluating data handling procedures, quality checks (internal and external) and raising procedures used in estimating national discards
- Listing data storage requirements and discussing the concept of a regional database procedures of primary discard data and proposed modifications
- Discussing ways to improve co-operation with the fishing sector to collect discard information
- Discussing sampling and safety training procedures used by countries
- Making recommendations to improve comunication and data delivery to other study groups, identifying problems and suggesting potential solutions

SGPIDS2 (ICES 2012b) provided a first attempt at defining quality standard levels for discard sampling programmes. The group provided suggestions for quality indicators and what should be incorporated in the regional database. The group also developed practical ways of improving vessel selection procedures and contact logs. Main achievements included:

- Defining and developing quality indicators for discard sampling programmes (e.g. non-response and refusal rates and measurements of 'goodness of fit')
- Developing practical ways of defining sampling frames and statistically sound practical procedures for selecting vessels.
- Comparing the outcomes of different onboard sampling procedures using concurrent case studies
- Considering ways of integrating the recording of Protected, Endangered and Threatened Species (PETS) into onboard observer programmes.

SGPIDS3 (ICES 2013b) looked at the practical issues when defining sampling frames for at-sea sampling programmes using national vessel registers for a number of case studies. The group provided further guidance on vessel selection procedures, docu- menting response and refusal rates, on-board sampling and estimation procedures. SGPIDS developed. Achievements included:

- Testing the application of probability-based sampling design and the quality indicators envisaged under DC-MAP in the definition of strata to sample fleets using case studies.
- Comparing response rates from case studies and developing further guidance on vessel selection to provide more comparable quality indicators.
- Documenting and analysing within-trip raising procedures of discard weight, lengths and ages
- Developing procedures and guidance on the minimum requirements for recording PETS as part of national observer programmes.

WKPICS1 (ICES 2011a) reviewed the design and current status of national at-sea observer and onshore sampling programmes. Most of these were heavily influenced by the requirements of the DCF with reference to métiers and mostly consisted of ad hoc quota based sampling. This group introduced the concepts and terminology related to a probability-based sampling approach. This group achieved:

- Clarifying of concepts and terminology for fishery catch sampling schemes
- Categorizing catch sampling schemes to facilitate the development of best practices. Three types of fisheries sampling schemes were defined: at sea sampling for large scale fisheries, on shore sampling of large scale fisheries and sampling of small scale fisheries
- Identifying logistical problems affecting the implementation of these sampling schemes, using case studies as examples

WKPICS2 (ICES 2012a) developed guidelines for best practice that covers the design, implementation and analysis stages of catch sampling schemes. The group also realized that precision cannot be assessed by just a number in isolation, and started defining quality indicators for data used for stock assessment. Achievements included:

- Providing a table detailing "best practice" that covers the design, implementation and analysis stages of catch sampling schemes.
- Outlining four classes of probability based sampling schemes with examples of sampling units and stratification for multiple stages
- Reviewing best practice for data raising and precision estimates using case studies
- Reviewing SGPIDS, WKACCU and WGRFS quality indicators and drafting templates for quality assurance report (covering sampling design, and national contribution to regional and stock sampling).
- Providing a glossary of statistical terms
- Making recommendations to improve regional coordination in the most cost-effective way

WKPICS3 (ICES 2013a) focused on several classes of catch sampling schemes for estimating variables such as quantities discarded, and length or age composition of catches, taking account of the many practical problems that face people trying to obtain representative, randomised samples of catches. The core achievements include:

- Reviewing and proposing amendments to the Quality Assurance Reports developed by WKPICS2 and SGPIDS3.
- Reviewing the sampling design and estimation procedures currently adopted within Europe for estimating age compositions and weight-length relationships for retained and discarded fish.
- Documenting data quality indicators used in non-EU countries and providing advice on appropriate data quality indicators to be included in the DC-MAP.
- Reviewing the regional approach and the optimization of national sampling schemes to meet regional goals.

PGCCDBS 2013 (ICES 2013 c) proposed merging this series of workshops into a single expert group (WGCATCH) aimed at continuing the work of WKPRECISE (ICES 2009), WKACCU (ICES 2008), WKMERGE, SGPIDS and WKPICS. The proposal was accepted by ICES and the first WGCATCH will take place in November 2014.

10.2 More specific guidelines

Foreword The following sections report more specific information provided within WGKPICS and SGPIDS workshops that can be of interest in the Mediterranean context. The full details are available in the corresponding reports, on the ICES website.

10.2.1 WKPICS (2012): Guidelines for design-based and model-based data raising and precision estimation

Principal classes of survey designs for catch-sampling programs

Fisheries catch sampling schemes considered here can broadly be categorized into four principal classes based on the number of stages in the sample selection. For at-sea sampling programs, the sampling frame is ideally constructed so that vessels, trips, and fishing operations can be selected with known probability over time. The effective sample size can be maximized by spreading out the collection of data across all vessels, trips, and fishing operations in each stratum. For at-sea sampling the two principal design classes are:

A) Trips as primary sampling units. When trips can be selected randomly from a fleet of vessels, at least approximately, it is often reasonable to treat vessel-trips as the primary sampling units. For a fleet with day-trips this can easily be achieved by randomizing the selection of days and vessels. In such cases, it is reasonable in the analysis phase to treat the list of all trips (obtained at the end of the year) as the sampling frame. This is a virtual frame that cannot be used in stage 1 to select the trips. The actual selection is typically based on a frame with a vessel list crossed with time. For fleets with varying trip-length it is more difficult to selected vessels and trips with approximately equal inclusion probabilities. It can be helpful to create strata where vessels with a similar trip length are grouped.

B) Vessels as primary sampling units. When it is not possible to approximately achieve a random sample of trips for a fleet, then another design option for at-sea sampling is to select vessels randomly in stage 1, and then select a sub-sample of trips throughout the year for each vessel. In this case, the vessel is the PSU, with trips as second stage sampling units and fishing operations as third stage sampling units. This design introduce an extra level of clustering, since trips and fishing operations to be sampled now are nested with a fixed number of vessels selected in stage 1. Clearly, these trips may not be considered a simple random sample from the entire fleet.

For at-shore sampling, a common approach is to conduct the sampling of catches from vessels and trips that can be accessed in ports where they land their catches. In these cases, the sampling frame is based on a list of access-sites crossed with time (for example port-days). The two principal design options for on-shore sampling are:

C) Site-days as primary sampling units. Where the primary sampling units can be defined as site-days which can be randomly selected, there is one extra level of clustering, where site-days are selected in stage 1, trips in stage 2, boxes in stage 3 (for sorted catches), and fish in stage 4.

D) Sites/ports as primary sampling units. Another design option is to select a sample of sites/ports (PSUs) in the first stage, and then conduct catch sampling for a sub-sample of days (stage 2) days within each site/port selected i stage 1. In stage 3, catch sampling is conducted for a sample of trips on a selected day and port. If landings are sorted by market categories and packed into boxes, then a stratified random sample of boxes (stage 4) may be taken for each trip. This option may be cost-effective if ports are scattered over large areas, and field samplers near a selected number of ports can be recruited.

It should be noted that stratification can be employed for several stages of the selection. When sampling port-days (stage 1) in options C and D, it is common that the catches for many completed trips (stage 2) are sorted by market category before they are landed. The market categories will then form strata. Sub-sampling of trip-catches may then be conducted by selecting a random sample of boxes (stage 3) from each market category (stratum), and then measure all fish from each box, or a sub-sample of fish from each box in stage 4.

Chapter 11

ToR 9) Proposals of workshops and studies

11.1 Workshop on fish condition

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Background (detailed description in Annex 3) Body condition is a key variable widely used in ecological studies of fish. Commonly, body condition is defined as the quantity of nutrient reserves, which represent the quantity of metabolizable tissues exceeding those required for daily nutritional demands. Condition indices thus inform on the quantity of energy extracted from the environment and can give important insights on foraging behavior or prey distribution for instance. Body condition indices are also used as indicators of an individual's well-being which can affect its future performances. For example, individuals with larger nutritional reserves may have a greater survival rate, a larger reproductive success and a higher growth, ultimately resulting in a link between body condition and fitness for several species. Measuring body condition is thus of outmost importance for physiologists and ecologists to understand population dynamics affected by mortality and reproduction.

Objectives This workshop will provide the opportunity to regroup the Mediterranean community working on this field, in order to discuss the condition indices used in the literature and compare body condition across areas from the Mediterranean to better understand how it fluctuate with the environment. As such metrics could serve to measure habitat quality and the health of stocks, the workshop will provide an arena to discuss how it could help refining stock status and management advice proposed in the regional organisations such as GFCM.

Duration One week

Estimated cost 50.000 €

Geographic area covered Mediterranean and Black Sea

11.2 Bluefin tuna aerial surveys in the Western and Central Mediterranean Sea (BFTAS)

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Background (detailed description in Annex 4) Atlantic bluefin tuna (ABFT) is a commercial fish of high value and great importance for the European fisheries, especially France, Italy, Croatia and Spain. European countries have a key responsibility in the conservation of this species that became over the last decade an emblematic species of overexploitation. Since the implementation of the rebuilding plan in the late 2000s, the stock status of ABFT greatly improved, but the speed and amplitude of the recovery still remain uncertain and difficult to estimate. Indeed, stock assessments of large pelagics fish, such as ABFT, mostly rest on fisheries statistics (i.e. catch, cat-at-age and CPUE) because of the lack of adequate fisheries-independent information. Such a situation is challenging, especially to estimate the performances of the ABFT rebuilding. Information from fisheries-independent surveys may be particularly useful in such context because scientific surveys are unaffected by management regulations and are therefore more reliable to detect management-driven changes in abundance. Aerial surveys have been used by France for several years and have proved to be efficient way to provide fisheries-independent data and build an index of abundance.

Objectives For ABFT, aerial surveys have been carried out in the Gulf of Lions, a well-known feeding ground where ABFT juveniles used to concentrate, especially in summer and autumn. The survey started in 2000 and has been operated until 2003 and then since 2009. The protocol has remained the same since 2000. This survey is carried out over a key area, which is nonetheless rather restricted. To get a more representative index of abundance of the population, it would be necessary to extend the spatial coverage of the survey. Therefore, this study proposes to carry out aerial surveys on 3 other key feeding and spawning grounds of ABFT juveniles in the Mediterranean Sea, i.e. the Catalan Sea, the Ligurian Sea and the Adriatic Sea.

Duration 50 hours of flight for each of the four areas spread across 6 to 7 flights between August and October

Estimated cost 400.000 €

Geographic area covered Western and Central Mediterranean

Chapter 12

ToR 10) Any other business

12.1 On the PGMed status regarding other groups

12.1.1 Meeting

In 2013, due to the plans made by ICES to modify the functioning of the Planning Group on Commercial Catches, Discards and Biological Sampling (PGCCDBS), the RCMMed&BS recommended to maintain the PGMed as the methodological group as it is, keeping the same type of work as previous years and still operating under the RCMMed&BS umbrella. It also recommended to constrain the work carried out by the PGMed in only two days, meeting right before the RCMMed&BS, even during the same week (PGMed: Monday-Tuesday and RCMMed&BS: Wednesday-Friday). PGMed suggested to stick to this original plan and to constrain the PGMed work in two full days (Monday-Tuesday) right before the RCM.

12.1.2 Subgroup on large pelagics

In 2013, the RCM LDF recommended to expand the RCM Med & BS to a RCM Med & BS & LPF, which would consist of two sub-groups (one dealing with the Med & BS and the other with LPF issues). The link between PGMed and both sub-groups is yet to be clarified. PGMed works under the RCM umbrella, so the technical work developed by PGMed is in theory for both RCMMed & BS and for the LP subgroup. Therefore, the work performed by the PGMed should benefit to both and specific tasks (ToRs) related to large pelagic fish and identified by the LP subgroup should be included within the meeting.

12.1.3 Evolution of the PGCCDBS

The PGMed is no longer meeting in parallel with the PGCCDBS. In fact, in 2014, the PGCCDBS proposed that it should continue in future, but with a major revision of membership and Terms of Reference that are shifted from the topics covered by WGCATCH and WGBIOP to focus on applying the Quality Assurance Frame-work (QAF) to the end-use of data by assessment Expert Groups, particularly in the benchmarking process. To reflect this shift in emphasis, it was proposed to rename the PG as the Planning Group on Data Needs for Assessment and Advice (PGDATA). The link between PGMed and the new PGDATA is not clear yet and thus the PGMed proposed to track the work carried out by PGDATA in 2015 in order to decide which kind of link is necessary between both PGs.

12.2 Maturity scale requirements on surveys

The maturity and submaturity stages, such as the one used in the MEDITS protocol, can be very detailed compared to DCF needs as presented during dedicated ICES working groups. Such detailed maturity and submaturity stages require a level of accuracy that his hard to meet on the field, and leaves the door open to confusions during these busy surveys. Knowing that submaturity stages are generally not used for stock assessment in the Mediterranean, which basically requires immature/mature data, clarifications would be necessary for DCF minimum requirements during these surveys.

12.3 On the Marine Strategy Framework Directive (MSFD) and surveys at sea

12.3.1 Introduction

PGMED made a review of the former work done by the four STECF EWGs held in perspective of the DCF revision, for evaluating possible complementary links between DCF data collection and future MSFD data collection needs. All the experts groups stressed indeed strongly to avoid when possible overlaps in data collection between both regulations. Article 2 of the CFP regulation 1380.2013 states that Member States shall collect biological as well as environmental data necessary for fisheries management in order to enable the assessment of (a) the state of exploited marine biological resources and (b) the level of fishing and the impact that fishing activities have on the marine biological resources as was on marine ecosystems.

Two main sources of DCF data were from the beginning identified by EWG-13-02 (Ispra, 11-15 March 2013) as also potentially useful for MSFD issues : scientific surveys at sea which allow to collect no fisheries dependent data on marine exploited populations, and observers at sea programmes which provide information on by-catch, discards and more generally on effects of fishing on marines ecosystems, especially marine mammals, sea birds and turtles. The interest of surveys at sea for MSFD issues was already stressed by SGRN 10-03 (October 2010) which had in its ToRs to evaluate the interest of all surveys listed by the RCMs for DCF objectives but which have also retained as a criteria their potential use for MSFD ones.

12.3.2 Review of the main outcomes of STECF EWGs – Surveys at sea

EWG 13-02s report states that "the Commission has expressed at several occasions the opinion that not all monitoring required for MSFD can be included, but some may be possible. The cost of full monitoring of all MSFD requirements is unknown but probably very high. However, parts of the monitoring requirements are already covered in existing monitoring programmes including the DCF".

However it underlines that "given the fact that the implementation of the MSFD differs by MS, the monitoring requirements differ by MS. In the absence of information on the specific data needs by the MS, the EWG 13-02 cannot advise on inclusion of further sampling in the DC-MAP without knowing the specific monitoring plans of the MS EWG 13-02 endorses that surveys at sea can provide a platform to collect non fishery related data for MSFD. These opportunities should be further investigated at Member State level."

Following EWGs did not come back further on scientific surveys. EWG-13-05 (Varese, 10-14 June 2013) wrote in its report that: "The procedures and provisions for financial assistance for surveys carried out under the DC-MAP will differ from the DCF. Surveys in the DCF list are

evaluated by STECF and are mandatory for the Member States to carry out. Surveys on this list are all eligible for co-financing by the Commission. Member States can carry out other surveys but only on their own expenses. Surveys listed under the DC-MAP will be mandatory and eligible for funding under the EMFF. In addition, Member States may propose other surveys in their Operational Programme. These surveys would also be eligible for funding under the EMFF when the Operational Programme has been approved. In addition, the Member State may carry out surveys at their own expenses (not funded under the EMFF)."

The leadership of MS for implementing strategies for MSFD was so again expressed and strengthened. But the recent initiative of the MEDITS WG implemented in 2014 could modify this context at mid-term.

12.3.3 Review of the main outcomes of STECF EWGs: Incidental catch and by-catch

In its report, EWG 13-05 considers that the DC-MAP should primarily aim to fulfil end-user needs. Whilst dedicated by-catch monitoring programmes for sensitive species will provide improved data on by catch and thus allow for improved estimates on the extent of fisheries by-catch, it is relevant to note that:

1. By-catch data collected under the DC-MAP will not be sufficient to estimate the impact of incidental catches on populations of the species monitored. Additional data on population size would be required

2. When high impact fisheries (fisheries with high by-catch of non fisheries species) have been identified, rather than collecting highly accurate data on the extent of fisheries by-catches, financial resources under the EMFF may be better allocated to (a) fund studies on mitigation measures, (b) monitor the effectiveness of such mitigation measures, and (c) to assist fishers in allocating increased resources to the use of more environmentally fishing gears

3. The cost implications as well as the administrative burden of designing dedicated monitoring programmes for each of the by-catch species are enormous. In order to render the DC-MAP practically feasible, priorities should.

Bearing in mind the issues outlined above, EWG 13-05 considers also that two different approaches may be taken with regards to MS obligations on monitoring and reporting by-catch of protected non-fisheries species.

- Option I: The DC-MAP could include provisions for MS to sample by-catches of certain conspicuous and sensitive non-fisheries species, for which there are end user needs, in existing sampling programmes which make use of obervers at sea.

- Option II: The DC-MAP could include provisions for MS to sample by-catches of certain conspicuous and sensitive non-fisheries species, for which there are end user needs, based on dedicated sampling programmes.

Going further on, the EWG 13-18 (Brussels, 25-28 November 2013) suggests that:

- All marine mammals, seabirds and reptiles caught as incidental by-catch are recorded by default since the majority of these species are listed in existing instruments. With regards to fish species, it recommended that groups to be monitored by default (e.g. sharks/rays and sturgeons, lampreys) are designated at a regional level.

- The first step in assessing the impact of fishing on vulnerable marine ecosystems will often be analyses of the overlap between the location of fishing grounds (using VMS data) and the location of vulnerable marine habitats. A necessary prerequisite is the availability of habitat maps. Where such maps are not available, specific studies funded as part of direct management measures should be carried out.

- As a second step, the impact of different types of fishing gear on different habitat types should be characterized. This could be achieved by carrying out impact assessments as part of targeted surveys.

These suggestions seem to point out a clear preference of EWG 13-18 for abovementioned Option 1. Such opinions have been also expressed during RCMs 2013 and NC meetings.

Otherwise the EWG 13-18 provided a comprehensive list of definitions of relevance for the DCF by merged existing definitions from the CFP Basic Regulation and Regulation 199/2008, added definitions from the EWG 13-05 meeting report and definitions of the terms 'catch', 'by-catch', 'incidental by-catch' and 'slipping' based on existing FAO/GFCM glossaries.

The EWG 13-18 provided also for each topics considered (collection of data on incidental bycatch, vulnerable marine ecosystems) indicative lists of relevant legislation, conventions and action plans of relevance at European Union, regional and international levels.

EWG-14-02 (Hamburg, 24-28 February 2014) finalized the STECF EWGs reflexion by defining clear links between by-catch data collection and MSFD descriptors relating to the biodiversity. In its reports, "regarding the expanded scope of fisheries by-catch data collection, it provides detailed guidance for the recording of species and fisheries data (Annex 8). Based on the list of species from the relevant treaties and conventions (cf. EWG 13-18 report), the EWG 14-02 suggests that the RCGs identify adequate fisheries and/or species for sampling".

STECF endorsed this proposal to identify and prioritise the fishery/species combinations that need to be monitored and sampled for bycatch of nontarget species including protected, endangered and threatened species (PETS). STECF also stressed that collection of by-catch data for PETS should always be done at the species level.

As additional agenda item, the Commission requested that the EWG 14-02 discuss stomach sampling and analysis in the frame of a revised DCF. The EWG proposes that a pilot study should be conducted to investigate and to develop a cost-effective and end-user driven multi-annual plan for the collection and analysis of stomach data for consideration in the revised DCF/EU MAP.

12.3.4 Review of the main outcomes of STECF EWGs – Environmental indicators

Only the EWG 13-05 reflected on the other MSFD descriptors. It considers that concerning environmental indicators, extensive lists of indicators already exist, with a potentially enormous demand for associated data. So the EWG suggests "that before a decision to specify data collection requirements in relation to environmental indictors in the DC-MAP is taken, end-users first need to agree a priority list of indicators to suit their needs". The EWG 13-05 considers that "priority for data collection under the DCMAP should be given to those indicators that have been tested and proven to be suitable for measuring the impact of fishing activities on the marine ecosystem".

12.3.5 Towards a regional coordination on DCF and MSFD issues : the 2014 MEDITS Group initiative

As mentioned in the beginning of the section STECF EWGs pointed out that the strategies about the use of surveys for the MSFD come under Member states. Accord to the Directive, MS might define during years 2013-2014 a national Monitoring Programme to be implemented since 2015.

Doing that MS generally pointed out the interest of DCF scientific surveys as real or potential sources for collecting many types of data. Very often also, an optimisation of the research vessels as common platforms for DCF and MSFD issues appeared as the right way for minimizing operational costs. This point was already underlined by the EWG 13-02.

Research vessels used by MS for DCF are of very different types: big or small, owned by research institutes or chartered, offering multiple opportunities for technical and scientific tasks or allowing only to fish. Increasing tasks onboard is also time consuming and it is not always possible to add new objectives without evaluating whether the duration of the surveys is sufficient to allow to carried out new foreseen operations.

Considering this new context for next years and the fact that already MEDITS protocol was amended to add collection of data or biological parameters for new species, the Working Group MEDITS agreed during its annual coordination Meeting held in Rome last March 26-27 to provide some basic information related to the Marine Directive Strategy in order to understand, in the different countries and GSAs, which kind of requests among those emerging demand from the MFSD could be addressed and thus which contribution that the MEDITS survey could provide on this issue.

The synthesis of the questionnaires is presented in Annex 5, for each descriptor of the GES, and by GSA included in the MEDITS programme. Main conclusions are :

- Vessels capacities are often limited, in terms of ability to carry out operations other than fishing ones (bennes for sediment, benthos, plankton, etc..). Collection of samples of fish for descriptors 4, 8 and 9 are also dependent of the haul size of the vessel and of its freezing capacicity, and only feasible on research vessels.
- Possibilities to increase the scientific staff on board are often reduced, even for observers for marine mammals and birds. So if new tasks should be carried out, it will be an additive burden for scientist already being fully occupied for applying correctly the MEDITS protocol. This protocol includes partly data collection for descriptor 10 (litter).
- Data collection for descriptors 1, 5 and 11 could be achieved if research vessels are equipped for automatic measures (i.e. Ferrybox). In situ measures (Niskin bottles and plankton hauls) will be more difficult to be collected, often due to lack of time.

Even if difficulties for implementation cannot fully be removed, ways for complementarity work between DCF and MFSD could be identified at the regional level : more accurate and complete analysis of the catches, collection of samples for other descriptors, measures of basic environmental parameters. However, the time necessary for such extra data collection and its funding are still unknown, as well as how this will affect the future DCF data collection. Furthermore the data collected might be sent to other laboratories to be exploited. If it is largely accepted that the sampling effort should be mutualized and should evolve to embrace broader perspectives, how this is technically implemented on the field remains to be specified.

But it must be stressed that such coordination between MS is a way of progress strongly supported by EU DG Environment. So the MEDITSWG initiative is fully relevant and should be welcome to be enlarge to other surveys in the MED & BS region.

12.4 On data-calls

12.4.1 Data-call for the PGMed

Timing of the data-call

Given the amount of time now dedicated to the PGMed, two days, the data needs to be made available early to the PGMed, following a data-call launched by the co-chairs of the RCM Med & BS - LP, so that the work can be completed in due time. It has been proposed that the data-call for the PGMed would be launched early, in March, and the deadline be set the first of July.

Content of the data-call

The data-call needed to be redefined in terms of format and content to allow for a more thorough investigation of sampling and to harmonize with the data required for the large pelagics subgroup. It was proposed that the current structure of the PGMed data-call would be conserved, excepted for the data needed for the CV computation and for the large pelagics data. For those, it has been proposed to follow the proposition of the large pelagics subgroup on using the Standard Data Exchange Format (SDEF) so that common investigations and methodologies could be developed.

12.4.2 On the timing of data-calls

The dates and timelines for data-calls in the Mediterranean are currently not all formally defined within the regulation. For instance, a calendar of data calls could be incorporated or referred to in the new DC-MAP in order to avoid unplanned work. This might also be used as a means to more clearly define the status of the PGMed data call, an issue that remains unclear for the Member states.

12.4.3 Harmonisation of data-call formats

An attempt to harmonise the format of data calls could be made to optimize the work of member states. Currently GFCM and JRC launch data calls are different time with different contents and their harmonisation could help facilitate the data collection.

12.4.4 Content of data-calls

Currently MS are required to collect data on large pelagics which is not requested in relevant calls for data. Clarification, and potentially simplification of the variables to be collected should be carried out as efforts to collect data that is not used should be avoided.

12.5 Calculation of CV

At present, CV is applied to the aggregated data for given species. When applied to metier-related data, the fleet segment is not discriminated for and thus the different characteristics of the individual metiers are not explored. The group considers that inspecting the sampling stratification, for instance using the delta statistics, would allow to invetigate the variability within each metier in space and time, in relationship to catch volume and composition that may ultimately influence the resulting CV value and help optimize the sampling. From this we may define reference values for numbers to be sampled that constitute realistic targets. Such an example can be found in the french national program (p25).

Chapter 13

Annexes

13.1 Annex 1: List of PGMed participants

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Table 13.1: List of PGMed participants

13.2 Annex 2: Terms of Reference

TOR 1) Ranking system for the whole Mediterranean and for the Black Sea

TOR 2) Reviewing and update of the landing template for the Mediterranean and for the Black Sea

TOR 3) For the metiers which are exploiting a shared stock and selected by the ranking system, the number of sampling trips by metier at the GSA level can be determined.

TOR 4) Assess the CV for shared stocks both for the Mediterranean (GSA 7,GSA 15-16, GSA 17) and Black Sea.

TOR 5) Analyse the extension of the problem concerning the fishing performed in a different GSA than their original one.

TOR 6) Update the work conducted in the PGMed 2013 for large pelagic species on sampling of length and stock related variables by using 2012 (or 2013) data.

TOR 7) Assess the CV of large pelagic for length.

TOR 8) Review WK on data quality carried out until now: state of guidelines of statistical sound sampling methodologies.

TOR 9) Proposal of workshops and studies.

TOR 10) Any other business.

13.3 Annex 3: Details for the workshop on fish condition

Proposal for a workshop on fish body condition studies at the Mediterranean and Black Sea scales.

Body condition is a key variable widely used in ecological studies particularly on fish, mammals and birds to define the nutritional or physiological status of an individual (Bolger and Connolly, 1989; Stevenson and Woods, 2006). Commonly, body condition is defined as the quantity of nutrient reserves, which represent the quantity of metabolizable tissues exceeding those required for daily nutritional demands (Schamber *et al.*, 2009; Schulte-Hostedde *et al.*, 2001). Condition indices thus inform on the quantity of energy extracted from the environment and can give important insights on foraging behavior or prey distribution for instance (Lloret *et al.*, 2013). Body condition indices are also used as indicators of an individual's well-being which can affect its future performances (Stevenson and Woods, 2006; Wilson and Nussey, 2010). For example, individuals with larger nutritional reserves may have a greater survival rate, a larger reproductive success and a higher growth (Millar and Hickling, 1990), ultimately resulting in a link between body condition and fitness for several species (Jakob *et al.*, 1996). Measuring body condition is thus of outmost importance for physiologists and ecologists to understand population dynamics affected by mortality and reproduction (Schulte-Hostedde *et al.*, 2005). A large number of condition indices are available from the literature. In particular, morphometric indices are based on the assumption that for a given size, heavier individuals are in a better condition (Green, 2001). They are extensively used because of their simplicity; and have been selected a lot to monitor fish health (Lambert and Dutil, 1997), investigate marine pollution (Bervoets and Blust, 2003) or manage fisheries (Cone, 1989). Because MEDIAS and MEDITS surveys allow to collect size and weight measurements of a wide diversity of fish species, it offers a unique opportunity to compare body condition between areas of the Mediterranean and Black Sea and to better understand how it fluctuates with the environment. It could also help understanding the relative population trends observed in the different areas. In this project, we propose as a first step to build morphometric body condition indices over the whole Mediterranean and Black Sea, to compare between areas and relate it to environmental conditions and a measure of habitat quality. This index may also be of great importance to measure the health of a stock and the production of time series of such indicator to incorporate in stock assessments may help refining stock status and management advices proposed in the regional organisations such as GFCM. Further studies on the link of body condition with reproduction or feeding behavior or even age structure of the population may also be considered.

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13.4 Annex 4: Detailed document for the BFT surveys

Bluefin tuna aerial surveys in the Western & Central Mediterranean Sea (BFTAS)

Project proposed by: Jean-Marc Fromentin[1], Sylvain Bonhommeau[1], Fulvio Garibaldi[2], Vjeko Ticina[3] and Josetchu Ortiz de Urbina[4]

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General Context

Atlantic bluefin tuna (ABFT) is a commercial fish of high value and great importance for the European fisheries, especially France, Italy, Malta and Spain (Fromentin and Powers, 2005). European countries have a long lasting BFT fisheries history and further operate most of the BFT farming facilities in the Mediterranean Sea. Consequently, European countries have a key responsibility in the conservation of this species that became over the last decade an emblematic species of overexploitation.

Since the implementation of the rebuilding plan in the late 2000s, the stock status of ABFT greatly improved, but the speed and amplitude of the recovery still remain uncertain and difficult to estimate (ICCAT 2013). Indeed, stock assessments of large pelagics fish, such as ABFT, mostly rest on fisheries statistics (i.e. catch, cat-at-age and CPUE) because of the lack of adequate fisheries-independent information (ICCAT, 2007). ABFT is highly migratory and distributed over the whole North Atlantic and adjacent seas. Therefore, standard scientific surveys, such as the acoustic or trawling surveys that are routinely carried out for small pelagic and/or demersal fish, cannot be applied. The major source of scientific information for tuna is most often provided by tagging, but this technique often calls for large scale and costly programs (the recent Indian Ocean Tuna Tagging Programme costs more than 15M€). Consequently, fisheries-independent information for large pelagics fish remains scarce.

Besides this lack of fisheries-independent data, the paucity of fisheries information in the Mediterranean (especially in the 1990s and early 2000s) has been identified as an important limitation of the scientific advice about the Atlantic bluefin tuna (ABFT) stock status. Fisheries data are indeed impaired by large uncertainties due to significant under-reporting of most countries, illegal fishing and (past) farming practises (ICCAT, 2009).

Last but not least, the recent regulatory measures due to the rebuilding plan have significantly affected the CPUE of most fleets through changes in operational pattern, length of the fishing season and target sizes. This has profoundly and negatively affected the robustness of these CPUE time series that are used in ABFT stock assessment and has sometimes even prohibited the update of some series (such as the bait boat one, see ICCAT 2013). Such a situation is challenging, especially to estimate the performances of the ABFT rebuilding.

Information from fisheries-independent surveys may be particularly useful in such context because scientific surveys are unaffected by management regulations and are therefore more reliable to detect management-driven

changes in abundance. This explains why the scientific committee of ICCAT has continuously reiterated the importance to obtain robust fisheries-independent indicators (see ICCAT 2013).

Context of the aerial survey in the Gulf of Lions

The aim of the aerial surveys is to get fisheries independent information on ABFT to compute an index of abundance. To do so, aerial surveys must be carried out in key areas, such as nurseries, feeding or reproductive grounds. For ABFT, aerial surveys have been carried out in the Gulf of Lions, a well-known feeding ground where ABFT juveniles used to concentrate, especially in summer and autumn. The survey started in 2000 and has been operated until 2003 and then since 2009. The protocol has remained the same since 2000. The flights are done with a small (or a medium small) aircraft at 1000 feet above sea level with 1 to 2 scientific spotters. Aerial surveys have been conducted at the same time of day (around noon when the sun is at its highest) and during favorable weather conditions during the same period of the year, i.e. from August to October (see Bonhommeau et al. 2009, Fromentin et al. 2013). The plane followed the same route, which has been designed by the scientists (Figure 1). In the Gulf of Lions, the route is 710 nm long, which can be surveyed in 7 to 8 hours in one or two days (depending on the size/autonomy of the plane).

The route must be surveyed several times during the season to get an unbiaised mean and a good estimate of the variance. Nonetheless, the cost of an aerial survey remains low. 50 hours of flight (which correspond to 6 to 7 replicats of the route over the Gulf of Lions) with a twin-engine aircraft cost about 50,000€ (taxes and parking including). This corresponds to the cost of a single day at sea with a large oceanographic boat.

Note that aerial surveys also allow the detection of marine mammals (dolphins, baleen and sperm whales), marine birds and turtles, for which they frequently used, and for which we have little information in the Mediterranean Sea. Aerial surveys could thus be also useful to describe the descriptors 1 and 4 of the Marine Strategy Framework Directive (http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/marine-strategy-framework-directive/index_en.htm).

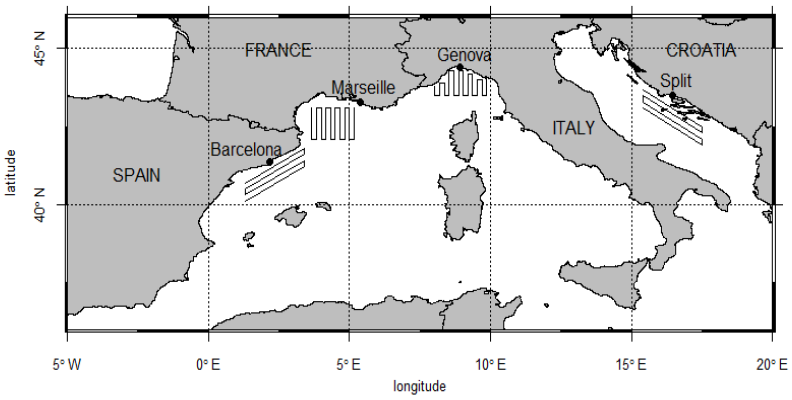

Figure 1. Design of the transects of the aerial surveys in the four areas proposed, i.e. (from left to right) the Catalan Sea, the Gulf of Lions, the Ligurian Sea and the Central Adriatic Sea.

Summary of the main results from the aerial survey in the Gulf of Lions

The results of the aerial surveys in the Gulf of Lions indicate a clear contrast between the former (2000-2003) and the latter (2009-2012) period (Figure 2). Densities over the period 2000-2003 varied between 0.0040 and 0.0068 ABFT schools/nm², while it increased up to ~0.025 schools/nm² since 2009, i.e. densities being about 4 times higher than this of the 2000-2003 period. Since 2009, the detected schools further covered a wider area compared to the 2000-2003 years (Figure 2), with a clear extension towards the coasts (that has been confirmed by numerous observations). These changes strongly suggest higher abundance of ABFT in the northwestern Mediterranean Sea, which are likely to reflect positive outcomes from recent management measures (ICCAT 2013).

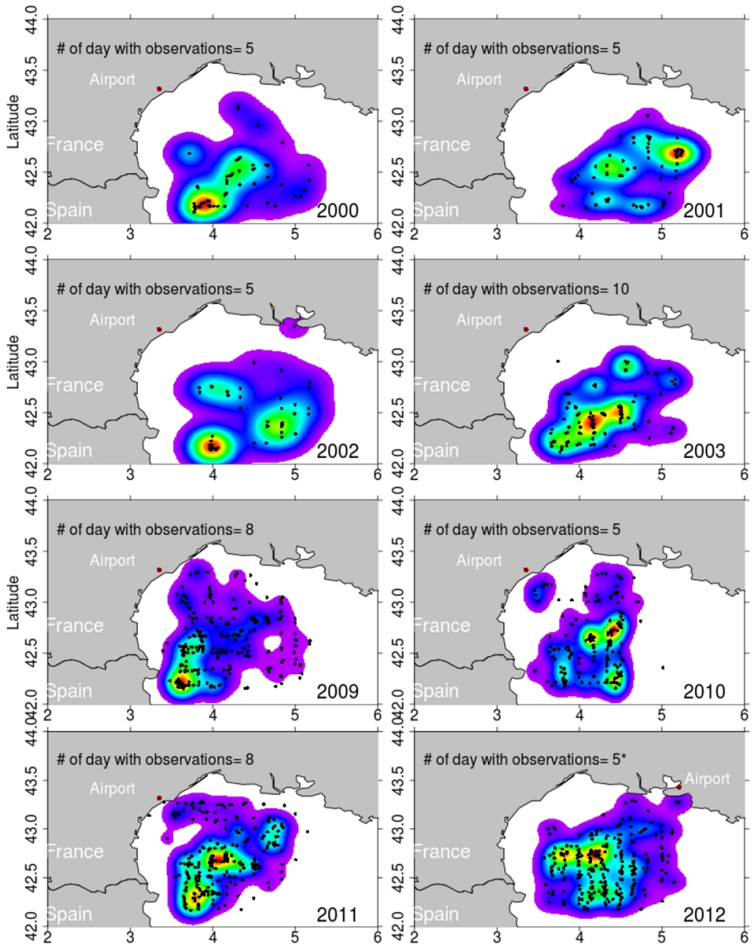

Figure 2. Spatial distribution of the detected ABFT schools (black dots) by aerial surveys in the Gulf of Lions from 2000 to 2012. A kernel filtering was applied to detect the area of main concentration of ABFT.

International Coordination

This survey is carried out over a key area, which is nonetheless rather restricted. To get a more representative index of abundance of the population, it would be necessary to extend the spatial coverage of the survey. Therefore, we propose to carry out aerial surveys on 3 other key feeding grounds of ABFT juveniles in the Mediterranean Sea, i.e. the Catalan Sea, the Ligurian Sea and the Adriatic Sea (Figure 1).

Survey effort and cost would similar in the fourth areas, i.e. a route of about 700 nm long to be surveyed 6 to 7 times from August to October of each year (Figure 1). All the data collected in a given year will be then analysed through distance sampling modelling (Buckland 2001) to compute a unique index of abundance of ABFT juveniles in the Mediterranean Sea.

Ifremer Sète would coordinate the project, train the different scientific teams and analyse the data. The protocol would be the same in the 4 areas and would be based on this of the Gulf of Lions (see above). The collected data will be included in the ICCAT databases and the outputs of this extended survey will be

presented each year the scientific committee of ICCAT and would be available for the ABFT stock assessment (as it is already done with the index of abundance derived from the Gulf of Lions' survey, see ICCAT 2012, 2013).

We strongly believe that such an independent fisheries index of abundance will greatly improve the quality/robustness of the ABFT stock assessment and to better estimate ABFT reference points (i.e. Fmsy and Bmsy).

Duplication of survey

There is no similar survey in the area of investigation (nor elsewhere on ABFT). Aerial surveys performed by the BFT ICCAT research program on adults over the Mediterranean spawning grounds in 2010, 2011 and 2013 have been stopped due to the lack of funding.

Tentative budget

Location of a small a twin-engine aircraft (type CESSNA push-pull) for 50 hours of flight (including pilot service, parking for the plane and insurances):
50,000€

Plane locations for the 4 areas:
200,000€

Personal costs for a scientific team for each survey:
40,000€ Personal coasts for the 4 areas:
160,000€

Additional personal costs for Ifremer (training, data storage and analysis)
20,000€

Travelling fees (including an annual coordination meeting of the 4 scientific teams) **20,000€**

Small material for the first year (GPS)
2,000€

Total (for each year):
402,000€

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13.5 Annex 5: Marine Strategy Framework Directive (MSFD) and MEDITS

Marine Strategy Framework Directive (MSFD) and MEDITS

During the MEDITS Coordination Meeting held in Rome last March 26-27, following the presentation of Angelique Jadaud, it was agreed to provide some basic information related to the Marine Directive Strategy in order to understand, in the different countries and GSAs, which kind of requests among those emerging demand from the MFSD could be addressed and thus envisaging the contribution that the MEDITS survey could provide on this issue.

The synthesis of the discussion is presented below, for each descriptor of the marine strategy, by GSA included in the MEDITS program.

List of boats (research/professional, size) used in each GSA

Country	GSA	If evolution of MEDITS
SPAIN	1, 2, 5 and 6	- From 1994 to 2013: **Research Vessel** "*Cornide de Saavedra*": Overall length: 66.7 m ; Maximal researchers on board: 18 - Since 2014: **Research Vessel** " *Miguel Oliver*": Overall length: 70 m length, Maximal researchers: 22
FRANCE	7, 8	**Research Vessel** "L'EUROPE" Overall length: 29 m ;Max. researchers: 7
ITALY	9	**Commercial boat** Overall length 24 m ;Max. researchers: 4 Work is partially performed on board; the benthos and few target species are sampled for the laboratory to perform specific analysis.
ITALY	10, 18	**Commercial boat** Overall length 33 m ;Max. researchers: 6 Most part of the work should be accomplished on board, to be in time with the deadlines of data delivery
ITALY	11	**Commercial boat** Overall length 29 m ;Max. researchers: 4 Work is partially performed on board, particularly for the target species, but the benthos and the remaining species are mostly sampled for laboratory to perform specific analysis.
MALTA	15	**Commercial fishing boat** Overall length 30 m ; Max. researchers: 3-5
ITALY	16	**Commercial boat** Overall length 32.2m ;Max. researchers: 4
ITALY	17 (northern Adriatic)	**Research Vessel "ANDREA 01PS"** Overall length 30 m ;Max. researchers: ??
CROATIA		**Research Vessel "**BIOS DVA" Overall length 36 m ;Max. researchers: 17
ITALY	19	**Commercial boat** (same vessel for GSAs 10, 18 and 19). Overall length 33 m ; Max. researchers: 6 Work is partially performed on board, particularly for the target species, but the benthos and the remaining species are mostly sampled for the laboratory.
GREECE	20, 22, 23	**Commercial boat** Overall length ??m ; Maximum researchers: 5 Work is partially performed on board, particularly for the target species, but the benthos and the remaining species are mostly sampled for the laboratory.

DESCRIPTOR 1 – BIODIVERSITY :Benthic habitats

Parameters to follow (requested for GSA7 and 8):

- **Abundance and biomasse (macrofaune, foraminifers)**
- **Organic substances in sediments, sediment profiles**
  - Sampling by « benne » (5 to 12 bennes by station) for macrofaune and sediment
  - Sampling by « core drill » for foraminiferes (few stations)

To do on board : Identifications and conservation of Macrofaune in formol

Country	GSA	Feasibility in current MEDITS configuration	If evolution of MEDITS
SPAIN	1, 2, 5 and 6	Abundance and biomass of all species are taken. Size sampling includes all fish and cephalopod species. In all other cases (e.g. crustacean sizes and biological sampling), the MEDITS protocol is followed.	Other sampling, such as planktonic diversity or sediments, should require additional time at sea. Previous experiences with additional sampling (e.g. beam trawl, dredges) in some specific areas demonstrate its feasibility if additional vessel time is afforded. In the framework of the project IRIS-SES (http://iris-ses.eu/), the feasibility of collecting samples with beam trawl during the night to improve the information for descriptor 1 will be tested in GSA01 and 05 during the 2014 MEDITS survey. It requires additional crew and additional scientific team, but not additional time at sea. Of course, it is possible to do in a "big vessel".
FRANCE	7, 8	Abundance and biomass of macro-benthos according to the MEDITS protocol are feasible	Evaluate the capacity of the boat to load bennes If possible, increase number of days at seaor specific benthic surveys to organize
ITALY	9	Abundance and biomass of macro-benthos according to the MEDITS protocol are feasible as well as photos of different identified items.	Other Samples by "benne" or of other materials like sediments should require ad hoc sampling programs.
ITALY	10, 18	Abundance and biomass according to the MEDITS protocol are feasible.	Samples by bennes or of other materials like sediments should require ad hoc sampling programs. Samples for genetic analyses can be carried out with an increase of the days at sea.
ITALY	11	Abundance and biomass according to the MEDITS protocol are feasible.	Samples by bennes or of other materials like sediments should require ad hoc sampling programs.
MALTA	15	-	-
ITALY	16	Data on abundance and biomass, including invertebrate of mega/macro benthos and non indigenous	Furthermore, it is possible to sample by grabs in fauna and sediments increasing the days at sea for sampling and additional resources for analyses.Samples for genetic

		species, are routinely collected.	analyses can be carried out with an increase of the days at sea for sampling and additional resources/project for analyses
ITALY	17 (northern Adriatic)	No	Make separate surveys
CROATIA		Sampling by bennes is not feasible in the present MEDITS configuration, except the abundance and biomass sampled according to the MEDITS protocol.	
ITALY	19	Only abundance and biomass according to the MEDITS protocol are feasible as well as photos of different identified items.	Samples by bennes of materials like sediments should require ad hoc sampling programs.
GREECE	20, 22, 23	No	In order to undertake additional tasks for the needs of the MSFD, another survey, separated from the MEDITS routine, with extra budget and personnel is needed

DESCRIPTOR 1 - BIODIVERSITY : Pelagic habitats

Parameters to follow (requested for GSA7 and 8):Planktonic diversity

- **Ferry box (physical and chemical parameters)**
- **CTD**
- **Niskinbottles**
- **Fluorimeter**
- **Flowcan, zooscan…**

Country	GSA	Feasibility in current MEDITS configuration	If evolution of MEDITS
SPAIN	1, 2, 5 and 6		Other sampling, such as planktonic diversity or sediments, should require additional time at sea. Previous experiences with additional sampling (e.g. beam trawl, dredges) in some specific areas demonstrate its feasibility if additional vessel time is afforded. In the framework of the project IRIS-SES (http://iris-ses.eu/), the feasibility of collecting samples with beam trawl during the night to improve the information for descriptor 1 will be tested in GSA01 and 05 during the 2014 MEDITS survey. It requires additional crew and additional scientific team, but not additional time at sea. Of course, it is possible to do in a "big vessel".
FRANCE	7, 8	OK for Ferry box and fluorimeter, if very little intervention of MEDITS scientists	CTD if the number of days increases
ITALY	9	No	Other samplings require ad hoc sampling programs
ITALY	10, 18	No	Other samplings require ad hoc sampling programs
ITALY	11	No	Other samplings require ad hoc sampling programs
MALTA	15	Low probability	MEDITS could potentially contribute to collection of water samples from specific offshore locations to address water column habitats. Such monitoring would require specific sampling trips to be combined with monitoring for nutrients and contaminants. Should the MEDITS vessel be used, additional survey days would be required.
ITALY	17	No	Make separate surveys

CROATIA	(northern Adriatic)	No	Plankton diversity could be followed by increasing number of days.
ITALY	19	Only abundance and biomass according to the MEDITS protocol are feasible as well as photos of different identified items.	Samples by bennes of materials like sediments should require *ad hoc* sampling programs.
GREECE	20, 22, 23	No	In order to undertake additional tasks for the needs of the MSFD, another survey, separated from the MEDITS routine, with extra budget and personnel is needed

DESCRIPTOR 1 – BIODIVERSITY : Seabirds and marine mammals

Parameters to follow (requested for GSA7 and 8):

- **Distribution/Occurrence/Abundance**
- **2 scientists looking for Seabirds and marine mammals**

Country	GSA	Feasibility in current MEDITS configuration	If evolution of MEDITS
SPAIN	1, 2, 5 and 6	An onboard observer dedicated exclusively to watching seabirds and marine mammals is available	
FRANCE	7, 8	Not possible : not enough place for 2 scientists dedicated to observation	Not possible
ITALY	9	Due to the low number of researchers on board, cannot be carried out.	
ITALY	10, 18	Surveys dedicated to the observation of birds and marine mammals cannot be carried out, only accidental catches can be recorded and treated (as well as for reptiles).	
ITALY	11	Surveys dedicated to the observation of birds and marine mammals cannot be carried out	
MALTA	15	MEDITS vessels could potentially be used as 'ships of opportunities' hosting observers who could contribute to monitoring of mobile species (such as turtles, cetaceans etc..). However, this requires an extra person onboard, for which cabin space onboard might be limited with the vessel currently being used in Malta for the survey.	
ITALY	16	Surveys dedicated to the observation of birds and marine mammals cannot be carried out, only accidental catches can be recorded and treated.	
ITALY	17 (northern Adriatic)	No	Make separate surveys
CROATIA		No	Observation of birds and marine mammals cannot be carried out without extra

			personnel. Accidental catch of marine turtles are regularly observed.
ITALY	19	Surveys dedicated to the observation of birds and marine mammals cannot be carried out	
GREECE	20, 22, 23	No	In order to undertake additional tasks for the needs of the MSFD, another survey, separated from the MEDITS routine, with extra budget and personnel is needed

DESCRIPTOR 2 – T2 : Non indigeneous species

Country	GSA	Feasibility in current MEDITS configuration	If evolution of MEDITS
SPAIN	1, 2, 5 and 6	Since all species are recorded, information on non-indigenous species could be available.	-
FRANCE	7, 8	Since all species are recorded, information on non-indigenous species could be available.	-
ITALY	9,	Due to the low number of researchers on board, cannot be carried out	-
ITALY	10, 18	Only accidental catches can be recorded and treated	-
ITALY	11	Surveys dedicated to non indigenous species cannot be carried out	-
MALTA	15	Any invasive species could be recorded during the survey (MEDITS already collects this as abundance and biomass for all species caught are recorded, a list of those species to be considered as invasive would need to be decided upon and provided)	-
ITALY	16	Only accidental catches are recorded and treated consideringnon indigenous species	-
ITALY	17 (northern Adriatic)	No	Make separate surveys
ITALY	19	Surveys dedicated to the observation of birds and marine mammals cannot be carried out	
GREECE	20, 22, 23	No	In order to undertake additional tasks for the needs of the MSFD, another survey, separated from the MEDITS routine, with extra budget and personnel is needed

DESCRIPTOR 3 – T3 : Population of commercial fish

Most of the data required for this descriptor are already collected through MEDITS

DESCRIPTOR 4 – T4 : Elements of marine food webs

Parameters to follow (requested for GSA7 and 8):

- **Energetic value and isotopic signatures of stomacal contents**
- **Calorimetry: 12 adultindividuals /species ; 12 species**
- **Isotopy: 6 to 9 individuals/ length class ; 8 species**
- **Zoobenthos: 5 to 9 adult individuals /species; 12 species**
- **Analysis of stomacal contents (200 stomachs/species ; 12 species)**
- **All the samples are frozen**

Country	GSA	Feasibility in current MEDITS configuration	If evolution of MEDITS
SPAIN	1, 2, 5 and 6	From 2007 on, stomach contents analyses of some representative species of fishes has been carried out in GSA05. This sampling was also incorporated to GSAs 1, 2 and 6 in most recent years	In the framework of the project IRIS-SES (http://iris-ses.eu/), the feasibility of collecting samples for isotope analyses to investigate the demersal trophic webs will be tested in GSA01, 05 and 06 during the 2014 MEDITS survey. In our opinion, it is one of the additional sampling that MEDITS could do in all GSAs, because it doesn't require a "big vessel".
FRANCE	7, 8	OK, with the limit of the time left after the application of MEDITS protocol Depend on the capacity of freezer	Increase number of days at sea, to apply the protocol in totality
ITALY	9	No	Samples for different organisms in the trophic chain for isotopes determination can be carried out with an increase of days at sea. Samples and analysis of stomach contents would require additional resources and an additional project.
ITALY	10, 18	No	Samples for different organisms in the trophic chain for isotopes determination can be carried out with an increase of days at sea. Samples and analysis of stomach contents would require additional resources and an additional project.

ITALY	11	No	Samples for different organisms in the trophic chain for isotopes determination can be carried out with an increase of days at sea. Samples and analysis of stomach contents would require additional resources and an additional project.
MALTA	15	MEDITS could provide the necessary frozen samples if these are caught in abundance. Processing should then be performed by the relevant entity.	
ITALY	16	No	Samples for different organisms in the trophic chain for isotopes determination can be carried out with an increase of days at sea for sampling and with additional resources/project for analyses. Studies on diet requires increasing of day at sea for sampling and additional resources/project for analyses.
ITALY	17 (northern Adriatic)	No	Make separate surveys
CROATIA		No	Trophic chain parameters could be followed by increasing number of days at the sea and additional personnel taking in consideration capacity of deep freezers.
ITALY	19	No	Samples for different organisms in the trophic chain for isotopes determination can be carried out with an increase of days at sea. Samples and analysis of stomach contents would require additional resources and an additional project.
GREECE	20, 22, 23	No	In order to undertake additional tasks for the needs of the MSFD, another survey, separated from the MEDITS routine, with extra budget and personnel is needed

DESCRIPTOR 5 – T5 : Eutrophication

Parameters to follow (requested for GSA7 and 8):

- **Hydrology, Phytoplankton, Niskin bottles, Plankton nets, Ferrybox**

Country	GSA	Feasibility in current MEDITS configuration	If evolution of MEDITS
SPAIN	1, 2, 5 and 6	no	To take samples for eutrophication studies (hydrology, phytoplankton) in the current MEDITS program would surely demand additional time, either working at night or increasing the number of days, and maybe also including personnel expertise on these sampling.
FRANCE	7, 8	Ok for automatic measures (Ferrybox) Not possible for in situ measures (Niskin bottles and plankton nets). Other specific surveys	
ITALY	9	no	
ITALY	10, 18	no	
ITALY	11	no	
MALTA	15	Low probability	MEDITS could potentially contribute to collection of water samples from specific offshore locations to address nutrients. Such monitoring would require specific sampling trips to be combined with monitoring for nutrients and contaminants. Should the MEDITS vessel be used, additional survey days would be required.
ITALY	16		It is not possible to collect information on eutrophication in the current MEDITS configuration.
ITALY	17 (northern Adriatic)	No	Make separate surveys
CROATIA		No	Eutrophication parameters could be followed by increasing number of days at the sea and additional personnel.
ITALY	19	No	
GREECE	20, 22, 23	No	In order to undertake additional tasks for the needs of the MSFD, another survey, separated from the MEDITS routine, with extra budget and personnel is needed

DESCRIPTOR 8 – T8: Contaminants

Parameters to follow (requested for GSA7 and 8):

- **Chemical contamination of species**
- **Contaminants selected because of their toxicity, persistence, biological effects…**
  - 11 species (M. merluccius, Lophius sp., S. canicula, S. pilchardius…
  - 3 samples/species in minimum 3 different stations
  - Around 12 individuals/station (equivalent sizes, 2 ou 3 years)
  - All the samples are frozen

Country	GSA	Feasibility in current MEDITS configuration	If evolution of MEDITS
SPAIN	1, 2, 5 and 6	The collection of fish and shellfish for the analysis of contaminants seems feasible in the framework of the Spanish MEDITS surveys, but this will obviously depend on the sampling protocol and, in the case of descriptor 8, the species used as environmental indicators.	If this implies an additional sampling effort, it would be necessary to increase the time at sea.
FRANCE	7, 8	OK, with the limit of the time left after the application of MEDITS protocol Depend on the capacity of freezer	Increase number of days at sea, to apply the protocol in totality
ITALY	9	No	Samples of fish and shellfish for the analysis of contaminants can be carried out increasing the number of days at sea.
ITALY	10, 18	No	Samples of fish and shellfish for the analysis of contaminants can be carried out increasing the number of days at sea.
ITALY	11	No	Samples of fish and shellfish for the analysis of contaminants can be carried out increasing the number of days at sea.
MALTA	15	No	MEDITS could potentially contribute to collection of water samples from specific offshore locations to address contaminants. Such monitoring would require specific sampling trips to be combined with monitoring for nutrients and contaminants. Should the MEDITS vessel be used, additional survey days would be required.
ITALY	16	No	Samples of fish and shellfish for contaminant analyses can be carried out increasing the number of days at sea.
ITALY	17	No	Make separate surveys

CROATIA	(northern Adriatic)	No	Samples of fish and shellfish for the analysis of contaminants can be carried out by increasing the number of days at sea and additional personnel taking in consideration capacity of deep freezers.
ITALY	19	No	Samples of fish and shellfish for the analysis of contaminants can be carried out increasing the number of days at sea.
GREECE	20, 22, 23	No	In order to undertake additional tasks for the needs of the MSFD, another survey, separated from the MEDITS routine, with extra budget and personnel is needed

DESCRIPTOR 9 – T9 : Contaminants in fish and seafood for human consumption

Parameters to follow (requested for GSA7 and 8):

- **Chemical contamination of fishery products (fish, molluscs, crustaceans)**
  - All dangerous chemical substances, on fish (10), molluscs (2)
    - heavy metals: Cd, Pb, Hg
    - Dioxins… (PCDD-PCDF)
    - PCBs
- **All the samples are frozen**

Country	GSA	Feasibility in current MEDITS configuration	If evolution of MEDITS
SPAIN	1, 2, 5 and 6	In any case, we believe that some commercial species could be sampled for descriptor 9, without additional time at sea. In the framework of the project IRIS-SES (http://iris-ses.eu/), the feasibility of collecting these samples will be tested in GSA06 during the 2014 MEDITS survey. In our opinion, it is one of the additional sampling that MEDITS could do in all GSAs, because it doesn't require a "big vessel".	If this implies an additional sampling effort, it would be necessary to increase the time at sea.
FRANCE	7, 8	OK, with the limit of the time left after the application of MEDITS protocol Depend on the capacity of freezer	Increase number of days at sea, to apply the protocol in totality
ITALY	9	No	Samples of fish and shellfish for the analysis of contaminants can be carried out increasing the number of days at sea.
ITALY	10, 18	No	Samples of fish and shellfish for the analysis of contaminants can be carried out increasing the number of days at sea.
ITALY	11	No	Samples of fish and shellfish for the analysis of contaminants can be carried out increasing the number of days at sea.
MALTA	15	MEDITS could provide the necessary frozen samples if these are caught in abundance. Processing should then be performed by	

		the relevant entity.	
ITALY	16	No	Samples of fish and shellfish for contaminant analyses can be carried out increasing the number of days at sea.
ITALY	17 (northern Adriatic)	No	Make separate surveys
CROATIA		No	Samples of fish and shellfish for the analysis of contaminants can be carried out by increasing the number of days at sea and additional personnel taking in consideration capacity of deep freezers.
ITALY	19	No	Samples of fish and shellfish for the analysis of contaminants can be carried out increasing the number of days at sea.
GREECE	20, 22, 23	No	In order to undertake additional tasks for the needs of the MSFD, another survey, separated from the MEDITS routine, with extra budget and personnel is needed

DESCRIPTOR 10 – T10 : T10.1.2 : Macro-Litters on the bottom

Country	GSA	Feasibility in current MEDITS configuration	If evolution of MEDITS
SPAIN	1, 2, 5 and 6	Information about litters on the bottom has been routinely taken in all Spanish GSAs since the beginning of the MEDITS program in 1994. It has been incorporated to MEDITS protocol in 2013.	
FRANCE	7, 8	OK, 2013 MEDITS protocol	
ITALY	9	was carried out at pilot level by the MEDITS in 2013.	
ITALY	10, 18	The routine implementation which was carried out at pilot level by the MEDITS units requires, at least for the Italian GSAs, to increase the number of days at sea.	The routine implementation which was carried out at pilot level by the MEDITS units requires, at least for the Italian GSAs, to increase the number of days at sea.
ITALY	11	The routine implementation which was carried out at pilot level by the MEDITS units requires, at least for the Italian GSAs, to increase the number of days at sea.	The routine implementation of descriptor 10 (T10.1.2. Macro-Litters on the bottom) which was carried out at pilot level by the MEDITS units requires, at least for the Italian GSAs, to increase the number of days at sea.
MALTA	15	Data on this could be collected, either through the availability of an extra scientist on board, or through the provision of photos to the relevant entity.	
ITALY	16		The routine implementation of descriptor 10 (T10.1.2. Macro-Litters on the bottom), which was carried out at pilot level in 2013 MEDITS survey in GSA 16 requires an increase of the number of days at sea.
ITALY	17 (northern Adriatic)	No	Make separate surveys
CROATIA		Macro-Litters on the bottom was observed during MEDITS survey according to MEDITS protocol.	Detailed analysis requires additional personnel and numbers of days.
ITALY	19		The routine implementation of descriptor 10 (T10.1.2. Macro-Litters on the bottom) which was carried out at pilot level by the MEDITS units requires, at least for the Italian GSAs, to increase the number of days at sea.
GREECE	20, 22, 23	No	In order to undertake additional tasks for the needs of the MSFD, another survey, separated from the MEDITS routine, with extra budget and personnel is needed

DESCRIPTOR 10 – T10 : T10.1.3 : Micro-plastics at surface

Country	GSA	Feasibility in current MEDITS configuration	If evolution of MEDITS
SPAIN	1, 2, 5 and 6	-	-
FRANCE	7, 8	No	Dedicated surveys have been accepted (followed by Galgani F.)
ITALY	9	Not possible to make samples for micro-plastics at surface in the current MEDITS configuration.	
ITALY	10, 18	-	-
ITALY	11	-	-
MALTA	15	-	-
ITALY	16	-	-
ITALY	17 (northern Adriatic)	No	Make separate surveys
CROATIA		No	Observation of micro- plastic at surface is not feasible in the present MEDITS configuration.
ITALY	19	-	-
GREECE	20, 22, 23	No	In order to undertake additional tasks for the needs of the MSFD, another survey, separated from the MEDITS routine, with extra budget and personnel is needed

DESCRIPTOR 11:

Parameters to follow (requested for GSA7 and 8):

- **Maritime traffic (record the AIS situation)**
- **Sound (anchorebuoys)**

Country	GSA	Feasibility in current MEDITS configuration	If evolution of MEDITS
SPAIN	1, 2, 5 and 6		Determining the sound at sea would require specialized equipments and personnel. The feasibility of this sampling in the framework of MEDITS will obviously depend on those requirements, since maybe ad-hoc samplings or additional time at sea would be required.
FRANCE	7, 8	OK, to collect AIS if the oceanographic company validate it	The estimate of the sound at sea requires dedicated surveys.
ITALY	9	No	The estimate of maritime traffic and sound at sea requires dedicated surveys.
ITALY	10, 18	No	The estimate of the sound at sea requires dedicated surveys
ITALY	11	No	The estimate of maritime traffic and sound at sea requires dedicated surveys.
MALTA	15	-	-
ITALY	16	No	The estimate of the sound at sea requires dedicated surveys.
ITALY	17 (northern Adriatic)	No	Make separate surveys
CROATIA		No	The estimate of the sound at sea requires dedicated surveys.
ITALY	19	-	The estimate of the sound at sea requires dedicated surveys.
GREECE	20, 22, 23	No	In order to undertake additional tasks for the needs of the MSFD, another survey, separated from the MEDITS routine, with extra budget and personnel is needed

Proposals by GSA for answering to the main descriptors (increase number of days, work at night, other project/survey...).

GSAs 1, 2, 5, 6

Currently, the Spanish MEDITS surveys are overloaded with many activities, not only those committed under the MEDITS protocol, but other additional sampling that have been undertaken whenever time was available (e.g. stomach contents, beam trawl sampling, drags, specific studies). Consequently, there is no room for a substantial increase in sampling activities unless additional vessel time is afforded. Work at night would only be a solution for some specific sampling and this would entail having two scientific groups which seem unfeasible owing to the space limitation onboard.

GSAs 7, 8

Due to the limited capacity of the French research vessel involved in MEDITS survey in term of number of embarked scientists, only a fully application of the MEDITS protocol can be guaranteed, including data collection on macro litters on the bottom for descriptor 10. . If free time allows it, collection of frozen samples for descriptors 1, 4, 8, 9. Automatic data collection on marine environment could be planned when relevant equipments will be available on the vessel.

GSA 9

Taking into account the current MEDITS survey configuration as well as the high number of activities already performed inside, a solution could be to plan additional days at sea. This could allow obtaining samples for Descriptor 1 - T1-HB, Descriptor 4 – T4, Descriptor 8 – T8, Descriptor 9 – T9, Descriptor 10 - T10.1.2.

GSAs 10, 18

The better solution, given the current MEDITS survey configuration, is to select the activities compatible with it and quoting the additional days at sea required for the following activities: continuing the collection of data on Marine Litter, collecting and treating additional samples of fish and shellfish.

GSA 11

Taking into account the current MEDITS survey configuration as well as the high number of activities already performed inside, the better solution could be to plan additional days at sea for the following activities: maintaining the collection of data on Marine Litter also detailing their possible source, gathering and treating additional samples of fish also for the analysis of stomach contents and contaminants.

GSA 15

Malta's position is basically that minor changes to current sampling procedures (e.g. Medits) may enable the provision of substantial data, particularly on by-catch of non-target and protected species. Anything more than that will put a strain on resources for MS' with small DCF budgets like Malta. Malta also requested DG Mare to specify more on the descriptors we may be collecting data for.
All in all, collection of the above data, excluding water sampling should not lead to any increase in the number of days out at sea. The vessel currently used for MEDITS in GSA 15

(a commercial vessel contracted through tendering procedures), can only accommodate another scientist onboard for other work apart from that required by the MEDITS protocol Version 7. Should more scientists be required to embark during the MEDITS survey, would lead to the requirement of a bigger vessel, which will surely prove very challenging for Malta, whose trawling vessels are generally smaller than the one currently used (apart from increased costs).

GSA 16

The better solution, given the current MEDITS survey configuration, is to select the activities compatible with it and quoting the additional days at sea required for the following activities: continuing the collection of data on Marine Litter, collecting and treating additional samples of fish and shellfish. If work is not limited to sampling at sea but also to analyses of collected samples additional resource should be required for lab activities.

GSA 17: Northern Adriatic

ITALY
Specific surveys have to be planned for Marine Strategy. MEDITS is already very long and samplings are added, time will increase with maybe some differences occurring between biological parameters collected along the time series. Moreover, MEDITS is financed by the European and national fishing fund (DGMARE) and the marine strategy is dealing with other European and national administrations. Making separate surveys would be then more appropriate. A kind of possible collaboration could be to supply samples collected with MEDITS trawl (fish, benthos,…) to laboratory of analysis. Moreover the collection of more samples on board could require a researcher in addition.

CROATIA
It should be emphasized that during the MEDITS survey most of the work is done on aboard due to deadlines related to data reporting. In order to fulfil all the requirements given in the current MEDITS protocol 8 scientists was embarked on aboard occupying all available working places in laboratories and working deck, leaving no extra place for additional tasks. Any additional work could be done by increasing number of skilled personnel, working days at the sea or prolonging working hours per day. To implement any of these proposals specific limitations should be considered, such as: availability of vessel in given period, safety rules in marine traffic (additional crew members), extra financial cost, etc.

GSA 19

Taking into account the current MEDITS survey configuration as well as the high number of activities already performed inside, it's necessary to plan additional days at sea for the following activities: maintaining the collection of data on Marine Litter also detailing their possible source, gathering and treating additional samples of fish also for the analysis of stomach contents.

GSAs 20, 22, 23

Vessels do not have additional equipment (oceanographic winches, lab, formaldehyde store or fridge availability). This makes impossible to take additional scientific personnel on board, to use specific scientific instruments or to keep samples during long distance travelling. The MEDITS disciplines, with the recent additional tasks (litter, otoliths, individual weights, more

species in G1 list) are a full time occupation for our staff and additional work would cause problems to the MEDITS objectives.
In order to undertake additional tasks for the needs of the MSFD, another survey, separated from the MEDITS routine, with extra budget and personnel is needed, as quite various additional tasks are requested.

13.6 Annex 6: Terms of Reference of the PGCCDBS 2014

The Planning Group on Commercial Catches, Discards and Biological Sampling [PGCCDBS] chaired by Mike Armstrong, UK, and Gráinne Ní Chonchúir, Ireland, will meet in Horta (Azores), Portugal from the 17^{th}–21^{st} of February 2014.

a) Review last year's PGCCDBS recommendations and responsive actions taken.

b) Review the outcomes of workshops, study groups, exchange schemes and other intersession work related to sampling design, collection, interpretation and quality assurance of data on stock-related biological variables (age and growth; maturity and fecundity; sex ratio).

c) Review the outcomes of workshops, study groups and other intersession work related to sampling design, collection, interpretation and quality assurance of data on fleet/métier related variables (discards estimates and length/age compositions of landings and discards).

d) Respond to data issues reported to PGCCDBS by ICES Expert Groups, Assessment Working Groups (including PGCCDBS-AWG contact persons) and RCMs by providing advice on suitable actions and responsibilities for those actions.

e) Evaluate the future structure of this EG considering the establishment of two new experts groups dealing with sound statistical catch sampling (WGCATCH) and quality assurance of biological parameters (WGBIOP).

PGCCDBS will report by 28^{th} March 2014 for the attention of ACOM. Note that PGCCDBS and PGMED no longer meet in parallel.

The European Commission sent a query to PGCCDBS, at short notice, to provide responses on two additional topics:

- to prepare a real example of how the change from metier-based 'quota' sampling to stock-based sampling at a regional level will lead to reductions in the number of samples needed
- to review an extract regarding data quality issues as provided to the stake-holder meeting on revision of the Data Collection Framework following STECF EWG 13-18 in 2014.

13.7 Annex 7: List of workshops proposed by PGCCDBS 2014

The following workshops have been selected from the list presented in the 2014 PGCCDBS report.

13.7.1 For 2014

Otolith exchange

- Mackerel (small scale), Coordinator: Jens Ulleweit, Germany
- Trachurus trachurus and Trachurus mediterraneus, Coordinator: Pierluigi Carbonara, Italy, and Kélig Mahe France
- Engraulis encrasicolus, Coordinator: Andres Uriarte, Spain, Begoña Villamor, Spain

Workshops

- WKSABCAL, Workshop on statistical analysis of biological calibration studies. Lisbon, 13-17 October. Chairs Lotte Worsøe Clausen and Ernesto Jardim.

13.7.2 For 2015

Otolith exchange

- Mullus barbatus and Mullus surmuletus, Coordinator: Francesc Ordines, Spain, and Kélig Mahé, France

Workshops

- WKARCM, Workshop on Age reading of Chub Mackerel (Scomber Colias). Lisbon, 2-6 November. Co-Chairs: Andreia Silva, Portugal, and Maria Rosario Navarro, Spain
- WKARHOM2, Workshop on Age reading of horse mackerel, Mediterranean horse mackerel and blue jack mackerel (Trachurus trachurus, T. mediterreaneus and T. Picturatus). Sta. Cruz de Tenerife, 26-30 October. Co-Chairs: Pierluigi Carbonara, Italy, and Kélig Mahé, France.
- WKMSMAC2, Workshop on the maturity staging of mackerel and horse mackerel. Lisbon, 28 September – 2 October. Co-chairs: Cindy van Damme, The Netherlands and Pierluigi Carbonara, Italy.

13.7.3 For 2016

Otolith exchange - Age calibration

- Micromesistius poutassou

13.8 Annex 8: Links between by-catch data collection and MSFD

Links between by-catch data collection and MSFD descriptors on biodiversity (source: STECF EWG 14-02 report)

Level	Needs the DCF should address	Problems identified	Objectives of revision	Options for addressing problem	Proposed solution	Cost implication	GFCM-DCRF	Overlap with MSFD
Architecture of the DCF	Monitoring of Non-Retained By-catch	Currently not in DCF	live up to treaties; Good environmental Status; streamlining regulations	To include it in the new regulation	Identification of adequate fisheries and/or species at RCG's	Extra effort hence cost will vary according to needs identified		
Guidelines								
Non-retained by-catch sampling	Monitoring of Incidental by-catch	where recorded: no entry of data in the database	Identified end user must receive the data	a. Incorporate new fields in National database and adjust data processing, incl. data validation b. Upload directly to Regional Database;	a. Incorporate new fields in National database and adjust data processing, incl. data validation b. Synchronize with RDB	low	in agreement	Link to descriptor 1,4
		no sampling on "haul level"; subsample (basket) is too small	Level of data recording needs to be in line with end user needs	In protocol clear instruction to sample at haul level	indicate %coverage on haul level (ref WGBYC2014)	training; develop guides; updating manuals;	in agreement	
		Fishermen do not like to cooperate, because species are protected and/or because of negative publicity	To improve data quality	Involve fishermen in the data collection process (Fisheries Science Partnerships; FSP); negative incentives (penalties); look at refusal rates	Involve fishermen in the data collection-process (Fisheries Science Partnerships; FSP)	cost implications may be high, depending on situation;	in agreement	

Level	Needs the DCF should address	Problems identified	Objectives of revision	Options for addressing problem	Proposed solution	Cost implication	GFCM-DCRF	Overlap with MSFD
	Monitoring of small-sized bulk by-catch - non-commercial***	no sampling on "haul level"; subsample (basket) is too small	Level of data recording needs to be in line with end user needs	In protocol clear instruction to sample at adequate level (ref. Design base sampling)	Business to be taken up by the RCGs .	Costs may be very high, because dedicated sampling may be required	not in agreement ; problems similar as other regions	Link to descriptor 1,4,6
		where recorded: no entry of data in the database	Identified end user must receive the data	a. Incorporate new fields in National database and adjust data processing, incl. data validation b. Upload directly to Regional Database;	a. Incorporate new fields in National database and adjust data processing, incl. data validation b. Synchronize with RDB	low	not in agreement ; problems similar as other regions	Link to descriptor 1,4,6
	Monitoring of small-sized bulk by-catch - commercial	Not considered to be a problem. It is covered by the DCF and linked to landing obligation.					in agreement	Link to descriptor1,3,4,6

List of Tables