Report of the 6th Meeting of the

Mediterranean Planning Group for Methodological Development

(PGMed)

Rome, 30th January-5th February 2012

Report

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Background

During the 2006 Regional Coordination Meeting for the Mediterranean area (Malta, 26th -28th 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 to 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 March 2007).

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 (PGCCBDS) should be promoted and maintained.

The link between the two planning groups (PGs) will be maintained through:
(i) the inclusion of each group's report as an annex of the other;
(ii) the organization of parallel meetings;
(iii) the organization of joint plenary for generic issues;
(iv) the organization of joint workshops.

Introduction

The 6th Meeting of the Mediterranean Planning Group for Methodological Development (PGMed) was arranged in parallel with the ICES Planning Group of Commercial Catches, Discards and Biological Sampling (ICES PGCCDBS) in Roma 30th January-5th February 2012. The conduction of parallel meetings between the two groups ensured the link between them.

The 2012 PGMed was attended by 8 Mediterranean and Black Sea Member States (Spain, France, Italy, Malta, Greece, Cyprus, Bulgaria and Romania). Only Slovenia was not represented at the meeting. The list of PGMed participants is provided in Annex I and the list of PGCCDBS participants is provided in Annex II.

The Group revised and approved the Terms of Reference (Annex III; see Annex IV for PGCCDBS Terms of Reference) proposed during the 2011 RCM Mediterranean & Black Sea (Report of the RCMMed &BS 2011).

The agenda was planned in order to have a common plenary of both PGMed and PGCCDBS groups during the first day and part of the second, and separate sessions dealing with the specific Mediterranean ToRs in the remaining days. On Friday, a new common plenary of both PGMed and PGCCDBS was carried out. A summary of the issues addressed during the common session, which are also relevant to the Mediterranean, are reported in the Annex V, as listed below. Further details can be found in the PGCCDBS report.

- Workshop on Age Reading of European Atlantic Sardine [WKARAS]
- White anglerfish illicia and otoliths exchange
- Blue whiting otoliths exchange
- Hake otoliths exchange
- Red mullet and stripped mullet otoliths and scales exchange
- European Age Readers Forum (EARF) and WebGR updates
- Updated age readers' contact list
- Perspectives for the new EU multi-annual programme 2014–2020 in relation to stock related biological variables
- Review key outcomes of the Workshop on practical implementation of statistical sound catch sampling programmes (WKPICS1)
- Review key outcomes of the Study Group on Practical Implementation of Discard Sampling Plans (SGPIDS)

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

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

PGMed 2012 re-performed this exercise and came up with a regional ranking system for the Mediterranean Sea and 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.

For the Mediterranean, landings, effort and value data were available from Cyprus, Italy, Spain, Malta and Slovenia for both 2009 and 2010, while for France, data was available only for landings and effort (no value data). For Greece, 2008 data was used (landings and effort data only; no value data). The ranking system was performed at the regional level using as reference the average values of the years 2009 and 2010 (for Greece 2008 data was used). The metier cells were first ranked according to their share in the total commercial landings (tons) (Table 1.1). The MISC metiers were ignored since these metiers are different for the different countries and are of importance at the national level, not at the regional level.

Thereafter the shares were cumulated, starting with the largest, until a cut-off level of 90% was reached. Then, the metier cells were ranked according to their share in the total effort (days at sea) (Table 1.2), and the shares were once more cumulated, starting with the largest, until a cut-off level of 90% was reached.

A trial ranking system was also performed using value data (Table 1.3). It must be noted however that this ranking system did not include data from Greece and France as value data was not made available.

The results of the ranking system using landings and effort data only show that on a Regional (Mediterranean) level, 10 metiers were selected (Table 1.4). Metiers which did not belong to the top 90% in terms of total effort, or landing were removed from the final table.

Table 1.1. Results of the ranking system at a cut-off level of 90%, based on total landings (tons) for the Mediterranean region and segmented according to Appendix VII of 2010/93/EU.

Level 4	Level 5	Level 6	Total Landings (t)	Landings Contribution (%)
Purse seine [PS]	Small pelagic fish	>=14	119623	26.0
Bottom otter trawl [OTB]	Demersal species	>=40	118049	25.7
Trammel net [GTR]	Demersal species	>=16	53890	11.7
Pelagic pair trawl [PTM]	Small pelagic fish	>=20	42295	9.2
Set gillnet [GNS]	Demersal species	>=16	24644	5.4
Boat dredge [DRB]	Molluscs		21172	4.6
Set longlines [LLS]	Demersal fish	(a)	15265	3.3
Bottom otter trawl [OTB]	Mixed demersal species and deep water species	>=40	14629	3.2
Drifting longlines [LLD]	Large pelagic fish	(a)	12561	2.7

Table 1.2. Results of the ranking system at a cut-off level of 90%, based on Effort (days at sea) for the Mediterranean region and segmented according to Appendix VII of 2010/93/EU.

Level 4	Level 5	Level 6	Total Effort (days at sea)	Effort contribution (%)
Trammel net [GTR]	Demersal species	>=16	2029598	43.0
Set gillnet [GNS]	Demersal species	>=16	909882	19.3
Set longlines [LLS]	Demersal fish	(a)	516436	11.0
Bottom otter trawl [OTB]	Demersal species	>=40	467363	9.9
Pots and traps [FPO]	Demersal species	(a)	160885	3.4
Purse seine [PS]	Small pelagic fish	>=14	97933	2.1
Bottom otter trawl [OTB]	Mixed demersal species and deep water species	>=40	78197	1.7

Table 1.3. Results of the ranking system at a cut-off level of 90%, based on Value (€) for the Mediterranean region and segmented according to Appendix VII of 2010/93/EU.

Level 4	Level 5	Level 6	Total Value (€)	Value contribution (%)
Bottom otter trawl [OTB]	Demersal species	>=40	508618840	37.9
Bottom otter trawl [OTB]	Mixed demersal species and deep water species	>=40	115189165	8.6
Trammel net [GTR]	Demersal species	>=16	108783742	8.1
Purse seine [PS]	Small pelagic fish	>=14	106775144	7.9
Set gillnet [GNS]	Demersal species	>=16	98883612	7.4
Drifting longlines [LLD]	Large pelagic fish	(a)	84656090	6.3
Bottom otter trawl [OTB]	Deep water species	>=40	69599730	5.2
Boat dredge [DRB]	Molluscs		64985104	4.8
Pelagic pair trawl [PTM]	Small pelagic fish	>=20	52399607	3.9

The results obtained were also compared with the ranking system conducted during PGMed 2011 (Table 1.4).

Table 1.4. Summary showing mètiers selected by the ranking systems based on landings and effort in 2009-10 for the Mediterranean region and segmented according to Appendix VII of EC 2010/93/EU and comparison with the 2008 – 2009 ranking results. E: Total effort as days at sea; L: landings (tons). ,X: if the metier has been selected by the ranking system.

Level 4	Level 5	Level 6	L 2008-2009	L 2009-2010	E 2008-2009	E 2009-2010
Purse seine [PS]	Small pelagic fish	>=14	X	X	X	X
Bottom otter trawl [OTB]	Demersal species	>=40	X	X	X	X
Trammel net [GTR]	Demersal species	>=16	X	X	X	X
Pelagic pair trawl [PTM]	Small pelagic fish	>=20	X	X		
Set gillnet [GNS]	Demersal species	>=16	X	X	X	X
Boat dredge [DRB]	Molluscs		X	X	X	
Set longlines [LLS]	Demersal fish	(a)	X	X	X	X
Bottom otter trawl [OTB]	Mixed demersal species and deep water species	>=40	X	X	X	X
Drifting longlines [LLD]	Large pelagic fish	(a)	X	X		
Pots and traps	Demersal species	(a)			X	X

From the Table 1.4 it is apparent that exactly the same metiers that were selected through the ranking system during PGMed 2011 exercise were once again selected during this present exercise. Similar results were also obtained even in more previous years. Following this observation, the group agreed that this ranking system should from now onwards be held every two years instead of on a yearly basis.

As regards the results from the trial ranking system for value, it was observed that the same metiers as those selected with the landing and effort combined system were selected with the exception of the pots and traps targeting demersal species (not selected for value) and the inclusion of a new metier; the bottom otter trawl targeting deep water species. The group recognised that this result may be biased since data from two MS are missing and strongly encourages all MS to provide value data by metier in the future.

For the Black Sea, data from Bulgaria and Romania were analysed. The ranking system was performed at the regional level using as reference the average values of the years 2009 and 2010. The metier cells were ranked according to their share in the total commercial landings (tons), effort in days at sea and value in Euro (Tables 1.5, 1.6, 1.7). Thereafter the shares were cumulated, starting with the largest, until a cut-off level of 90% was reached. Metiers which did not belong to the top 90% in terms of total effort, landings, or values were removed from the final table.

Table 1.5. Results of the ranking system at a cut-off level of 90%, based on total landings (tons) in 2009-2010 for the Black Sea region and segmented according to Appendix VII of 2010/93/EU.

Level 4	Level 5	Level 6	Total landings (t)	Landings contribution (%)
Midwater otter trawl [OTM]	Mixed demersal and pelagic species	13-20**	4572632.00	90.86

Table 1.6. Results of the ranking system at a cut-off level of 90%, based on effort (days at sea) in 2009-2010 for the Black Sea region and segmented according to Appendix VII of 2010/93/EU.

Level 4	Level 5	Level 6	Total effort (days)	% contribution
Midwater otter trawl [OTM]	Mixed demersal and pelagic species	13-20**	2763	42.8
Stationary uncovered pound nets [FPN]	Large pelagic fish	(a)	1598	24.7
Set gillnet [GNS]	Small and large pelagic fish	>=16	639	9.9
Set gillnet [GNS]	Demersal species	360-400**	555	8.6
Set longlines [LLS]	Demersal fish	(a)	397	6.2

Table 1.7. Results of the ranking system at a cut-off level of 90%, based on Value (€) in 2009-2010 for the Black Sea region and segmented according to Appendix VII of 2010/93/EU.

Level 4	Level 5	Level 6	Total value (€)	Value contribtion (%)
Midwater otter trawl [OTM]	Mixed demersal and pelagic species	13-20**	1569734	63.73316
Set gillnet [GNS]	Demersal species	360-400**	410024	16.64749
Stationary uncovered pound nets [FPN]	Large pelagic fish	(a)	234729.4	9.530307

The results of the ranking system show that on a Regional (Black Sea) level, 5 metiers were selected (Table 1.8). These were: the midwater otter trawl, the stationary

uncovered pound nets, the set gillnet for demersal fish, as well as the set gillnet for small and large pelagic species and the set longlines.

The results obtained were also compared with the ranking system conducted during PGMed2011 where 2008 – 2009 data was used (Table 1.8).

Table 1.8. Mètiers selected by the ranking systems based on landings and effort in 2009-2010 for the Black Sea region and segmented according to Appendix VII of 2010/93/EU. E: Total effort (days at sea); V: value (€); L: landings (tons). ‚X': if the metier has been selected by the ranking system.

Level 4	**Level 5**	**Level 6**	**E 2008-2009**	**E 2009-2010**	**L 2008-2009**	**L 2009-2010**	**V 2008-2009**	**V 2009-2010**
Midwater otter trawl [OTM]	Mixed demersal and pelagic species	13-20**	X	X	X	X	X	X
Stationary uncovered pound nets [FPN]	Large pelagic fish	(a)	X	X				X
Set gillnet [GNS]	Demersal species	360-400**	X	X			X	X
Set longlines [LLS]	Demersal fish	(a)	X	X				
Set gillnet [GNS]	Small and large pelagic fish	>=16	X	X			X	
Pots and traps [FPO]	Demersal species	(a)	X				X	

When comparing the present results with those of the PGMed 2011, ranking results were very similar, and the same metiers were selected with the exception of the pots and traps for demersal species which were now not selected during the present ranking. Following this observation, the group agreed that as was decided for the Mediterranean area, this ranking system should from now onwards be held every two years instead of on a yearly basis.

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

In accordance with 2007 RCM recommendation (4th RCMMed Report - Cyprus, 2007), for the purpose of exchanging landings data, MS should provide landings data of the species presented in Appendix VII of the Commission Decision 2010/93/EU for the previous 3 years during the PGMed meeting. A common template was circulated before the PGMed 2012 meeting to collate all the 2008 – 2010 landings data per country as a reference for the selection of species to be included in the biological sampling. Results are presented in Table 2.1 (Average landing values in tons) and Table 2.2 (Percentage contribution of different species to the Mediterranean MS landing) below.
It must be noticed that Greece data refers to the period 2005-2007 (source National Report 2011-2013) while for all others MS the reference period of the landing data is the three-year period 2008 - 2010.

Table 2.1. Average landing values (in tons) for each species from Appendix VII of Commission Decision 2010/93/EU and for each Mediterranean & Black Sea Member State.

Species	Cyprus	Greece [1]	France	Malta	Italy	Spain	Slovenia	Romania	Bukgaria	Total landing (t)
Alopias superciliosus	0	0	0	0	7	1	0	0	0	**8**
Alopias vulpinus	0	0	5	0	2	0	0	0	0	**7**
Anguilla anguilla	0	6	394	0	15	1	0	0	0	**415**
Aristeomorpha foliacea	0	0	0	31	2406	1	0	0	0	**2438**
Aristeus antennatus	0	0	0	1	646	908	0	0	0	**1554**
Boops boops	280	7964	196	26	2397	158	2	0	0	**11024**
Carcharhinus plumbeus	0	0	0	0	0	0	0	0	0	**0**
Carcharias taurus	0	0	0	0	0	3	0	0	0	**3**
Centrophorus granulosus	0	0	0	0	0	5	0	0	0	**6**
Cetorhinus maximus	0	0	0	0	0	0	0	0	0	**0**
Coryphaena hippurus	0	4	0	436	2015	27	0	0	0	**2482**
Coryphaena equiselis	0	0	0	0	0	0	0	0	0	**0**
Dalathias licha	0	0	0	0	0	1	0	0	0	**1**
Dicentrarchus labrax	1	145	351	0	140	60	5	0	0	**701**
Dipturus batis	0	0	0	0	0	0	0	0	0	**0**
Dipturus oxyrinchus	0	0	0	0	0	0	0	0	0	**0**
Eledone cirrhosa [8]	0	150	1361	0	2640	267	0	0	0	**4418**
Eledone moschata	0	486	0	0	3955	43	20	0	0	**4504**
Engraulis encrasicolus	0	20481	2825	4	58404	7641	180	28	45	**89609**
Etmopterus spinax	0	0	0	0	0	5	0	0	0	**5**
Eutrigla gurnardus	0	0	18	0	538	17	0	0	0	**573**
Galeorhinus galeus	0	0	3	0	0	15	0	0	0	**18**
Galeus melastomus	0	0	0	0	8	44	0	0	0	**52**
Gymnura altavela	0	0	0	0	0	0	0	0	0	**0**
Heptranchias perlo	0	0	0	2	41	0	0	0	0	**43**
Hexanchus griseus	0	0	0	2	0	1	0	0	0	**4**
Illex spp., Todarodes spp.	0	1752	20	2	2537	324	0	0	0	**4635**
Istiophoridae	0	0	0	1	236	0	0	0	0	**237**
Isurus oxyrinchus	0	0	0	0	0	1	0	0	0	**1**
Lamna nasus	0	0	0	0	0	0	0	0	0	**1**
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	17	1072	267	12	1643	235	14	0	0	**3259**
Lophius budegassa [4]	0	2578	628	2	488	715	0	0	0	**4411**
Lophius piscatorius	0	0	0	0	1436	168	0	0	0	**1605**
Merluccius merluccius	16	12386	2191	8	13048	4062	1	0	0	**31712**
Micromesistius poutassou	0	400	12	7	1030	3462	0	3	0	**4914**
Mugilidae	2	141	554	11	1514	133	16	7	23	**2401**
Mullus barbatus [10]	35	4048	240	13	6678	1180	2	1	59	**12255**
Mullus surmuletus	89	2458	0	23	2925	280	0	0	8	**5783**
Mustelus asterias	0	0	0	1	0	0	0	0	0	**1**
Mustelus mustelus	0	0	0	1	6	6	1	0	0	**14**
Mustelus punctulatus	0	0	0	0	269	0	0	0	0	**269**
Myliobatis aquila	0	0	0	1	0	1	0	0	0	**2**
Nephrops norvegicus	0	1007	11	2	3695	486	0	0	0	**5201**

Species	Cyprus	Greece [1]	France	Malta	Italy	Spain	Slovenia	Romania	Bukgaria	Total landing (t)
Octopus vulgaris [5]	60	4853	153	36	3449	1798	0	0	0	**10350**
Odantaspis ferox	0	0	0	0	0	0	0	0	0	**0**
Oxynotus centrina	0	0	0	0	0	0	0	0	0	**0**
Pagellus erythrinus	17	1487	161	12	1133	339	6	0	0	**3155**
Parapenaeus longirostris	2	4206	2	11	10396	203	0	0	0	**14819**
Penaeus kerathurus	2	2832	1	0	739	116	0	0	0	**3690**
Prionace glauca	0	0	0	1	170	14	0	0	0	**186**
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	0	0	16	0	0	4	1	48	51	**120**
Pteroplatytrygon violacea	0	0	0	0	0	0	0	0	0	**0**
Raja asterias	0	0	4	6	0	31	0	0	0	**40**
Raja clavata [9]	0	378	68	6	388	23	0	0	48	**911**
Raja miraletus	0	0	0	0	31	56	0	0	0	**86**
Raja undulata	0	0	0	0	0	0	0	0	0	**0**
Rhinobatos rhinobatos	0	0	0	0	0	0	0	0	0	**0**
Rhinobatos cemiculus	0	0	0	0	0	0	0	0	0	**0**
Rostroraja alba	0	0	3	0	0	0	0	0	0	**3**
Sarda sarda [7]	2	1316	33	5	1318	313	1	0	12	**3001**
Sardina pilchardus	7	20388	5481	2	15012	17481	379	0	0	**58750**
Scomber spp.	1	4148	772	99	2578	4082	5	0	0	**11685**
Scyliorhinus canicula	0	0	34	1	112	174	0	0	0	**321**
Scyliorhinus stellaris	0	0	1	1	0	0	0	0	0	**2**
Sepia officinalis	28	3553	120	20	8674	360	12	0	0	**12767**
Shark-like Selachii	9	636	3	7	568	61	0	0	0	**1285**
Solea vulgaris	0	1460	227	0	2092	64	9	0	0	**3852**
Sparus aurata	3	101	665	1	203	403	4	0	0	**1381**
Sphyrna lewini	0	0	0	3	1	0	0	0	0	**4**
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	0	0	0	0	0	0	0	**0**
Spicara smaris [6]	207	4816	27	7	918	100	0	0	0	**6075**
Sprattus sprattus	0	0	0	0	96	1	16	119	2864	**3097**
Squalus acanthias [11]	0	0	3	0	23	3	0	6	37	**72**
Squalus blainvillei	0	0	0	10	0	0	0	0	0	**10**
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	116	28	0	6400	481	5	0	0	**7030**
Thunnus alalunga	229	236	9	5	2760	307	0	0	0	**3546**
Thunnus thynnus [2]	45	159	1257	240	2549	1894	0	0	0	**6144**
Torpedo marmorata	0	0	0	0	0	0	0	0	0	**0**
Trachurus mediterraneus [3]	6	0	6	11	525	1115	1	12	174	**1849**
Trachurus trachurus	0	7047	620	0	3978	5171	3	0	0	**16819**
Trigla lucerna	0	81	23	3	354	35	1	0	0	**496**
Veneridae	0	0	1	0	15435	16	4	0	0	**15456**
Xiphias gladius	38	1192	48	306	6083	1473	0	0	0	**9140**

Table 2.2. Percentage contribution (%) of landing per species from Appendix VII of Commission Decision 2010/93/EU for each Mediterranean & Black Sea Member State.

Species	Cyprus	Greece [1]	France	Malta	Italy	Spain	Slovenia	Rumenia	Bulgaria
Alopias superciliosus	0.0	0.0	0.0	0.0	88.4	11.6	0.0	0.0	0.0
Alopias vulpinus	0.0	0.0	67.1	3.1	29.7	0.1	0.0	0.0	0.0
Anguilla anguilla	0.0	1.4	94.9	0.0	3.5	0.1	0.0	0.0	0.0
Aristeomorpha foliacea	0.0	0.0	0.0	1.3	98.7	0.0	0.0	0.0	0.0
Aristeus antennatus	0.0	0.0	0.0	0.0	41.5	58.4	0.0	0.0	0.0
Boops boops	2.5	72.2	1.8	0.2	21.7	1.4	0.0	0.0	0.0
Carcharhinus plumbeus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Carcharias taurus	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Centrophorus granulosus	0.0	0.0	0.0	8.0	0.0	92.0	0.0	0.0	0.0
Cetorhinus maximus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coryphaena hippurus	0.0	0.2	0.0	17.6	81.2	1.1	0.0	0.0	0.0
Coryphaena equiselis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dalathias licha	0.0	0.0	20.0	0.0	0.0	80.0	0.0	0.0	0.0
Dicentrarchus labrax	0.1	20.7	50.0	0.0	19.9	8.5	0.7	0.0	0.0
Dipturus batis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dipturus oxyrinchus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eledone cirrhosa	0.0	3.4	30.8	0.0	59.8	6.0	0.0	0.0	0.0
Eledone moschata	0.0	10.8	0.0	0.0	87.8	1.0	0.4	0.0	0.0
Engraulis encrasicolus	0.0	22.9	3.2	0.0	65.2	8.5	0.2	0.0	0.1
Etmopterus spinax	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0

Species	Cyprus	Greece [1]	France	Malta	Italy	Spain	Slovenia	Rumenia	Bulgaria
Eutrigla gurnardus	0.0	0.0	3.1	0.0	94.0	2.9	0.0	0.0	0.0
Galeorhinus galeus	0.0	0.0	16.7	0.7	0.0	82.5	0.0	0.0	0.0
Galeus melastomus	0.0	0.0	0.0	0.0	15.6	84.4	0.0	0.0	0.0
Gymnura altavela	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Heptranchias perlo	0.0	0.0	0.0	4.3	95.4	0.2	0.0	0.0	0.0
Hexanchus griseus	0.0	0.0	0.5	57.6	6.7	35.2	0.0	0.0	0.0
Illex spp., Todarodes spp.	0.0	37.8	0.4	0.0	54.7	7.0	0.0	0.0	0.0
Istiophoridae	0.0	0.0	0.0	0.3	99.7	0.0	0.0	0.0	0.0
Isurus oxyrinchus	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Lamna nasus	0.0	0.0	0.0	42.9	24.8	32.3	0.0	0.0	0.0
Leucoraja circularis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leucoraja melitensis	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
Loligo vulgaris	0.5	32.9	8.2	0.4	50.4	7.2	0.4	0.0	0.0
Lophius budegassa	0.0	58.4	14.2	0.1	11.1	16.2	0.0	0.0	0.0
Lophius piscatorius	0.0	0.0	0.0	0.0	89.5	10.5	0.0	0.0	0.0
Merluccius merluccius	0.1	39.1	6.9	0.0	41.1	12.8	0.0	0.0	0.0
Micromesistius poutassou	0.0	8.1	0.2	0.1	21.0	70.5	0.0	0.1	0.0
Mugilidae	0.1	5.9	23.1	0.5	63.1	5.5	0.7	0.3	0.9
Mullus barbatus	0.3	33.0	2.0	0.1	54.5	9.6	0.0	0.0	0.5
Mullus surmuletus	1.5	42.5	0.0	0.4	50.6	4.8	0.0	0.0	0.1
Mustelus asterias	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
Mustelus mustelus	0.0	0.0	2.7	5.3	39.6	43.2	9.3	0.0	0.0
Mustelus punctulatus	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Myliobatis aquila	0.0	0.0	3.5	55.8	0.0	40.8	0.0	0.0	0.0
Nephrops norvegicus	0.0	19.4	0.2	0.0	71.0	9.3	0.0	0.0	0.0
Octopus vulgaris	0.6	46.9	1.5	0.4	33.3	17.4	0.0	0.0	0.0
Odantaspis ferox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oxynotus centrina	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pagellus erythrinus	0.5	47.1	5.1	0.4	35.9	10.8	0.2	0.0	0.0
Parapenaeus longirostris	0.0	28.4	0.0	0.1	70.2	1.4	0.0	0.0	0.0
Penaeus kerathurus	0.1	76.7	0.0	0.0	20.0	3.1	0.0	0.0	0.0
Prionace glauca	0.0	0.0	0.0	0.7	91.8	7.5	0.0	0.0	0.0
Pristis pectinata	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Pristis pristis	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Psetta maxima	0.0	0.0	13.2	0.0	0.0	3.5	0.8	39.8	42.6
Pteroplatytrygon violacea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Raja asterias	0.0	0.0	8.9	15.5	0.0	75.6	0.0	0.0	0.0
Raja clavata	0.0	41.5	7.5	0.6	42.5	2.6	0.0	0.0	5.3
Raja miraletus	0.0	0.0	0.0	0.0	35.3	64.7	0.0	0.0	0.0
Raja undulata	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rhinobatos rhinobatos	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Rhinobatos cemiculus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rostroraja alba	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Sarda sarda	0.1	43.9	1.1	0.2	43.9	10.4	0.0	0.0	0.4
Sardina pilchardus	0.0	34.7	9.3	0.0	25.6	29.8	0.6	0.0	0.0
Scomber spp.	0.0	35.5	6.6	0.9	22.1	34.9	0.0	0.0	0.0
Scyliorhinus canicula	0.0	0.0	10.6	0.2	35.0	54.1	0.0	0.0	0.0
Scyliorhinus stellaris	0.0	0.0	50.5	44.8	4.8	0.0	0.0	0.0	0.0
Sepia officinalis	0.2	27.8	0.9	0.2	67.9	2.8	0.1	0.0	0.0
Shark-like Selachii	0.7	49.5	0.2	0.6	44.2	4.8	0.0	0.0	0.0
Solea vulgaris	0.0	37.9	5.9	0.0	54.3	1.7	0.2	0.0	0.0
Sparus aurata	0.2	7.3	48.2	0.1	14.7	29.2	0.3	0.0	0.0
Sphyrna lewini	0.0	0.0	0.0	77.3	22.7	0.0	0.0	0.0	0.0
Sphyrna mokarran	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sphyrna tudes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sphyrna zygaena	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spicara smaris	3.4	79.3	0.4	0.1	15.1	1.7	0.0	0.0	0.0
Sprattus sprattus	0.0	0.0	0.0	0.0	3.1	0.0	0.5	3.8	92.5
Squalus acanthias	0.0	0.0	4.1	0.0	32.1	4.8	0.0	8.0	51.0
Squalus blainvillei	0.0	0.0	0.0	98.2	0.0	1.8	0.0	0.0	0.0
Squatina aculeata	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Squatina oculata	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Squatina squatina	0.0	0.0	83.9	0.0	0.0	16.1	0.0	0.0	0.0
Squilla mantis	0.0	1.7	0.4	0.0	91.0	6.8	0.1	0.0	0.0
Thunnus alalunga	6.4	6.7	0.2	0.1	77.8	8.7	0.0	0.0	0.0
Thunnus thynnus [2]	0.7	2.6	20.5	3.9	41.5	30.8	0.0	0.0	0.0
Torpedo marmorata	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Trachurus mediterraneus	0.3	0.0	0.3	0.6	28.4	60.3	0.0	0.6	9.4
Trachurus trachurus	0.0	41.9	3.7	0.0	23.7	30.7	0.0	0.0	0.0
Trigla lucerna	0.0	16.3	4.6	0.5	71.4	7.0	0.2	0.0	0.0
Veneridae	0.0	0.0	0.0	0.0	99.9	0.1	0.0	0.0	0.0
Xiphias gladius	0.4	13.0	0.5	3.3	66.6	16.1	0.0	0.0	0.0

Notes for tables 2.1. and 2.2.

[1]Greece data referred to the period 2005-2007 (source National Report 2011-2013)

[2]2010 Italy data only from longline and misc since for purse seine in 2010 was forbidden to fish (Italian Ministry 1504/2010)

[3]For 2010 Cyprus data the 3 tons of *Trachurus* spp. has been assigned arbitrary to *Trachurus mediterraneus*; for Malta the *Trachurus* spp. has been assigned arbitrary to *Trachurus mediterraneus*; for 2008 Spain data, *Trachurus mediterraneus* grouped with *Trachurus trachurus*

[4]For 2010 Malta data, 2.569 tons refer to *Lophius budegassa* and *Lophius* spp., 0.0738 tons to *Lophius budegassa* and 0.267 tons to *Lophius piscatorius*; For 2008 Spain data, *L. budegassa* grouped with *L. piscatorius*

[5]For 2010 Malta data, 51.589 tons of *Octopus* spp. has been assigned arbitrary to *Octopus vulgaris*

[6]For 2010 Malta data 2.973 tons of *Spicara* spp. has been assigned to *Spicara smaris*

[7]For 2010 Cyprus data, 6 tons have been assigned arbitrary to *Euthynnus alleterratus* but may inlcude quantities of *Sarda sarda*

[8]For 2008 Spain data, *E. cirrhosa* grouped with *E. moscata*

[9]For 2008 Spain data, *R. clavata* grouped with *R. asterias*

[10]For 2008 Spain data, *M. barbatus* grouped with *M. surmuletus*

[11]For 2008 Spain data, *Squalus acanthias* is *Squalus* spp

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

From the available data, the group examined the cases where different Member States (MS) are sharing certain stocks. Those métiers sampled by two MS, as selected in the ranking system, were considered with the aim of find out the proportionality of the sampling effort by each country. Estimated number of samples to be taken by métier and MS was calculated as a proportion of the total number of samples, taking into account both the landing and effort (in days9 of every MS in the shared area. Results area shown in tables 3.1, 3.2., 3.3. and 3.4.

Table 3.1. Estimated number of samples to be taken by MS considering catches (Estim. N (C)) and effort in days (Estim. N (E)) for the shared métiers in the Gulf of Lions (GSA 7). N: number of planned samples to be taken according to National Programs.

Level 4	Level 5	Level 6	MS	Catch (kg)	Effort (days)	N	Estim. N (C)	Estim. N (E)
Set longlines [LLS]	Demersal fish	(a)	Spain	175593	1484	48	25	8
			France	208838	8244	6	29	46
Bottom otter trawl [OTB]	Demersal species	>=40	Spain	849831	2085	24	13	19
			France	7603989	12255	104	115	109
Bottom otter trawl [OTB]	Deep water species	>=40	Spain	133141	1056	12	12	12
			France	608	3	0	0	0
Purse seine [PS]	Small pelagic fish	>=14	Spain	98487	55	36	6	3
			France	746825	935	12	42	45

Table 3.2. Estimated number of samples to be taken by MS considering catches (Estim. N (C)) and effort in days (Estim. N (E)) for the shared métiers in the South of Sicily and Malta Island (GSA 15 and 16). N: number of planned samples to be taken according to National Programs.

Level 4	Level 5	Level 6	MS	Catch (kg)	Effort (days)	N	Estim. N (C)	Estim. N (E)
Trammel net [GTR]	Demersal species	>=16	Malta	90896	14178	12	3	9
			Italy	1564409	75675	46	55	49
Set longlines [LLS]	Demersal fish	(a)	Malta	102174	5070	12	6	8
			Italy	387638	14529	19	25	23
Bottom otter trawl [OTB]	Demersal species	>=40	Malta	96400	478	12	0	0
			Italy	12350085	51580	35	47	47
Bottom otter trawl [OTB]	Deep water species	>=40	Malta	53162	439	12	1	1
			Italy	1487458	10499	12	23	23
Bottom otter trawl [OTB]	Mixed demersal and deep water species	>=40	Malta	135728	752	12	3	4
			Italy	3669283	14176	67	76	75
Purse seine [PS]	Small pelagic fish	>=14	Malta	182413	6	1	1	6
			Italy	5020146	12	17	17	12

- Gulf of Lions (GSA 7, Table 3.1): France and Spain. For the bottom otter trawl, the current allocation of sampling trips by both countries can be considered very similar to the estimation. In the case of the set longlines métier for demersal fish, the real sampling is quite different than the estimated number of samples, although in this case differences in the target species can justify this point. The purse seine métier in Spain has been experiencing displacements during the last years and the number of real samples taken is more similar than the planned, as it is not possible to perform all the sampling programmed.

- Strait of Sicily (GSA 15 & 16, Table 3.2): Italy and Malta. Although in some cases the computed values differ from the planned ones (for instance, for bottom otter trawl and purse seine), this is due to the large differences in catches and effort among MS. However, each MS should ensure a minimum number of samples to be taken in order to cover each métier sampled along the year.

Table 3.3. Estimated number of samples to be taken by MS considering catches (Estim. N (C)) and effort in days (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.

Level 4	Level 5	Level 6	MS	Catch (kg)	Effort (days)	N	Estim. N (C)	Estim. N (E)
Bottom otter trawl [OTB]	Demersal species	>=40	Italy	20343836	84508	78	85	85
			Slovenia	133320	1113	8	1	1
Purse seine [PS]	Small pelagic fish	>=14	Italy	3477788	2710	12	30	28
			Slovenia	197981	424	20	0	1
Pelagic pair trawl [PTM]	Small pelagic fish	>=20	Italy	32892268	15896	14	34	34
			Slovenia	432120	175	20	0	0

Table 3.4. Estimated number of samples to be taken by MS considering catches (Estim. N (C)) and effort in days (Estim. N (E)) for the shared métiers in the Black Sea (GSA 29). N: number of planned samples to be taken in accordance to National Programs.

Level 4	Level 5	Level 6	MS	Catch (kg)	Effort (days)	N	Estim. N (C)	Estim. N (E)
Set gillnet [GNS]	Demersal species	360-400	Bulgaria	50000	366	32	32	30
			Romania	48705.5	426.5	32	32	34
Midwater otter trawl [OTM]	Mixed demersal and pelagic species	13-20	Bulgaria	4296000	2730	30	77	77
			Romania	43129	33	48	1	1

- Northen Adriatic Sea (GSA 17, Table 3.3): Italy and Slovenia. As in the previous case, the computed values differ from the planned ones due to the large differences in catches and effort among MS. However, each MS should ensure a minimum number of samples to be taken in order to cover each métier sampled along the year.

- Black Sea (GSA 29, Table 3.4): Bulgaria and Romania. For set gillnet, the sampling distribution is proportional for each MS to their catches and effort. For midwater otter trawl, important differences have been found although, like in the previous cases this is due to the large differences in catches and effort among MS. However, each MS should ensure a minimum number of samples to be taken in order to cover each métier sampled along the year.

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

ToR 4 issue was to analyse the benefit brought by merging all information available at GSA level to calculate precision level achieved for shared stocks. The precision, in terms of Coefficient of Variation (CV) of the Length Frequency Distributions (LFDs) was assessed using COST tools (packages in R), following RCMMed&BS 2011 recommendation. This method allows to estimate the precision, in terms of coefficient of variation (CV) for each length class and for the whole LFD at stock level.

The PGMed 2012 examined the data available during the meeting and started working to calculate the Coefficient of Variation (CV) for turbot (*Psetta maxima*) and sprat (*Sprattus sprattus*) at regional level (Black Sea) using survey data. Bulgarian and Romanian survey data for 2010 was used for calculation of CV for both species. Data have been obtained during the common surveys under DCF in front of the Bulgarian and Romanian coasts for stock assessment purposes by means of pelagic and demersal fishing gears. Estimation of CVs for data obtained from sampling of landings and discards by métier and species was not conducted at regional level for the Black Sea due to lack of Bulgarian data on landings. For the aims of analysis, Bulgarian and Romanian survey data were disaggregated at trip (day) and haul levels. For turbot, 3 cm length classes were used, while for sprat - 0.5 cm length classes were applied. The results of the analysis has been presented in Table 4.1.

Table 4.1. Species, country and survey for which the CV for length was estimated.

MS	Species	Year	Survey	Length class	N	CV (shared stock)	CV
Bulgaria	*P. maxima*	2010	BT	3 cm	124	0.3039 (0.21)	0.30
Romania	*P. maxima*	2010	BT	3 cm	104		0.42
Bulgaria	*S. sprattus*	2010	PT	0.5 cm	36434	0.1280	0.11
Romania	*S. sprattus*	2010	PT	0.5 cm	6274		2.95

The results show that the CVs of survey data for the shared turbot stock was considered high - 0.30 averaged for all length classes. However, as the first and last two size classes were low abundant, these tails were removed and thus the estimation of CV improved when considering only for the size classes 475 – 685 (0.21). For sprat, the CVs at regional level showed good values.

Although there was data available for other shared stocks for GSA 7 (France and Spain), GSA 15-16 (Italy and Malta) and GSA 17 (Italy and Slovenia), it was not possible to compute the CVs due to the lack of time for working, but some national level analyses (including the preparation of the scripts) were performed.

The work performed during PGMed 2012 with the COST tool was only possible thanks to the participation of a COST expert. In this sense, MS complained about the difficulties found in general for using the COST tool. If this tool should be further used both at national (by MS) and regional (in PGMed) levels, the need of training courses is highly encouraged.

ToR 5) Update the work conducted in the PGMed 2011 for large pelagic species on sampling of length and stock related variables by using 2010 data

Following the recommendation made by the RCMMed&BS 2011, PGMed continued the exercise carried out during PGMed 2011 for computing the sampling figures for metier and stock related variables for large pelagics, based on the most recent available data (2010). Total numbers to be sampled at regional level were agreed by RCMMed&BS 2011 and calculated based on 2010 data. As no data from Greece was available during the meeting, it was excluded from the analysis, fixing the numbers computed during PGMed 2011 as numbers to be sampled according to PGMed 2012.

Metier-related variables (length sampling)
The minimum number of fish to sample for length by Member State (MS) was updated and new tables were proposed. When the number of individuals to sample by MS was low, they were distributed among other countries in order to avoid useless sampling. They were computed for bluefin tuna *Thunnus thynnus* (Table 5.1), swordfish *Xiphias gladius* (Table 5.2), albacore *Thunnus alalunga* (Table 5.3), dolphinfish *Coryphaena hippurus* (Table 5.4) and bonito *Sarda sarda* (Table 5.5).

The group agreed that planning a number of individuals to be sampled for métier-related variables (length sampling) is often complicated as, according to the Regulation, length sampling strategy is based on metiers, not on stocks. In this sense, the group agreed that table III_C_5 from the set of tables in the National Programs is nonsense and asked the Commission to change it in the future DCF, in order to be more coherent with the sampling strategy.

The proposed numbers of specimens to be sampled for métier-related variables, will be checked during the next RCMMed&BS. If appropriate, the National Programs could be adjusted to take into account the exchange of quotas among MS.

Table 5.1. Production, minimum number of specimens proposed by PGMed 2011 and minimum number of specimens (N) of bluefin tuna (*T. thynnus*) to be sampled for metier-related variables by MS following the regional sampling approach proposed by PGMed 2012. Reference values are market in grey.

Bluefin tuna	**Purse Seine**			**Longline**			**Handline/traps**		
MS	**Production (t)**	**PG 2011**	**PG 2012**	**Production (t)**	**PG 2011**	**PG 2012**	**Production (t)**	**PG 2011**	**PG 2012**
France	196.0	21	489	121.8	146	357	0.0	0	0
Malta	0.0	1443	0	153.2	179	449	0.0	0	0
Spain	804.0	3166	2006	240.0	506	712	0.0	4	0
Cyprus	0.0	0	0	3.0	0	0	0.0	0	0
Italy	0.0*	83*	83*	520.0	730	1525	280.0	58	780
Greece	NA	527	527	NA	93	93	NA	66	66
Slovenia	0.0	0	0	0	0	0	0.0	0	0
Total	**1000**	**5240**	**3022**	**1038**	**1654**	**3136**	**280**	**128**	**846**

* In 2010 Italy stopped the fishing activity with purse seine. For this reason the minimum no. of fish to be sampled at national level for Italy has been estimated using the 2009 data.

Table 5.2. Minimum number of specimens (N) proposed by PGMed 2011, N proposed in the National Programmes 2011-2013, total landings (2010) and their proportion, and minimum number of specimens of swordfish (*X. gladius*) proposed by PGMed 2012 to be sampled for metier-related variables by MS following the regional sampling approach. Reference values are market in grey.

Swordfish	N to sample PGMed 2011	N proposed in NP (2011-2013)	Landing 2010 (t)	Landings 2010 (%)	N to sample PGMed 2012
Cyprus	0	180	31.0	0.4	0
Spain	359	1500	1755.7	21.1	293
France	0	0	80.2	1.0	0
Greece	210	NA	NA	NA	210
Italy	898	864	6032.0	72.5	946
Malta	48	48	423.0	5.1	66
Slovenia	0	0	0.0	0.0	0
Total	**1515**	**2592**	**8321.761**	**100**	**1515**

Table 5.3. Minimum number of specimens (N) proposed by PGMed 2011, N proposed in the National Programmes 2011-2013, total landings (2010) and their proportion and minimum number of specimens of albacore (*T. alalunga*) proposed by PGMed 2012 to be sampled for metier-related variables by MS following the regional sampling approach. Reference values are market in grey.

Albacore	N to sample PGMed 2011	N proposed in NP (2011-2013)	Landing 2010 (t)	Landings 2010 (%)	N to sample PGMed 2012
Cyprus	39	400	206.0	8.7	48
Spain	37	1000	277.2	11.7	65
France	0	0	0.5	0.0	0
Greece	20	NA	NA	NA	20
Italy	478	470	1876.0	79.4	441
Malta	0	0	2.0	0.1	0
Slovenia	0	0	0.0	0.0	0
Total	**574**	**1870**	**2362**	**100**	**574**

Table 5.4. Minimum number of specimens (N) proposed by PGMed 2011, N proposed in the National Programmes 2011-2013, total landings (2010) and their proportion and reference minimum number of specimens of dolphinfish (*C. hippurus*) proposed by PGMed 2012 to be sampled for metier-related variables by MS following the regional sampling approach. Reference values are market in grey.

Dolphinfish	N to sample PGMed 2011	N proposed in NP (2011-2013)	Landing 2010 (t)	Landings 2010 (%)	N to sample PGMed 2012
Cyprus	0	0	0.0	0.0	0
Spain	0	0	0.0	0.0	0
France	0	0	0.4	0.0	0
Greece	0	NA	NA	NA	0
Italy	1259	1336	1771.0	76.9	1154
Malta	241	241	530.0	23.0	345
Slovenia	0	0	0.0	0.0	0
Total	**1500**	**1577**	**2302**	**100**	**1500**

Table 5.5. Minimum number of specimens (N) proposed by PGMed 2011, N proposed in the National Programmes 2011-2013, total landings (2010) and their proportion and reference minimum number of specimens of bonito (*S. sarda*) proposed by PGMed 2012 to be sampled for metier-related variables by MS following the regional sampling approach. Reference values are market in grey.

Bonito	N to sample PGMed 2011	N proposed in NP (2011-2013)	Landing 2010 (t)	Landings 2010 (%)	N to sample PGMed 2012
Cyprus	0	0	0.0	0.0	0
Spain	51	150	517.6	28.2	74
France	0	0	17.0	0.9	0
Greece	89	NA	NA	NA	89
Italy	213	194	1295.0	70.5	190
Malta	0	0	6.0	0.3	0
Slovenia	0	0	0	0.0	0
Total	**353**	**344**	**1836**	**100**	**353**

Stock-related variables

The minimum number of fish to sample for stock related variables (age, weight, sex and maturity) for large pelagic per MS for regional sampling was updated, but only for comparative and informative purposes. The PGMed agreed to follow the tables computed during PGMed 2011 and not the current ones, as the sampling plan has already been designed by each MS. In this sense, no changes should be done for the stock-related variables in the National Programs. For that reason, the number of individuals computed was kept as it was, even for those cases in which the number of individuals to be sampled by MS was low, and not distributed among other countries.

PGMed agreed to repeat this exercise in 2013, in order to start planning the sampling for the new period (2014-2020). Numbers were computed for bluefin tuna *T. thynnus* (Table 5.6), swordfish *X. gladius* (Table 5.7), albacore *T. alalunga* (Table 5.8), dolphinfish *C. hippurus* (Table 5.9) and bonito *S. sarda* (Table 5.10).

Table 5.6. Production, minimum number of specimens (N) proposed by PGMed 2011 and PGMed 2012 of bluefin tuna (*T. thynnus*) to be sampled for stock-related variables by MS following the regional sampling approach. Reference values are market in grey.

Bluefin tuna	Purse Seine			Longline			Handline/traps		
MS	Production (t)	PG 2011	PG 2012	Production (t)	PG 2011	PG 2012	Production (t)	PG 2011	PG 2012
France	196.0	0	75	121.8	22	54	0.0	0	0
Malta	0.0	220	0	153.2	27	71	0.0	0	0
Spain	804.0	485	305	240.0	77	107	0.0	0	0
Cyprus	0.0	0	0	3.0	0	0	0.0	0	0
Italy	0.0*	13*	13*	520.0	112	232	280.0	8	129
Greece	NA	80	80	NA	14	14	NA	9	0
Slovenia	0.0	0	0	0	0	0	0.0	0	0
Total	**1000**	**798**	**460**	**1038**	**252**	**478**	**280**	**17**	**129**

* In 2010 Italy stopped the fishing activity with purse seine. For this reason the minimum no. of fish to be sampled at national level for Italy has been estimated using the 2009 data.

Table 5.7. Minimum number of specimens (N) proposed by PGMed 2011, N proposed in the National Programmes 2011-2013, total landings (2010) and their proportion, and minimum number of specimens of swordfish (*X. gladius*) proposed by PGMed 2012 to be sampled for stock-related variables by MS following the regional sampling approach. Reference values are market in grey.

Swordfish	N to sample PGMed 2011	N proposed in NP (2011-2013)	Landing 2010 (t)	Landings 2010 (%)	N to sample PGMed 2012
Cyprus	0	0	31.0	0.4	0
Spain	240	100	1755.7	21.1	193
France	0	0	80.2	1.0	0
Greece	135	NA	NA	NA	135
Italy	592	569	6032.0	72.5	626
Malta	31	31	423.0	5.1	44
Slovenia	0	0	0.0	0.0	0
Total	**998**	**700**	**8322**	**100**	**998**

Table 5.8. Minimum number of specimens (N) proposed by PGMed 2011, N proposed in the National Programmes 2011-2013, total landings (2010) and their proportion and reference minimum number of specimens of albacore (*T. alalunga*) proposed by PGMed 2012 to be sampled for stock-related variables by MS following the regional sampling approach. Reference values are market in grey.

Albacore	N to sample PGMed 2011	N proposed in NP (2011-2013)	Landing 2010 (t)	Landings 2010 (%)	N to sample PGMed 2012
Cyprus	25	25	206.0	8.7	28
Spain	29	50	277.2	11.7	38
France	0	0	0.5	0.0	0
Greece	0	NA	NA	NA	0
Italy	268	263	1876	79.4	256
Malta	0	0	2	0.1	0
Slovenia	0	0	0	0.0	0
Total	322	338	2362	100	322

Table 5.9. Minimum number of specimens (N) proposed by PGMed 2011, N proposed in the National Programmes 2011-2013, total landings (2010) and their proportion and reference minimum number of specimens of dolphinfish (*C. hippurus*) proposed by PGMed 2012 to be sampled for stock-related variables by MS following the regional sampling approach. Reference values are market in grey.

Dolphinfish	N to sample PGMed 2011	N proposed in NP (2011-2013)	Landing 2010 (t)	Landings 2010 (%)	N to sample PGMed 2012
Cyprus	0	0	0.0	0.0	0
Spain	0	0	0.0	0.0	0
France	0	0	0.4	0.0	0
Greece	0	NA	NA	NA	0
Italy	1115	1183	1771.0	76.9	1023
Malta	214	214	530.0	23.0	306
Slovenia	0	0	0.0	0.0	0
Total	**1329**	**1397**	**2302**	**100**	**1329**

Table 5.10. Minimum number of specimens (N) proposed by PGMed 2011, N proposed in the National Programmes 2011-2013, total landings (2010) and their proportion and reference minimum number of specimens of bonito (*S. sarda*) proposed by PGMed 2012 to be sampled for stock-related variables by MS following the regional sampling approach. Reference values are market in grey.

Bonito	N to sample PGMed 2011	N proposed in NP (2011-2013)	Landing 2010 (t)	Landings 2010 (%)	N to sample PGMed 2012
Cyprus	0	0	0.0	0.0	0
Spain	18	50	517.6	28.2	25
France	0	0	17.0	0.9	0
Greece	30	NA	NA	NA	89
Italy	72	66	1295.0	70.5	65
Malta	0	0	6.0	0.3	0
Slovenia	0	0	0.0	0.0	0
Total	**120**	**116**	**1836**	**100**	**179**

ToR 6) Assess the CV of large pelagic for length

During PGMed 2012, the calculation of the CV of large pelagics for metier-related variables (length sampling) at the regional level was carried out. The precision, in terms of Coefficient of Variation (CV) of the Length Frequency Distributions (LFDs) was assessed using COST tools (packages in R), following RCMMed&BS 2011 recommendation. This method allows to estimate the precision, in terms of coefficient of variation (CV) for each length class and for the whole LFD at stock level.

PGMed 2012 examined the available 2010 data during the meeting including data available for bluefin tuna from the Atlantic, following the recommendation from last RCMMed&BS. Three MS were asked for data from the Atlantic before the meeting: France, Spain and Portugal. French data was not available during the meeting, Portugal data was available but not in the correct format and Spain data was also available. However, as only information from one MS was in the correct format, the group decided not to use Atlantic data for this approach. According to 2010 data available from the ICCAT task I, Mediterranean landings represent 70% of the landings from the eastern stock of bluefin tuna, in front of 30% that correspond to Atlantic landings.

National level analyses using COST packages in R (including the preparation of the scripts), for Cyprus (*C. hippurus*, *X. gladius*, *T. alalunga*, *T. thynnus*), Italy (*C. hippurus*, *X. gladius*, *T. alalunga*, *T. thynnus*, *S. sarda*), Spain (*X. gladius*, *T. alalunga*, *T. thynnus*, *S. sarda*) and Malta (*C. hippurus*, *T. thynnus*) were performed. However, due to the lack of time for working, only CVs for bluefin tuna were computed at regional level, combining data from 2010 of all the available metiers (purse seine and longliners), considering 5 cm as length range and the following MS: Italy, Malta, Spain and Cyprus. Trips were taken as strata. The result obtained (0.1468) can be considered very good.

As mentioned in ToR 4, the work performed during PGMed 2012 with the COST tool was only possible thanks to the participation of a COST expert. In this sense, MS complained about the difficulties found in general for using the COST tool. If this tool should be further used both at national (by MS) and regional (in PGMed) levels, the need of training courses is highly encouraged.

ToR 7) Review the methodology used in the sampling of large species and harmonization with ICCAT requirements

Review of work done by 2011 RCM Med&BS

During the large pelagic regional coordination between the RCM Med&BS and the RCM Long Distance Fishery in 2011, there was a discussion about the problems of data deficiencies on large pelagic encountered in the ICCAT SCRS species group meetings, and also about the reasons of these data deficiencies since data on these species are collected under the DCF. It was noted that not all data collected under the DCF are required by ICCAT under Task 1 and Task 2 data (e.g. ageing data); in such a case scientific data should be provided through the submission of scientific papers in the relevant SCRS scientific meetings.

The two RCMs made the following common recommendations/proposals:

- Considering that the quality of the work of the ICCAT working groups depends on the adequate participation of experts, the two groups strongly recommend the participation of experts to the ICCAT scientific meetings. It is reminded that ICCAT scientific meetings are eligible for participation under the DCF.

- The two groups propose a joined workshop among ICCAT representatives, scientists involved in large pelagic sampling, as well as representatives from RCM LDF and RCM MED&BS in order to harmonize the biological sampling issues on large pelagic and specify additional data or modifications that should be included in the future DCF, taking into account the ICCAT requirements for stock assessment.

Furthermore, the conversion table prepared by PGMed in 2011 for incorporating the gears definition present in the ICCAT database and the metier definition used under the DCF was revised and finalised during the 2011 RCM Med&BS.

The 2012 PGMed pointed out that the above proposed workshop is not included in the 2012 eligible meetings, and since the preparation of the new DCF will be done during 2012, this important issue may not be adequately covered. In any case the PGMed reviewed the methodologies used by the MS for sampling métier-related variables and stock-related variables, as well as the ICCAT requirements for assessing large pelagic species, for identifying possible additional data/ modifications to be included in the future DCF.

Methodology for sampling métier-related and stock-related variables

The methodologies followed by MS for sampling métier-related variables and for sampling stock-related variables are include in Annex VI. The methodologies are in agreement with the DCF rules.

Review of ICCAT requirements

For recording all the ICCAT requirements on the collection of data for the assessment of the large pelagic species, a review of the ICCAT FIELD MANUAL was made. This Manual provides, among others, an overview of the data requirements for assessment and research within ICCAT, and provides additionally information on sampling designs, potential problems in sampling, estimating precisions, raising procedures etc.

The population parameters for key ICCAT species include Growth, Natural Mortality, Length-Weight Relationship, Length conversion factors and Product conversion factors.

The ICCAT requirements can be summarized in the following:

- Sampling catches, effort, CPUE (verified that the recommended units of effort for each type of fishing gear is included in Appendix VIII of DCF Decision)
- Sampling for length frequency data
- Genetic sampling and tagging for examining geographic range and boundaries of a stock, interaction with sub-stocks and pattern of migration, important for managing the stocks
- Sampling for sex and maturity: Estimation of length-at-maturity and fecundity. Details required for collection of samples: date, vessel, species, length, weight, sex, weight of gonads, gonad sub-sample weight, location of capture.
- Discards and discard rate estimation
- Collection of hard parts for estimating age and growth rate data and age distribution of catches (including individual length, weight, sex information).

Currently, for the submission of information required by ICCAT, specific codes and formats are prepared by the ICCAT Secretariat which can be downloaded from the ICCAT Web site. The reporting forms are:

- Fleet characterization (requesting number of fishing vessels in each fishing fleet, categorized by size (LOA) and tonnage (GRT) classes and major targeted species
- Task I Nominal Catches: Nominal catch estimates (targeted and by-catch species) and dead discards, classified by fishing fleet, species, year, gear, region, fishing waters.

- Task II Catch & Effort: Catch (species catch composition) and effort statistics bty fishing fleet, gear, time strata and area strata.
- Task II size samples: Size frequencies of the samples measured for each species classified by fishing fleet, species, gear, sample units, time strata, area strata.
- Task II catch-at-size: Reported catch-at-size estimates (raised to Task I) classified by fishing fleet, gear, time strata, and area strata for the major species and by sex in the case of swordfish.
- Task II – farming size sampling (bluefin tuna)

The Group concluded that the ICCAT requirements for assessing the large pelagic species are covered by the current DCF (except for genetic sampling and tagging). Therefore, PGMed considers that the problem of data deficiency, at least for the MS, is mostly because there are currently no relevant reporting forms for submitting data on age, maturity and weight to the ICCAT Secretariat. Until now such data are submitted at the ICCAT scientific meetings by the participating scientists.

The Group recommends the development of reporting forms by ICCAT Secretariat for submitting information on individual stock-related variables – length, weight, sex, maturity and age estimation. Collaboration between DGMare and the ICCAT Secretariat is required for this.

An alternative proposal would be the launch of Official Data Calls on biological data collected for large pelagics by DGMare. The data could be analysed by experts and submitted to the relevant ICCAT scientific meetings.

ToR 8) Common understanding of Ecosystem Indicators (App. XIII EU Decision 93/2010) collection of methodologies used in the different countries

The DCF Regulation 199/2008, performing data collection in the fisheries sector, provides the estimated of 9 ecosystem indicators, as reported in Appendix XIII of the Commission Decision 93/2010.

Before the meeting, the PGMed asked all Mediterranean countries to provide an understanding of the Ecosystem Indicators and methodologies used in the different countries

The following tables (Table 8.1 to 8.9) are showing the 9 indicators with the description (methodologies, criteria to estimate, formula…) for each MS.

The PGMed recognised that for most of the mentioned indicators there is no at Regional level a clear position on how to approach and estimate them and moreover there is no a standard methodology to calculate the different indicators.

Concerning the biological indicators, the PGMed suggests that the first fourth, related from fisheries independent research surveys, could be addresses by the incoming WG MEDITS and MEDIAS. Both Groups are requested to review the work performed under the PGMed trying to harmonize as much is possible the methodologies and the different requirements in order to propose a common approach.

Concerning the economic indicator (number 9 "Fuel efficiency of fish capture") PGMed agreed that should be eventually the incoming PGECON (Economic Planning Group) that should address this issue.

For the indicator 8 "Discarding rates of commercially exploited species" PGMed suggest that this goal should be tackled by the incoming RCMMed&BS, participants should be fulfil the template with the current system to collect data and the methodologies to calculate this indicator.

For the VMS indicators (indicators number 5, 6 and 7) in the following templates MSs reported only the description on how the system works in the each country and which data are recorded. PGMed suggest that the next RCMMed&BS must be aware and thereafter discuss, during the Malaga meeting, the outputs of the Working Group on the Ecosystem Effects of Fishing Activities [WGECO] that will be held in Copenhagen, 11-18 April.

Table 8.1. Conservation status of fish species "Indicator of biodiversity to be used for synthesizing, assessing and reporting trends in the biodiversity of vulnerable fish species".

Member states	Description
Bulgaria	Data is obtained during stock assessment surveys – two in the spring and two in the autumn.
Cyprus	As stated in AppendixXIII of DCF Decision 2010/93/EU, the specification and calculation of the indicators are provided in Commission Staff Working Document SEC 2008/449. There has been no regional agreement on following alternative calculations of the indicators. For this indicator (conservation status of fish species), based on the criteria in Document SEC 2008/449, most (if not all) species collected during the Medits survey are excluded from the calculation of the indicator.
France	This is an indicator of biodiversity to be used for synthesizing, assessing and reporting trends in the biodiversity of vulnerable fish species. Its purpose as a state indicator is to assess the performance of the Common Fisheries Policy at minimising the impact of fishing activities on the marine ecosystem. It is calculated in five steps according to the DCF regulation (ConsDCF): 1. Species selection: list of species sensitive to fishing, i.e. large. Those species identified reliably of which > 20 individuals are caught per year (all area), and of which L0.95 (the ninety-fifth percentile of the population length distribution) ≥ 40 cm are listed, of this list, the 20 largest species are the sensitive species. 2. Calculate the abundance index of individuals with length ≥ L0.95 /2 (a proxy for size at maturity). 3. On a 10 years gliding window, calculate a decline index: the slope of a linear model; if the species is not rebuilt since (≥ average abundance first 3 years) : score the decline index as follows: - Min(decline) ≤ 90% 'critically endangered' CR 3 - Min(decline) ≤ 70% 'endangered' EN 2 - Min(decline) ≤ 50% 'vulnerable' VU 1 - Otherwise 'least concern' LC 0 The indicator is the average decline score across sensitive species; it varies from 0 (no species threatened) to 3 (all species critically endangered). We also present an alternative version (ConsSIH), where only significant slopes (risk α=0.1) are taken into account, and the rebuilding criterion is more stringent (≥ 5 highest abundances in the time series).
Greece	
Italy	To evaluate this indicator will be used historical series from MEDITS and MEDIAS surveys. As a proxy will be used the R-SUFI routine for the two following indicators: 1.1) Total abundance in number and weight – it is calculated as abundance index in number and weight of the total of fish, cephalopods, crustaceans decapods, stomatopods and selachians in the community. 1.2) Diversity index (Hulbert, 1971) – used as a measure of eveness and interpretable as the probability that two individuals taken randomly from a community belong to different species

<table>
<tr><td></td><td>
<table>
<tr><th>Indicator</th><th>Data input</th><th>Formula</th></tr>
<tr><td>1.1.) Total abundance in number (N) and weight (B)</td><td>Catch in N and B per haul k in the stratum j $y_{k,j}$
Trawled area $a_{k,j}$
Area of the stratum A_j</td><td>$$Y = \sum_j Y_{i,j} = \sum_j A_j \sum_{k=1}^{n_j} \sum_i^n y_{ikj} \Big/ \sum_{k=1}^{n_j} a_{k,j}$$
$$Var(Y) = \sum_j \frac{A_j^2}{n_j - 1} \sum_{k=1}^{n_j} \left(\frac{\sum_i y_{i,kj}}{a_{k,j}} - \frac{\sum_{k=1}^{n_j} \sum_i^n y_{i,..}}{\sum_{k=1}^{n_j} a_{k,j}} \right)^2$$</td></tr>
<tr><td>1.2) Diversity Δ</td><td>N_i</td><td>$$\Delta = \frac{N}{N-1} \left[1 - \sum_{i=1}^{n} \left(\frac{N_i}{N} \right)^2 \right]$$
$$Var[\Delta] \approx \sum_i^n Var[N_i] \left(\frac{2N_i}{N^2} - \sum_i^n \frac{2N_i^2}{N^3} \right)$$</td></tr>
</table>
</td></tr>
<tr><td>Malta</td><td>All data requirements for calculating indicator are covered by Malta. Can be computed for data since 2002 from MEDITS data (using the COSER software presented during the MEDITS Co-ordination Meeting 2011). Procedure as per 'COM(2008) 187 final' document</td></tr>
<tr><td>Romania</td><td>During the period 2008-2010 will undertaken annually two priority surveys in the Romanian Black Sea, in May-June and October -November. It was used the bottom trawl 22/27-34 with horizontal opening of 13m. Research survey covered largest proportion of the Romanian marine area, using standard gear. All species that contribute to the indicator are consistently and reliably identified.
Besides of species which are included in the Appendix VII (sprat- Sprattus sprattus; horse mackerel- Trachurus mediterraneus ponticus; anchovy- Engraulis encrasicolus; turbot- Psetta maxima maeotica; dogfish- Squalus acanthias), we have data regard population structure and parameters for: sand smelt – Atherina boyeri; whiting – Merlangius merlangus euxinus; red mullet – Mullus barbatus; and Caspian shad – Alosa caspia nordmanni.</td></tr>
<tr><td>Slovenia</td><td><u>Source of data</u>. The available data for the calculation of the indicator for the proportion of large fish is available from the MEDITS surveys, for target species according to the MEDITS protocol.
<u>Methodology</u>. Biomass indices will be calculated in order to monitor overall increase or decrease in the population over time.</td></tr>
<tr><td>Spain</td><td>This is an indicator of the conservation status of fishes to be used for synthesizing, assessing and reporting trends in the biodiversity of vulnerable fish species (where maximum (asymptotic) body size is taken as a measure of a species' vulnerability to a given rate of fishing mortality). We don´t know if this indicator could be used with the MEDITS data, as the indicator refers to large species.</td></tr>
</table>

Table 8.2. Proportion of large fish "Indicator for the proportion of large fish by weight in the assemblage, reflecting the size structure and life history composition of the fish community".

<table>
<tr><th>Member states</th><th>Description</th></tr>
<tr><td>Bulgaria</td><td>Data is obtained during stock assessment surveys – two in the spring and two in the autumn.</td></tr>
<tr><td>Cyprus</td><td>As stated in AppendixXIII of DCF Decision 2010/93/EU, the specification and calculation of the indicators are provided in Commission Staff Working Document SEC 2008/449. There has been no regional agreement on following alternative calculations of the indicators. For this indicator (proportion of large fish), the "large fish" threshold is 40cm length.</td></tr>
<tr><td>France</td><td>The LFI is the proportion in weight of individual fish larger than a threshold length. This threshold is generally set as the seventy-fifth percentile of the community length distribution. This metric reflects the length distribution in the community. Weight-length relationships are used to estimate weight by length class.</td></tr>
<tr><td>Greece</td><td></td></tr>
<tr><td>Italy</td><td>To evaluate this indicator will be used historical series from MEDITS and MEDIAS surveys.
Will be used the plarge indicator calculated trough the R-SUFI routine. This will give proportion, based on the biomass, of specimens bigger than a certain size. ICES has identified a threshold of 40 cm TL, whereas in our case will be evaluated and compared the method proposed by Rochet et al., 2004 and tested on 4 different size ranges (15, 20, 25 e 30 cm TL).
<table>
<tr><th>Indicator</th><th>Data input</th><th>Formula</th></tr>
<tr><td>2) Proportion of fish bigger than a certain determined thresold l_{big}</td><td>$y_l(t)$ catches per l
$y(t)$ total catch (measured species) determined thresold $lbig$</td><td>$p_{large}(t) = \sum_{l>lbig} y_l(t) \Big/ y(t)$
$Var[p_{large}] = \frac{p_{large}(1-p_{large})}{y(t)}$</td></tr>
</table></td></tr>
<tr><td>Malta</td><td>All data requirements for calculating indicator are covered by Malta. Can be computed for data since 2002 from MEDITS data(using the COSER software presented during the MEDITS Co-ordination Meeting 2011). Procedure as per 'COM(2008) 187 final' document</td></tr>
<tr><td>Romania</td><td>For each species from catch was chosen a length class bigger than average length (Sprat ≥100-105 mm; Anchovy ≥120-125mm; Whiting ≥185-190mm; Red mullet ≥130-135mm; Horse mackerel
≥145-150mm; Turbot ≥61-64cm; Sand smelt ≥100-105mm; Caspian shad ≥160-165mm) for which were calculated the percentage of large individuals. Overall, proportion of large fish (%) decreased in the last three years (2008, 2009, 2010), only for whiting increased.</td></tr>
<tr><td>Slovenia</td><td><u>Source of data</u>. The available data for the calculation of the indicator for the proportion of large fish is available from the MEDITS surveys, for target species according to the MEDITS protocol.
<u>Methodology</u>. The indicator will be computed as proportion of biomass of fish larger than the mean size of first sexual maturation. Currently the mean size for particular stocks is not yet available – should be agreed on regional level. Furthermore the number of specimen from two Slovenian stations is</td></tr>
</table>

	too small to provide source of data for reliable calculation – the regional elaboration of data is needed.
Spain	This is an indicator for the proportion of large fish in the assemblage by weight, reflecting the size structure and life history composition of the fish community. The "large" fish threshold (th) needs to be set at a level that decreases the noise around the trend caused by e.g. recruitment effects while maintaining the indicators' sensitivity. The proportion of "large fish" is calculated as: P>th = W>th / Wtotal , where W>th is the weight of fish greater than the threshold accorded in length and *WTotal* is the total weight of all fish in the sample

Table 8.3. Mean maximum length of fishes "Indicator for the life history composition of the fish community".

Member states	**Description**
Bulgaria	Data is obtained during stock assessment surveys – two in the spring and two in the autumn.
Cyprus	As stated in AppendixXIII of DCF Decision 2010/93/EU, the specification and calculation of the indicators are provided in Commission Staff Working Document SEC 2008/449.
France	This indicator is presented in two versions. Average population maximum length (mean MaxSIH) is the un-weighted mean across populations of the length at the ninety-fifth percentile of the population length distribution (cm). This metric reflects variations of the right-hand side of length distributions within populations. Average individual maximum length (mean MaxDCF) is the population-abundance weighted mean of a fixed index of large size in each population (the median of annual ninety-fifth percentile of the population length distribution, cm). This metric reflects primarily changes in species composition.
Greece	
Italy	Length at the ninety- fifth percentile of the length distribution L0.95 - As a proxy will be used the R-SUFI routine that will estimate the Length at the ninety- fifth percentile for each species measured. The mean maximum length in the community will be considered as the mean length of the bigger fish in the community (Shin et al., 2005).
Malta	All data requirements for calculating indicator are covered by Malta. Can be computed for data since 2002 from MEDITS data (using the COSER software presented during the MEDITS Co-ordination Meeting 2011). Procedure as per

Indicator	Data input	Formula
3) Mean length of the community at 95 percentile ($l_{0.95}$)	- Length at 95 percentile - $L_{q,i}$ per species - S number of species measured in the survey - are considered the measured species with a temporal historic series	$l_q = \sum_{i=1}^{S} L_{q,i} \Big/ S$ $Var[l_q] = \sum_{i=1}^{S} Var[L_{q,i}]$

	'COM(2008) 187 final' document
Romania	The mean maximum length of some fish species presented above were calculated taken into account the start length classes for large individuals, also presented above.
Slovenia	Source of data. The available data for the calculation of the indicator for the proportion of large fish is available from the MEDITS surveys, for target species according to the MEDITS protocol. Methodology. Mean maximum length indicator (MMLI) will be calculated for the entire assemblage that is caught by a particular fishing gear. For many species the asymptotic total length ($L\infty$) is not available yet. Furthermore the number of specimen from two Slovenian stations is too small to provide source of data for reliable calculation – the regional elaboration of data is needed.
Spain	This is an indicator for the life history composition of the fish community. According to ICES (2009) the mean maximum length of fishes will be calculated as the mean ultimate body length (similar to the mean maximum length but based on asymptotic total length ($L\infty$) as opposed to *L*max) according to: $MMLn = \Sigma N_s . L\infty_s / \Sigma N_s$ where: $L\infty_s$ is the von Bertalanffy ultimate body length of each species s (from FishBase), and N_s is the total number of individuals of each species caught during the survey. A second index will be calculated based on the weight of fish in the sample, using: $MMLw = \Sigma W_s . L\infty_s / \Sigma W_s$

Table 8.4. Size at maturation of exploited fish species "Indicator of the potential *genetic effects* on a population".

Member states	**Description**
Bulgaria	Data is obtained during stock assessment surveys – two in the spring and two in the autumn.
Cyprus	As stated in Appendix XIII of DCF Decision 2010/93/EU, the specification and calculation of the indicators are provided in Commission Staff Working Document SEC 2008/449. This indicator requires the collection of age data from surveys (which is an additional requirement to the Medits protocol). As agreed in the 2011 Medits coordination meeting, a protocol for the collection of individual weight and age data from the survey will be produced and should be used from the 2012 Medits survey.
France	See MEDITS report 2005. Length at maturity (50% mature)
Greece	-
Italy	To evaluate this indicator will be used historical series from MEDITS surveys. Length at maturity L50 – This parameter will be calculated trough the R-SUFI routine that will estimate the maturity length at 50% (L50):

Indicator	Data input	Formula
4) The length on which 50% of the population *i* is mature in the year *t* (L_{50})	$N_{m,i}(t)$	1) Estimate of the probabilty to be mature p_l in function of the body length *l* in the year *t*: $\ell(p_{l,t}) = \log\left(\frac{p_{l,t}}{1-p_{l,t}}\right) = \mu + a_t + b_t l + \varepsilon$ 2) Estiamte of L_{50} as: $L_{50} = \frac{\ell(0.5) - \mu - a_t}{b_t}$

Malta	This indicator cannot be computed for past MEDITS data since age readings are required. This parameter was not required by the MEDITS protocol. Age reading is going to be introduced in the new MEDITS protocol to be issued in 2012. After this, Malta will be able to collect age data and therefore calculate this indicator using procedure as per 'COM (2008) 187 final' document, when enough samples are available.
Romania	Size at maturation of exploited fish species are presented on base of annually observations. For example: sprat 60-65mm; whiting 125-130mm; anchovy 85-90mm, horse mackerel 85-90mm; turbot 46-49cm; spiny dogfish 91-95cm
Slovenia	Source of data. The available data for the calculation of the indicator for the proportion of large fish is available from the MEDITS surveys, for target species according to the MEDITS protocol. Methodology. The most likely the so-called probabilistic maturation reaction norm indicator (PMRNI) will be used. The number of specimen from two Slovenian stations is too small to provide source of data for reliable calculation – the regional elaboration of data is needed.
Spain	The indicator is the probabilistic maturation reaction norm (i.e. the probability of maturing) and this is derived from the maturity ogive (i.e., the probability of being mature) and from the mean annual growth at age as $m(a,s)=(o(a,s)-o(a-1,s-\Delta s(a)))/(1-o(a-1,s-\Delta s(a)))$ where a is age, s is length, $o(a,s)$ is the maturity ogive, and $\Delta s(a)$ is the length gained from age a -1 to a . Estimation of the probabilistic maturation reaction norm thus requires (i) estimation of maturity ogives, (ii) estimation of growth rates (from length at age), (iii) estimation of the probabilities of maturing, and (iv) estimation of confidence intervals around the obtained maturation probabilities (see SGRN 06-01 for further details)

Table 8.5. "Distribution of fishing activities".

Member states	Description
Bulgaria	Data is obtained from the Vessel monitoring centre every hour for active vessels over 15 meters.
Cyprus	As stated in AppendixXIII of DCF Decision 2010/93/EU, the specification and calculation of the indicators are provided in Commission Staff Working Document SEC 2008/449. Concerning the indicators related to VMS data (indicators 5-7), it should be noted that their calculation will be feasible under the Cyprus Electronic Reporting System, which will be developed in accordance with the provisions of the Control Regulations No. 1224/2009 and No. 404/2011.
France	The VMS positions of French vessels are updated approximately every hour on average. Ifremer is developing a processing algorithm that makes use of raw VMS information. For any given vessel, this algorithm is based on the following parameters at each position: • distance to the nearest port, • average speed relative to the previous position in order to define whether the vessel is fishing or not, • the spatial cell in which the vessel is located. The first two parameters are used to verify for each position (applying a decision rule) whether the vessel is beginning or ending a trip. This initial processing makes it possible to define all the trips made by a vessel

	(beginning and end dates, ports of departure and arrival, numbers of days at sea). The second parameter is also used to estimate whether the vessel is fishing or making way, depending on the relevant metier. And finally, the third parameter leads to a characterisation of the distribution of the fishing effort for different types of spatial cell. Using this algorithm, a vessel's activity can be characterised in detail and several levels of aggregation defined for the spatialisation of that activity. In *Harmonie* (Ifremer's storage database for fisheries data) two tables have been created to hold VMS-sourced activity data: the first contains all the characteristics of the VMS trips and the second the spatial distribution of its activity for each day of a given trip. Data processing is carried out at the beginning of each month for the preceding month's activity. On completion of this processing, the tables are loaded into *Harmonie* automatically. In addition, this routine provides the data required to build maps showing how the effort is spatially distributed. All of the work and developments carried out during 2010 using VMS data have enabled the majority of the requested indicators to be generated. Each month, routine processing of the VMS data is conducted, generating all the trips by a vessel plus the associated sequences. Currently, three spatial scales are proposed: one is a statistical rectangle and the others a matrix of square cells each 10 and 3 minutes latitude by 10 and 3 minutes longitude. The algorithm involves processing the data in the chronological sequence of the vessel's positions over a period. Distance to the nearest port for each position and the average speed at that point relative to the preceding position are the key parameters for the algorithm. A succession of decision rules helps to define the trips and sequences. On completion of this processing, the data are automatically loaded into the two *Harmonie* database tables as described above. An interface developed in Java allows the spatialised effort data to be extracted rapidly in accordance with various aggregation criteria. The criterion for aggregation over one or more periods may correspond to a list of vessels defining a fleet, a metier or a fishery or, conversely, to an area of interest such as an MPA or a Natura 2000 zone. The allocation of a vessel to a fleet or a metier is not only determined annually using the fishing activity calendar, but also by month and by day at sea (link with the daily logbook). Various options allow indicators 5 to 7 be generated at the three proposed spatial resolutions, these being the distribution and aggregation of fisheries activity and areas of lesser impact due to mobile bottom fishing gears. The structure of the data tables allows maps to be produced quickly to show the spatial patterns of effort.
Greece	-
Italy	Indicator of the spatial extent of fishing activity. It would be reported in conjunction with the indicator for 'Aggregation of fishing activity'. It would be based on the total area of grids (3 km x 3 km) within which VMS records were obtained, each month.
Malta	The collection of VMS data is to date not supported by the DCF. VMS data in Malta is collected by the Fisheries Control Unit and official requests for such data need to be made. VMS data in Malta is for vessels over 12m LOA and VMS data is collected with 2hour intervals. Calculating procedure is as per 'COM(2008) 187 final' document

Romania	In Romania was implemented VMS system for vessel longer than 24m, but now is working only one vessel.
Slovenia	Source of data. VMS system that provide position reports every 15 minutes; InfoRib system with logbook data (with 6-level métier segmentation). Methodology: Geographical data with "fishing" records will be taken from the VMS data base (for each calendar year and month). Then the logbooks with 6 level métier classification will be taken from InfoRib database. The filter (for max 2 hours) will be used which will count the required positions. In the last step the position will be classified in the corresponding 3km x 3km square.
Spain	Individual vessel identifiers associated with VMS vessel position records should be replaced with metier codes and data filtered to provide 2h position records if monitoring is more frequent. Vessel position records should be assigned to 3km*3km grid cells and the total numbers of vessel position records by metier in each cell in each calendar month should be reported. When methods exist for separating 'fishing' and 'not fishing' vessel position records, these should be applied and the 'fishing' records reported. For reporting purposes, the indicator would state the total area (sum of areas of 3km grid cells) where fishing activity was recorded for each fishing technique in each month and year. Presentation of the underlying processed data (vessel position records by fishing technique and month) would also be needed to facilitate the development of other indicators.

Table 8.6. "Aggregation of fishing activities".

Member states	**Description**
Bulgaria	Data is obtained and processed from the Vessel monitoring centre every hour for active vessels over 15 meters.
Cyprus	-
France	See Indicator 5
Greece	-
Italy	Indicator of the extent to which fishing activity is aggregated. It would be reported in conjunction with the indicator for 'Distribution of fishing activity'. It would be based on the total area of grids (3 km x 3 km) within which 90% of VMS records were obtained, each month.
Malta	The collection of VMS data is to date not supported by the DCF. VMS data in Malta is collected by the Fisheries Control Unit and official requests for such data need to be made. VMS data in Malta is for vessels over 12m LOA and VMS data is collected with 2hour intervals. Calculating procedure is as per 'COM(2008) 187 final' document
Romania	Data is obtained and processed from the Vessel monitoring centre every 2 hours for active vessels over 24 meters.
Slovenia	Source of data. VMS system that provide position reports every 15 minutes (with 6-level métier segmentation). Methodology: Geographical data with "fishing" records will be taken from the VMS data base (for each calendar year, month and fishing technique). Then the logbooks with 6 level métier classifications will be taken from InfoRib database. The filter (for max 2 hours) will be used which will count

	the required positions. In the last step the position will be classified in the corresponding 3km x 3km square. At the end the calculation will be made in which squares the 90% of fishing activities were executed.
Spain	Individual vessel identifiers associated with VMS vessel position records should be replaced with metier codes and data filtered to provide 2h position records if monitoring is more frequent. Vessel position records should be assigned to 3km*3km grid cells and the total numbers of vessel position records by metier in each cell in each calendar month should be reported. When methods exist for separating 'fishing' and 'not fishing' vessel position records, these should be applied and the 'fishing' records reported. For reporting purposes, the indicator would state the total area (sum of areas of 3km grid cells) where 90% of fishing activity (90% of the total number of position records) was recorded for each fishing technique in each month and each year. Presentation of the underlying processed data (vessel position records by fishing technique and month) would also be needed to facilitate the development of other indicators.

Table 8.7. "Areas not impacted by mobile bottom gears"

Member states	**Description**
Bulgaria	According the Bulgarian national legislation, the bottom trawling is prohibited.
Cyprus	-
France	See Indicator 5
Greece	-
Italy	Indicator of the area of seabed that has not been impacted by mobile bottom fishing gears in the last year. It responds to changes in the distribution of bottom fishing activity resulting from catch controls, effort controls or technical measures (including MPA established in support of conservation legislation) and to the development of any other human activities that displace fishing activity (e.g. wind farms). The use of VMS apparatus started mainly as a control tool for the application of the Common Fsheries Policy (CFP), for the conservation and sustainable exploitation of fisheries'resources. The so-called "blue box", i.e. an on-board system allowing a fishing vessel to be tracked remotely, is one of the measures that the European Commission adopted under Regulation (EC) No. 2371/2002). The Regulation provides that, beginning on 1st of January 2005, fishing vessels with an overall length exceeding 15 m "shall have installed on board a functioning system which allows detection and identification of that vessel by remote monitoring systems". Subsequent Regulation (EC) No. 2244/2003 lays down more detailed provisions. VMS data represent a useful tool for management purposes as well, and are fully compatible with graphic rendering and interpretation through the GIS. The VMS database contains a huge amount of data, and a careful and long job of data "cleaning" will be necessary, since quality of data is imperative for its use in resource management. It will be necessary as well the separation between signals coming from the vessel during navigation and those transmitted during fishing activity, and their selection according to different

	fishing system. This data will be crossed with other sources of data: • **Vessel Register**, containing information about Boat characteristic (OL, GT, KW, fishing license...); • **Logbook**, containing vessel ID and information on the gear used. This allows the identification of the vessel to métier level 4. Logbook information usually includes retained catches of the main commercial species on a trip-by-trip basis and at the scale of an ICES rectangle. This information allows the identification of the vessel to métier level 5 or 6. VMS and logbook information needs to be processed in order to better describe fishing activity for use in the three pressure indicators. Different methods are used to: • Identify fishing activity; • Create fishing tracks; • Define métiers. At first, it is necessary to distinguish fishing activity from other activities (e.g., steaming). This is possible by using both information data about boat activity (the bluebox code) and vessel speed. These two sources of information have to be combined in different ways for the different metiers. The time frequency of VMS position returns for Italian vessels is variable, ranging from 20 minutes to 2 hours. According to the Report of the Working Group on the Ecosystem Effects of Fishing Activities (WGECO), frequency of VMS signals should be interpolated at low time intervals (< 0.5 h), so that it is likely that many fewer unaccounted movements have been undertaken and joining points by straight lines is reasonable. In this way, VMS signals of Italian fleet will be interpolated using Kochanek–Bartels cubic splines. Métier level 4 describes gear types. Level 5 describes trawl with species (i.e., otter trawl and plaice), while métier level 6 is a specific description based on the catch. The DGMARE request indicates that activity information is required disaggregated to métier level 6. This level is based on the catch composition. However, level 6 (mesh size) corresponds to level 5 for what concern trawlers (for the bottom and pelagic trawl the minimum mesh size is 40 and 20 mm respectively, Reg. 1967/06/CE). Regarding the small scale fishery, all the different mesh sizes have been aggregated at level 5. According to the WGECO, the key information would be about the vessels and its gear, so down to métier level 5. If this is agreed, it should significantly reduce the data volume needed to address the request and have no impact on the conclusions. The approach used to define métiers at level 5 consists in a quantitative analysis of logbook data, which were directly combined with information gathered from VMS. The results will permit to describe the distribution of activity of fishing boats (over 15 metres long), linking descriptive with "operative" information. All the calculation has been made with the R software, in agreement with the other experiences carried out for indicators 1-4. Definition of indicator 5, in particular, foresees the selection of signals during fishing activity, and can be defined according to the main different fishing system. With this purpose, exercises and case studies were already

	performed and utilized for activities of technical assistance to the Directorate of Fisheries, as well as in framework of the project "Construction of a GIS supporting management processes in maritime fishing and aquaculture sectors in the framework of EFF (European Fishing Fund)". This exercises made possible the identification of the geographical (using GSA as a reference) and temporal distribution of fishing boats considered. Definition of indicator 6 needs the elaboration of "frequency areas" for signals coming from different kind of fishing systems, and their assemblage according to their frequencies in the different geographical areas (GSA as a reference), and this could fit with the definition of indicator 6. Last indicator (N. 7 "Areas not impacted by mobile bottom gears") can only partly derived from the elaborations of number 5. It foresees the use and the crossing among different sources of data, as the areas subject to a kind of total or partial protection (either geographical or temporal), or dedicated to different activities. The presence of the majority of this data already stored in a GIS will facilitate their use according to the specific goal. It has to be noted, as a final note, that the definition of all the three indicators will be covered by the VMS data only for the fishing fleet over 15 metres long.
Malta	The collection of VMS data is to date not supported by the DCF. VMS data in Malta is collected by the Fisheries Control Unit and official requests for such data need to be made. VMS data in Malta is for vessels over 12m LOA and VMS data is collected with 2hour intervals. Calculating procedure is as per 'COM(2008) 187 final' document
Romania	The mobile bottom gears are prohibited in the Romanian marine area
Slovenia	Source of data. VMS system that provide position reports every 15 minutes (with 6-level métier segmentation). Methodology: Geographical data with "fishing" records for the vessels which uses bottom gears will be taken from the VMS data base. Then the logbooks with 6 level métier classification will be taken from InfoRib database. The filter (for max 2 hours) will be used which will count the required positions. In the last step the position will be classified in the corresponding 3km x 3km square.
Spain	VMS vessel position records for mobile bottom fishing gears should be identified (and data filtered to provide 2h position records if monitoring is more frequent). These VMS position records should be assigned to 3km*3km grid cells and the total numbers of vessel position records in each cell in each year should be reported. When methods exist for separating 'fishing' and 'not fishing' vessel position records, these should be applied and the 'fishing' records reported

Table 8.8. "Discarding rates of commercially exploited species".

Member states	**Description**
Bulgaria	No discard declared in logbooks. Discard data collected at observer trips.
Cyprus	For the discards data collected from observer trips, the formulas used for the raising of discards and the precision estimates are the ones proposed by the ICES Workshop on Discard Sampling Methodology and Raising Procedures (2004) and by Vigneau, 2006 (Raising procedures for discards: sampling

<table>
<tr><td></td><td>theory. ICES ASC CM 2006/K:16). These formulas were also used in the 2007 Cyprus Discards Pilot Study Report. Discards are raised to the total number of trips.

Discards data from logbooks are recorded and processed separately.</td></tr>
<tr><td>France</td><td>-</td></tr>
<tr><td>Greece</td><td>-</td></tr>
<tr><td>Italy</td><td>Regarding the indicator of state of the population, it will be represented by the discarding rates of commercially exploited species in relation to their landing. Biological samples, to be carried out under the National Program, will provide sampling on board of commercial vessels (i.e. trawlers).
During the biological sampling quantity of the target species discarded will be estimated. This indicator, although not giving a direct estimate of the state of exploitation of the resource, will allow determining whether sampling is performed optimally integrating the information derived from other indicators.
The rate of discard per metier and target species, will be expressed as "ratio estimator" and corresponding variance (Cochran, 1977). This rate will be calculated seasonally and annually.
For each year and for each metier will be also calculated a "composite indicator" (a geometric mean of annual rates of individual species).
The high rate of discard of commercial species is considered an indicator of lack in the harmonization between fishing gear and minimum sizes of fish. This could be an indicator of fishing pressure in areas where juveniles are concentrated, or of a less selective fishing activity with respect to market demands.
<table><tr><td>8) Rate of discard of commercial species</td><td>Discard (D) and landing (L) in weight per trip j, vessel k, metier m and species i

n= number of sampled vessels

N= total number of vessels per metier

.</td><td>Mean rate of discard (R) will be calculated as
$\hat{R} = \frac{\sum_{k=1}^{n} D_k}{\sum_{k=1}^{n} (L_k)}$

Variance:
$Var[\hat{R}] = \frac{(1-f)}{n\bar{L}^2}(s_D{}^2 + \hat{R}^2 s_L{}^2 - 2\hat{R}s_{DL})$
f =n/N; S_D= sampling variance of discards; S_L= sampling variance of landing and S_{DL}= sampling covariance</td></tr></table></td></tr>
<tr><td>Malta</td><td>Discards data is being collected during observer trips and during other sampling for collection of metier-related variables for metiers that have discards >10%. Discards data should be collected from logbooks for all vessels >10m LOA but this data is still very fragmentary. For vessels <10m LOA discards data is obtained through a sampling survey. Calculating procedure as per 'COM(2008) 187 final' document</td></tr>
<tr><td>Romania</td><td>Indicator 8 of the rate of discarding of commercially exploited species in</td></tr>
</table>

	relation to landings will based on respectively logbooks and observer trips processed separately.
Slovenia	Source of data. Landings by species from logbooks and discards by species provided by observers on board of fishing vessels. Methodology. The discarding rates by species are obtained from catch (C) and discard (D). $D = L\left(\frac{d}{k}\right)$ *D – total discard; L – total landings; d – sum of observed discards; k – sum of observed kept.* $C = L + D$ *C – total catch; L – total landings; D – total discards.*
Spain	Calculate total discard weight as a proportion of landed weight by species, fishing technique, quarter and year. As the indicator is a ratio it may be calculated with discards and landings data collected on the same trips or with raised data

Table 8.9. "Fuel efficiency of fish capture".

Member states	Description
Bulgaria	Data is obtained from anonymous questionnaires, filled by the fisherman.
Cyprus	So far it has not been possible to estimate indicator 9 – Fuel efficiency of fish capture, since it is extremely difficult to estimate it for the fishing vessels engaged in polyvalent activities (i.e. in more than one metier during the same fishing trip). It is anticipated that this issue will be discussed in the PGECON.
France	Derogation granted (access to monthly data not yet available)
Greece	-
Italy	The Fuel efficiency of fish capture is an Indicator of the relationship between fuel consumption and the value of landed catch. It provides information on trends in the fuel efficiency of different fisheries. Value of landings is calculated as the product of landings by species and prices. Cost of fuel is calculated as defined in the DCF. The indicator is calculated for each metier based on the six level classification, by Geographical Sub Areas, by quarter and by year.
Malta	Data is available for both landings and cost of fuel. However, for fuel costs, data under the DCF is required by Fleet segment and not by metier. A methodology to divide the fuel cost from fleet segment to metier still needs to be identified (a workshop has been held in 2011 on this) or a different methodology for collection of data needs to be established. This is especially problematic for countries having a high number of multi-purpose vessels such as Malta.
Romania	The data collected for economic and transversal variables allows the direct calculation fuel costs per quarter and métier for some segments. Estimation of the total costs for fuel in these métier are based on total effort (from logbooks) and fuel costs per sea day. For all other fleet segments, fuel costs per métier are estimated, based on the effort by métier.

Slovenia	Methodology. Calculate total value of landed catch (Euro) by fishing technique, quarter and year. Divide value by cost of fuel used to take this landed catch (Euro).
Spain	Calculate total value of landed catch (Euro) by fishing technique, quarter and year. Divide value by cost of fuel used to take this landed catch (Euro).

ToR 9) Compatibility and harmonisations of the DCF with GFCM task I requirements

The PGMed Group discussed the requirements between the so called GFCM Task 1.5 (the ones related to the biological variables) and the EU DCF needs.

There are currently 9 EU Member States, also involved in the GFCM, providing biological data in the Mediterranean and Black Sea under the DCF. Parts of these data are required under GFCM Task 1, which raises the questions of the double submission of the same information by Member Countries following different format, design, aggregation and also with a high risk of inconsistencies.

The PGMed Group was informed that last week during the "GFCM - SAC - Sub-Committee on Stock Assessment (SCSA) - 13th Session" (Rome, 23-26/01/2012) has been discussed a new possible "format" regarding the GFCM Task 1.5. During the Sub-Committee it has been proposed that a task 2 concerning the biological structure of yearly catch should be implemented instead of task 1.5.

The Sub-Committee agreed upon the idea to give the mandate to a group of experts or to a consultant to elaborate a design of the Task 2 module. This module should have a clear scope, be flexible enough to allow for different levels of aggregation of the information depending on the stocks selected (a selection of priority stocks should be considered the first step). Moreover, during that SAC-Sub-Committee meeting, a roadmap, which includes a workshop with the participation of the four Subcommittees Coordinators, has been proposed to identify new issues regarding the biological variables:
a group of consultant/expert will be established;
this group will check the current format and will try to propose some biological information and parameters that should be collect and stored in the GFCM database by countries;
the selection of priority stocks/species;
levels of aggregation of the different information collected and for the different species;
the evaluation and thereafter the new proposal made by these consultant will be sent and tested by different GFCM countries. The countries will evaluate how the new proposal works;
thereafter a workshop will be established to review the completeness of reference tables describing biological data relevant to achieved ad'hoc management objectives defined by GFCM.

The representative of the Commission, present to the PGMed meeting, informed the participants that an active collaboration has started between GFCM and EU in order to

harmonize as much is possible the requirements and the data collected under the DCF and GFCM biological task.

The PGMed recalled that "*A Workshop to develop guidelines to convert DCF biological, economic and transversal data to GFCM Task 1*" (Co-Chairs Joël Vigneau (France) and Italy to confirm) under DCF umbrella, is planned for 2012 in Corsica (France). The participants to this WS should be aware of the modifications under development in the GFCM, especially for what concern the biological issues. The ToRs are:

a) Review DCF and GFCM Task 1 segmentations and comment on their relevance for management purposes in the Mediterranean and Black Sea supra-region;
b) Review the completeness of reference tables describing biological, transversal and economic data relevant to achieved ad'hoc management objectives defined by both EC and GFCM;
c) Identify gaps or inconsistencies between the two approaches and consequently datasets required by these two international bodies;
d) Propose common understandings and interpretations of the DCF Decision 2010/93/EU and of the resolution GFCM/31/2007/1 to better describe and quantify fishing activities in terms of inputs and outputs for both bio-economic and ecosystem approaches in the Med&BS supraregion;
e) Develop guidelines to convert DCF biological, economic and transversal data to GFCM Task 1 variables, that EU Member states could adopt for creating homogeneous datasets in response to GFCM Task 1 requirements.
WKMed&BSConvert (WKMBDC) will report for the attention of RCMMed&BS, PGMed and GFCM/SAC.

ToR 10) Regional Data Base

MS participating to the PGMed discussed how to facilitate the implementation of a Regional Database (RDB) at Regional level. It was clarified that it was not the role of the PGMed but of the steering committee, formed in Ljubljana meeting (RCMMed&BS 2011), that should propose and analyse how to improve and to carry on the establishment of a broader RDB for Mediterranean and Black Sea.

The mentioned steering group will further develop a road map on how to put the database system in place, how to initiate and enable upload of data into the database and also agree on a medium term goal. The goal is that all Mediterranean MS will be able to upload data sets to the RDB in order to enable better regional planning of sampling and could facilitate work in answering to the different DCF data calls and end users requirements. PGMed 2012 proposes that the steering committee, formed during RCMMed&BS 2011, will manage the first step of the above mentioned roadmap.

In the following table are reported the actions needed to be taken during 2012 to implement a system for regional databases.

Action needed:	**Responsibility:**
Appoint people to the Steering Committee	RCMMed&BS 2011
a) appoint chair of the Steering Committee and communicate it to the RCMMed&BS co-chairs and PGMed chair b) formulate priorities for the RDB; c) identification of the body (bodies?) responsible for development of data processing features within the database and governance; d) identification of the responsible entity for technical governance, operational and strategic issues;	Steering Committee (February – March 2012)
Develop a work plan which should include: - data format: raw data, primary data, aggregated data etc etc... - data type: biological, transversal data (?). - set up the priority species that should be present in the RDB (i.e. demersal, small pelagic, large pelagic)… - which kind of biological information (i.e. length structure; age structure, sex, weight, maturity..) or biological variables (growth parameters, length weight relationship; maturity ogive etc etc) shall be stored - aggregation levels for different data (segmentation of the fleet, species, group of species…)	Steering Committee (March - April 2012)

- temporal (yearly, quarterly…) and spatial (GSA, country…) aggregation of the data The steering committee should also tackle the survey issue (for the time being Medits and Medias)	
Plan for the transfer of the RDB on a Regional platform and develop a plan for the implementation of the RDB	Steering Committee (March – May 2012)
Develop a plan for the maintenance, management and transfer of the RDB (also estimates of cost and overall financial implications)	Steering Committee (April – May2012)
National Correspondents to agree on the preliminary organisation and the first input of the RDB	NCs\Member States (May 2012)
Condense the input from the different NCs and formulate a draft-proposal for the next RCMMed&BS (Malaga, 2012)	Steering Committee (June 2012)
Evaluation of the draft proposal	RCMMed&BS (July – 2012)
Finalization of the proposal	Steering Committee (August - September 2012)
National Correspondents to agree on the final organisation of the RDB	NCs\Member States (October - 2012)

Due to the fact that most of the work (at least all the preliminary analysis) must be done by correspondence, the two participants to the PGMed 2012, also members of the steering committee, Christian Dintheer (France) and Ghorghe Radu (Romania), will get start to keep in touch with the rest of the group.

PGMed 2012 suggest that also a representative of GFCM (to be identified) could be involved in the process, in order to facilitate and to harmonize, when possible, the communication with the Regional Body. In order to facilitate the harmonization of the Mediterranean RDB with the specific format of EU bodies (e.g. JRC), PGMed also suggest that the EU Commission will be made aware of the progress in the RDB.

Once finalised, the Steering committee draft proposal will be sent to the National Correspondents. Comments, suggestions and improvements made by the NCs will be receipt by the Steering committee and thereafter the draft-proposal will be discussed during the RCMMed&BS 2012 (Malaga) meeting.

PGMed 2012, recalled that the members of the steering committee appointed during the Ljubljana meeting were: Christian Dintheer (France), Bojan Marceta (Slovenia), Gheorghe Radu (Romania), Maria Teresa Spedicato (Italy), Georges Tserpes (Greece). Moreover, due the fact that Spain has not still a clear position, María González will participate as observer.

ToR 11) Proposal of workshops and studies

Below is a list of proposed workshops, exchanges and studies scheduled for 2013 and beyond, agreed by PGCCDBS and of potential interest for PGMed. See PGCCDBS report for further details.

Proposals for Workshops 2013 and beyond

- WKARBLUE, Workshop on age reading of Blue whiting, Chaired by M. Meixide, Spain and J. Amtoft Godiksen, Norway will meet in Bergen, Norway, from 10–14 June 2013.
- WKNARC2, The Workshop of National Age Readings Coordinators, Chaired by Ângela Canha, Portugal, and Lotte Worsøe Clausen, Denmark, will meet in Horta (Portugal), 13–17 May 2013.
- WKSABCAL, Workshop on the Statistical Analysis of Biological Calibration Studies has been postponed until 2014; the ToRs for this WK are available in the PGCCDBS 2011 report.
- WKAVSG, Workshop on Age Validation Studies for Gadoids, Appointed chair Karin Hussi,Denmark, and Beatriz Morales-Nin, Spain, will meet in IMEDEA, Mallorca and the 22–26 April 2013.
- WKMIAS, Workshop on Micro increment daily growth in European Anchovy and Sardine, will meet in Mazara del Vallo, Sicily from 21–25 October 2013. Appointed chairs , G. Basilone, Italy, B. Villamor, Spain and M. La Mesa, Italy.
- WKPICS3, Workshop on the Practical Implementation of Statically Sound Catch Sampling Programmes, Chaired by Jon Helge Vølstad, Norway and Mike Armstrong, UK, will meet at ICES in Copenhagen in November 2013.

Proposals for exchanges 2013 and beyond

- Mackerel, small scale exchange. Appointed coordinator Jens Ulleweit (Germany).

Proposal for collaborative studies contracts

- A collaborative study on anglerfish (Lophius piscatorius) Priority 1.
- A collaborative study contract on "Support design based regional data collection programmes".

ToR 12) AOB

Links between PGCCDBS and PGMed

The main role of the PGCCDBS is to plan and coordinate the collection of data for stock assessment purposes and thus, to provide support to the Data Collection Framework. Following the proposal of the 2006 3rd Liaison Meeting, a specific planning group for the Mediterranean was created (PGMed) and met for the first time jointly with the 2007 PGCCDBS meeting in Malta (5th – 9th March 2007). 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 (PGCCBDS) should be promoted and maintained.

It was agreed that the link between the two planning groups (PGs) will be maintained through:
(i) the inclusion of each group's report as an annex of the other;
(ii) the organization of parallel meetings;
(iii) the organization of joint plenary for generic issues;
(iv) the organization of joint workshops.

Although points (ii) and (iii) 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.

Another issue to add is the lack of time for addressing specific topics for PGMed: for one hand, PGMed participates in the common presentations with PGCCDBS but also has to deal with a long list of ToRs, most of them practical issues that are developed during the meeting. In this sense, PGMed is a mostly practical group in comparison to PGCCDBS, which is more theoretical.

Thus, four main issues have been identified: (i) PGCCDBS and PGMed reports have become too independent; (ii) the active participation of experts from both the Mediterranean and Atlantic in the WK proposed during any PG is not the rule; (iii) PGMed lacks time to deal with all the ToR and (iv) both PGs have been diverging during last years.

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 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 plenary with PGCCDBS.

For 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.

Benchmark meetings

The Group discussed some of the problems that are found in the Working Groups (WG) of stock assessment in the Mediterranean region. As these WG are carried out under different umbrellas (STECF and GFCM), it is even possible that the same stock is analysed in different ways and contradictory results can be even reached. Also, in the GFCM WG there is no continuity in the kind of methodology and interpretation requested every year, so experts can even find that a stock assessment performed following the rules of the previous year is not accepted the next one.

As the Group was interested in knowing how methodological aspects are taken into account in ICES, Cristina Morgado (ICES Secretariat) kindly agreed to explain the objectives and main acting rules of Benchmark meetings.

In ICES, assessment working groups (WG) are carried out every year, where annual stock assessment is performed based on data and methods previously agreed at a benchmark workshop. . Every some years, Benchmark meeting are carried out to evaluate the appropriateness of data and methods to be used during the WG as well as to evaluate the possible implications for biological reference points. The main outcome of the benchmark meeting is the so called "Stock annex". The stock annex is a documents where the data and methodology to assessed a given stocks is described. The Benchmark workshops are attended by stock assessment experts, external experts (acting as external reviewers) as well as stakeholders. Each benchmark workshop deals with several stocks, usually with similar issues. The preriodicity to benchmark a given stock depends on the issues to be tacked, new data and experts availability about. An example of the ToRs of a Benchmark meetings can be seen in Annex VII.

Data Calls

The Group remarked the problems MS found during last Data Call from DGMare regarding the formats and amount of data requested. Whereas RCM Med&BS 2011 recommended that the Data Calls format should not be changed to facilitate the task of data providers, the Data Call launched in summer 2011 was completely modified and included a large number of species never asked before. In this sense, the requested information increased significantly from previous Data Calls, not only because of a longer list of species, but also because the new format obliged data providers to modify the data structure totally. Despite these modifications, the available period for sending the data (one month) was not increased which, together with the fact that the Data Call was launched in August, made the fulfil of the data requested very difficult for MS.

The Group suggested that it would be better that all the Data Calls come together during the year (not having different calls in the same year), maintaining previous formats and during the same period of the year. The Group also suggested that data already requested should not be asked again and thus only the new information should be sent. This would only be possible when the format is fixed. The Group also remarked that during the last RCM Med&BS, the period between when the data is collected and when the data is available was fixed and should be respected. In this sense, it is remarkable that, in the case of survey data, information should be available 6 months after the end of the survey and not after the reference year.

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Annex III. Terms of Reference PGMed 2012

1. Ranking system for the whole Mediterranean and for the Black Sea
2. Reviewing and update of the landing template with 2009 and 2010 data (i.e. landing for species and countries) for the Mediterranean and for the Black Sea
3. For the metier 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. MS should bring the data on catches, effort, value for metier related variables by GSA of the shared stocks
4. Assess the CV for shared stocks both for the Mediterranean (GSA 7, GSA 15-16 and GSA 17) and Black Sea
5. Update the work conducted in the PGMed 2011 for large pelagic species on sampling of length and stock related variables by using 2010 data
6. Assess the CV of large pelagic for length
7. Review the methodology used in the sampling of large species and harmonizationwith ICCAT requirements
8. Common understanding of Ecosystem Indicators (App. XIII EU Decision 93/2010) collection of methodologies used in the different countries
9. Compatibility and harmonisations of the DCF with GFCM task I requirements
10. Preparing a common understanding and methodology (e.g. type of data) to set up a Regional Database with "Biological data" and "Transversal data" (i.e. landing and effort) collected under the DCF (see "Regional scenarios and roadmap on Regional Database" report. Brussels, 22-24 February 2010)
11. Proposal of workshops or studies
12. AOB

Annex IV. Terms of Reference PGCCDBS 2012

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 by Assessment Working Group contact persons by providing advice on suitable actions and responsibilities for those actions.

e) Report on the implementation of the Quality Assurance Framework (QAF) by ICES Expert Groups, and make recommendations for further development of the QAF and procedures for ensuring its full implementation in stock assessments and associated advice.

f) Review and present practical examples of progress in developing enabling technologies and equipment for data collection from fisheries.

Annex V. Summary of the outcomes of workshops, study groups and other intersession work

Workshop on Age Reading of European Atlantic Sardine [WKARAS]

The Workshop on Age reading of European Atlantic Sardine (WKARAS) was held in Lisbon, Portugal, from 14 to 18 February 2011, chaired by Alexandra Silva, Eduardo Soares (IPIMAR, Lisbon, Portugal) and Isabel Riveiro (IEO, Vigo, Spain). There were eleven participants (seven with >4 years of experience in sardine age reading and contributing to stock assessment of sardine in ICES Divisions VIIIc and IXa) from five institutes (France, Spain, Portugal).

The otolith exchange included a total of 300 otoliths. The relative accuracy of sardine age determination after otolith exchange was generally good: the average percentage of agreement with modal age was 77.0% and 75.2% for the Iberian Stock and the Bay of Biscay, respectively; average bias was ca. 0.03 years. Precision was higher in the Bay of Biscay (CV=14.1%) than that in the Iberian stock area (CV=32.8%), although the latter was strongly influenced by high CVs at age 0 in the Gulf of Cadiz.

Compared to the previous workshop, the relative accuracy of sardine age determination within the Iberian Stock area (Cantabrian Sea and South Iberian Peninsula areas ICES Divisions VIIIc and IXa) has improved (by ca. 20% agreement increase) with minor improvement in precision. Identification of the otolith edge and of the first annual ring was the main between-reader discrepancy in sardine age determination.

A reference collection of 139 annotated digital otolith images was assembled during the workshop (catch area, date, fish length, location of modal rings), covering the northern Gulf of Biscay to the Gulf of Cadiz and Age groups 0–8 years (http://groupnet.ices.dk/WKARAS2011/default.aspx).

The Workshop recommends that i) sardine age reading workshops take place regularly at 4–5 years intervals, ii) procedures to calculate CV's by age groups are revised (given problems with the 0 age group), and iii) a workshop on daily ring methodology and interpretation is set up (like WKARAS 2009).

White anglerfish illicia and otoliths exchange

The exchange was coordinated by Jorge Landa (Spain). Modifications in the methodology of illicia preparation and in the traditional standardized age estimation criterion have allowed a new age estimation criterion on illicia. Using it, the catches-at-age have been able to be more successfully tracked (Landa *et al*., in prep.).

White anglerfish exchange of 200 images (100 illicia and 100 otoliths of the same specimen) took place during the third quarter of 2011. Age estimation analyses were performed within each calcified structures: illicia (i) and otoliths (ii). A comparison of

illicia and otoliths age readings (iii) was also performed. For both analyses, the between reader agreement was higher in illicia compared to otoliths. The illicia readings had lower relative bias than otolith readings, although were slightly less precise.

Illicia. The first annulus was well located by most of readers between 300 and 350 μm. Analysing only the illicia readers contributing to the stock assessment, the agreement, precision and specially the relative accuracy increased.

Otoliths. As in the last anglerfish illicia and otoliths ageing workshop in 2004, two different otolith analyses had to be performed due to the low agreement between the experienced otolith readers. There were discrepancies among the readers in the location of the first annulus.

Illicia vs. otoliths. Results indicated strong discrepancies between illicia and otoliths readings, as was concluded in the last anglerfish exchange and workshop in 2004 (Duarte *et al*., 2005). 86% and 71% of specimens were aged older using otoliths than using illicia when the readings of the experienced illicia readers and experienced otoliths readers R8 and R9 were compared.

Conclusions

Length-structured assessment models, that also enable using growth parameters as an additional input, will be used for white anglerfish in the next 2012 benchmark and assessment. The use of the overall growth parameters based on validated growth evidences (Landa *et al*., 2008) seems most appropriate at the current state of the art.

Illicia vs. otoliths. Considering the low levels of agreement between calcified structures (5–16%) it is not possible to use the age estimates of both illicia and otoliths together for stock assessment purposes.

Illicia. Although the relative bias values among the assessment readers can be considered good, the agreement values and precision suggest that they are not still sufficiently acceptable for building valid ALK for the stock assessment. If the new age estimation criterion is validated in several areas allowing the cohorts tracking, and the agreement among readers is increased, then the illicia could be used for stock assessment in the future.

Otoliths. The age estimation of white anglerfish, based on otoliths, is difficult mainly due to the occurrence of confusing false annuli and to the increasing opacity with age. The location of the first annulus is also a problem, even among expert readers. But there have been advances in daily growth studies that can help locate the first annulus more precisely. It is not possible to use otoliths of white anglerfish for stock assessment without a validated growth pattern and further research in that issue is needed.

<u>Blue whiting otoliths exchange</u>

After a blue whiting otolith ageing workshop in 2005, an otolith exchange of 189 fish caught in ICES Divisions IVa, IVb, IIa, and Va was carried out between twelve

countries (21 age readers) from January 2010 to February 2011 (organized by IMR, Norway). An agreement level with the modal age between age readers of 90% is considered desirable for some species, especially for readers supplying ages to an assessment working group. The overall percentage agreement for this exchange was only 46.4% and the overall precision CV was 17.1%, which is not satisfactory, even if all readers are included and interpreting age of blue whiting is considered relatively difficult. Underestimation of older ages seems to be one of the problems when interpreting ages of blue whiting. There is also a high level of bias between readers from many institutes.

The results were poorer than those obtained during the previous ageing workshop. This may partly be due to a higher number of inexperienced participants and a more complex otolith material with a higher proportion of older fish. However, the result suggests that a new workshop is needed to standardize the age reading between laboratories and to ensure the implementation of the ageing protocol/guidelines.

Hake otoliths exchange

The hake otolith exchange was initiated during the last Hake Age estimation Workshop conducted in November 2009 (WKAEH 2009; ICES 2010), and coordinated by Carmen Piñeiro and María Saínza (Spain). Readers from eight research institutes participated in the exchange, where all except two readers had been involved in the previous workshop (WKAEH 2009).

The exchange collection consisted of calibrated digital images of otolith sections from 237 fish collected during all seasons of 2006. Addition information on date, area of capture, total length and sex of respective specimens, were also provided to the readers. The length range of fish selected was between 20 cm and 80 cm TL from ICES Divisions VIIIc–IXa. The interpretation of the otoliths was based on the new guidelines agreed in the last Workshop (WKAEH 2009, ICES 2010) in order to improve the precision of age estimation.

The objectives of this exchange were to check the precision and bias of readers when using the new guidelines described at the last workshop (WKAEH 2009), and to test WebGR as an otolith exchange tool for hake otoliths.

The overall percentage agreement for this exchange was 62.3% (27–100%) and the overall CV was 33.1% (0–100%), which is not satisfactory. The high variability in the results was induced by the variable degree of participant experience in age determination of hake otoliths. Furthermore, due to the lack of a validated method to confirm the frequency of growth rings, the new guidelines are not sufficient to rule out individual subjectivity of interpretation of hake otoliths.

The use of the WebGR was very useful for calibration exercises; however, some improvements are needed for efficient running of the application in order to encourage general use of the tool.

Red mullet and stripped mullet otoliths and scales exchange

After a Workshop in 2009 (WKACM, Workshop on Age reading of Red mullet and Striped mullet), an exchange of 540 images with 377 otoliths and 163 scales from the two species both the Atlantic and the Mediterranean Sea was carried out in 2011 among four participants from Cyprus, Italy, and France. Differences were detected between the otoliths from the Atlantic and the Mediterranean Sea. Percent agreement among readers was relatively low and CVs were relatively high. Consequently, a Workshop on Age reading red mullet (*Mullus barbatus*) and striped red mullet (*Mullus surmuletus*) [WKACM] will take place in Boulogne-sur-Mer (IFREMER) in France, 2–6 July 2012.

European Age Readers Forum (EARF) and WebGR updates

PGCCDBS established the EARF in response to feedback received from those engaged in age reading across Europe. The objective was to establish a "One Stop Shop" for all those involved in age reading. It was thought that the forum would provide an important resource for training of new age readers, as well as providing opportunities for sharing and discussing existing age reading manuals, establishing standard operating procedures, and standardising preparation and interpretation methods. The forum was initially established as a Google Group, but was subsequently migrated to a more secure SharePoint site. At the moment the forum includes the following information:

The contact details and a mailing list of age reading coordinators as well as those engaged in age reading of fish species in the various European laboratories.

A calendar of upcoming workshops and also the PGCCDBS meeting details.

A link to the PGCCDBS documents repository.

A link to WebGR.

The EFAN Reports.

PGCCDBS guidelines for otolith exchanges and workshops.

A discussion board.

In 2011 a concerted effort was made to promote the usefulness of the EARF, and to encourage "buy in" from the age reading community. The EARF was presented to the meeting of age reading coordinators (WKNARC) which took place in June 2011. The utility of the forum was discussed and it was agreed by all that the forum is a useful tool and should be used by all institutes and age readers.

Also in 2011, several exchanges and workshops were successfully organised through the EARF. This proved very effective in streamlining communications between the chairs of the exchanges and the participants, and has also promoted on line sub forums (image J users forum) and discussions within the age readers forum, which are then

visible to the wider age reading community. According to the users, the EARF seems to be working well and no further development was desired at the moment.
New users have also been identified for the age reader's forum, i.e. the eel and salmon community, and the chairs of PGCCDBS have highlighted the EARF and the benefits of using the forum to the chairs of both the eel and salmon workshops, in the hope that they will encourage their members to use the forum in the future.
The results of the most recent eel age reading workshop (WKAREA-2) are currently not widely available and the participants of this workshop have requested a home for their results, age reading manual and the resulting reference collection. PGCCDBS suggests that the EARF is an ideal location for the age reading manual, with a link also to the report. It is also recommended that information be uploaded to the forum detailing the existence of a reference collection of agreed age images. The image collection could be stored in the WebGR tool, and the link to this could be highlighted on the EARF.
The same points also apply to the Workshop on Age Determination of Salmon (WKADS) which was held in January 2011. A digital image reference collection was compiled to include recognised scale features and age groups. It would be extremely useful to have a link to this collection on the EARF. It was also suggested in 2011 to include a literature section, with titles for relevant books on age reading topics, as well as references to historic methodological reports which would also be of interest. A good example of this is the recent e-mail discussions on re-ageing of whiting, where one person involved in the discussion highlighted that the information required already exists and the "New" method had already been tested 20 years ago. In this way the age readers forum will help preserve the "Institutional Memory" of the age reading community and ensure that this information is not lost when an individual leaves/retires, etc. However this has not been done yet, but could be encouraged amongst users of the EARF in 2012.
All members of the SharePoint should be informed that they can be alerted to updates on the site by activating the e-mail notification system.
Details of the location and ownership of reference collections of both annotated agreed age images and calcified structures should be housed on the forum.

WebGR implementation

During 2010, 2011 and early 2012 several workshops and exchanges have used WebGR (http://webgr.azti.es), with varying success, depending on the training that members of these expert groups and lab staff had in using this software and its tools. The tool has not been developed since 2010 but bug fixing is being supported by a small budget allocated in the German DCF National Programme.
From recommendations of WebGR users some short-term needed developments has been identified:

Develop installation packages in order to allow an easy set-up of the tool in servers different from the one provided by the WebGR consortium and in Windows and Linux environments.
System needs to provide better information about errors encountered during the batch upload of images, since it has been identified as the major problem by coordinators when setting up a new workshop.
Since the average user is not an IT professional, a better user manual needs to be written and an FAQ system would be desirable in WebGR's wiki page.
A tool allowing calibrating a set of images from the pixel to real distance ratio for having a calibration bar in the annotation screen is expected to be a great help for readers.
An R package (RWebGR) on statistical methodologies that will be developed during WKSABCAL 2014 for analysis of results of maturity and ageing workshops needs to be developed and its direct link to WebGR.
Develop a tool that allows performing daily rings study.
In the medium term and considering that WebGR has an Adobe Flash based interface that is likely to be discontinued by Adobe, it would be advisable to start migrating the interface to other standards like HTML5.

Updated age readers' contact list

The list of age readers' contacts was updated during the 2012 PGCCDBS Meeting in Rome. The list is now available on the European Age Readers Forum: http://groupnet.ices.dk/AgeForum/Age%20Readers%20Contact/Forms/AllItems.aspx

Perspectives for the new EU multi-annual programme 2014–2020 in relation to stock related biological variables

The new EU multi-annual programme opens a wide range of possibilities for regional cooperation and task sharing in relation to the production of stock related biological variables.
The improvement of regional focused sampling should be a priority and an independent analysis should be implemented to optimise best use of resources and eliminate duplication of efforts in relation to stock related biological variables. This will require in depth data analysis to ensure that the sampling programme is fit for purpose and will require a dedicated research programme. Sufficient consultations with the appropriate experts should take place to enable the allocation of tasks across expert laboratories in relevant MS. Task sharing between Members States should facilitate more focus on regional sampling where appropriate.
In relation to the envisaged regionalisation, the PGCCDBS was approached by the RCM NA to initiate a discussion of statistical and methodological procedures which

would enable sharing international information on biological parameters. The general opinion in the PGCCDBS is that task sharing is beneficial and should be encouraged where deemed appropriate. For institutes collecting small volumes of age samples for certain species and when new species are to be sampled, task sharing of the production of biological parameters such as ALK and maturity ogives are highly warranted in order to optimise the use of the existing expertise among the national laboratories.
There are, however, some concerns in relation to the formation of regional expert laboratories in relation to quality assurance of the age- and maturity estimations. A keystone in maintaining quality assurance and control is to ensure the avoidance of drift, and 'unification' of the estimations made by the laboratories treating the various stocks. Moving beyond precision based on individual assignments of age and maturity is in its beginning. This should be further encouraged and supported (also financially) to the regional expert laboratories. This will potentially facilitate a decrease in bias and improve the precision of the determinations despite the fewer readers and thus the risk of drift. The PGCCDBS encourages the task sharing and regionalisation, however, underlines the necessity for accompanying studies validating the age and maturity estimations and quality assurance made by the regional expert laboratories.
If all Nations agree to start up the formation of regional centres that are experienced, capable, and willing to perform the relevant analysis on assigned species; the allocation of species should be based on a review of the capability (in terms of expertise, equipment, financial possibilities, etc.) of each institute. The sampling, processing and exchange of samples between the suppliers ('customers') and the regional centres of expertise should be agreed and reviewed by a specified group consisting of experts on the particular stock in relation to its biology (growth, migration, stock components, maturation), the assessment needs and the options for sampling (both catches and scientific samples) for the species. Ideally those specific groups could be nominated by the relevant assessment working groups and then discussed, agreed and decided by the relevant RCMs/National correspondents so the first agreements could be established formally.

Review key outcomes of the Workshop on practical implementation of statistical sound catch sampling programmes (WKPICS1)

This workshop, chaired by Jon-Helge Vølstad (Norway) and Mike Armstrong (UK) was held in Bilbao, Spain, from 8–10 November 2011. The report for WKPICS1 is still in preparation. This following text is a preliminary summary of the outcomes of the workshop. Twenty-eight participants representing eleven countries including Iceland and the United States were present. Alan Lowther, United States, an external contributor, provided a particular reference and expertise in sampling small scale fisheries.

Prior to the workshop participants from each Member State were provided with a questionnaire to collect standard descriptions of each onshore and offshore sampling programme. These were collated at the workshop. The objectives, descriptions and the practical issues relating to setting up national programmes were detailed in the presentations of a diverse range of case studies covering:

Analyses of the Danish offshore observer programme;

At-sea sampling-the Norwegian reference fleet;

Maltese fisheries sampling programme;

Sampling programme of artisanal fisheries (Basque Country);

Sampling of commercial catches in Iceland (On-shore sampling);

Scottish port-sampling case-study;

UK England On-shore sampling programme;

Swedish sea-sampling programme-case study Skagerak.

The ideal sampling procedures are probability-based, carried out according to a statistical plan such that samples can easily be extrapolated to the target population using weights based on inclusion-probabilities.

The problems encountered in trying to adopt a probability based sampling scheme for onshore sampling programmes and offshore sampling programmes are quite different and a subgroup for each of these fields reviewed the experiences and the practical implementation of such a scheme.

In each case the ideal sampling frame, the primary sampling units and secondary units were defined. For onshore sampling the spatiotemporal sampling frames consist of sites-days (sites being the port of sampling or access point). For offshore sampling the frame is effectively based on a nation's vessel registry. Stratifying these sampling frames to improve on sampling efficiency, to limit cost or to focus sampling at key areas or domains of interest, were discussed and demonstrated with reference to the various case studies.

The key advantages of adopting a probability-based proportional sampling scheme is that the sampling of trips ashore or the fishing operations at sea within their respective domains will occur in their right proportions. Important métiers will achieve reasonable coverage, those that account for a minimal portion of the catch or effort will be sampled less.

Currently most sampling schemes are driven by a requirement to meet a minimum number of samples or a minimum level of precision. This can lead to quota sampling, where chasing a target for a particular métier, when sampling trips in a port, for example, will result in bias. In these instances métiers will not be sampled in their right proportion. The inclusion probabilities are unknown and the overall precision may be reduced.

Other key aspects that came from the workshop was the importance of recording non-events, such as documenting failed sampling attempts where procedures were followed but fishermen or merchants barred access to landings or a trip. These events

could create bias so need to be accounted for in raised estimates. Documenting their occurrence and their impact on the raised estimates, when presented to stake holders, has improved access to trips and landings in a couple of the case studies.
The post-stratification and the raising samples to catch estimates were only touched on briefly and these processes will be reviewed in detail using these case studies in WKPICS2.

Review key outcomes of the Study Group on Practical Implementation of Discard Sampling Plans (SGPIDS)

SGPIDS, chaired by Edwin van Helmond (The Netherlands), met from 27 June–1 July 2011 in Copenhagen, Denmark. Seventeen participants representing eleven countries were present at the meeting, including the outgoing chair, Simon Northridge, of ICES WGBYC (Working Group on Bycatch of Protected Species). SGPIDS was proposed by ICES PGCCDBS (2010) in response to a request from the Regional Coordination Meeting for the North Sea and Eastern Arctic (RCM NS and EA; 2010) to foster an exchange of experience and expertise between experts on discard sampling, planning and implementation of PGCCDBS recommendations and ultimately synchronize coordination and data collection procedures of discard sampling between countries.
To handle the exhaustive list of terms of reference the group split up into subgroups. These dealt with one term of reference each. Wherever necessary, the subgroups collected information about the existing discard sampling programmes by represented member state. This information was used to create an extensive overview of techniques and protocols used to sample discards onboard commercial vessels. Throughout the meeting plenary sessions were used to keep all subgroups up to date with each other.
The study group identified 21 different discard sampling programmes among the countries present, which were divided into two main types of discard sampling techniques: observer and self sampling (including self sampling with a reference fleet). Among observer programmes, differences in the procedures of selecting vessels and allocating sampling effort were identified. For example, nine out of 15 observer programmes use a quasi-random vessel selection method, based on a combination of opportunistic and co-operative criteria. The remaining six programmes use a fully random or otherwise systematic approach to select the vessels for monitoring. It was noted that only 25% of the programmes routinely record refusal rates. Six countries at SGPIDS conduct dedicated self-sampling schemes. Of these, 66% are validated (e.g. comparing biological data with matched or unmated observed trips and/or other independent sources). Vessel selection was a key source of potential bias for both sampling techniques. Sampling effort allocation was another major source of bias. Further, it was noted that legal conditions under which discard sampling is taking place, potentially harm the cooperation between industry and scientist in discard

sampling programmes and, eventually jeopardize the quality of sampling programmes.

SGPIDS recognised the potential for more standardisation in sampling designs and this should start with a complete description (in English) of sampling designs of all current sampling programmes. SGPIDS created a detailed description, at all levels (i.e. sampling protocols, data processing, data storage procedures, co-operation with industry, observer training and safety procedures) for the 21 programmes. With the aim to standardize discard sampling across countries, it is important that bias and variability associated with their respective sampling programmes are investigated.

The Data Collection Framework (DCF) set out precision levels but did not include any requirements about bias. Bias is introduced to sampling schemes when samples are not representative of the population. In accordance with previous working and study groups (e.g. ICES WKEID, WKACCU), SGPIDS identified a number of potential sources of bias in discard data. There was a general agreement that improving the data quality by reducing bias should be prioritised over increasing precision levels.

Annex VI. Methodology for sampling metier-related and stock-related variables by Member State

Métier-related variables

Metiers

Cyprus: LLD_LPF_0_0_0 SWO, LLD_LPF_0_0_0 ALB

Italy: LLD_LPF_0_0_0 ALB, LLD_LPF_0_0_0 BFT, LLD_LPF_0_0_0 SWO, PS_LPF_14_0_0, MISC

Malta: LLD_LPF_0_0_0 SWO, LLD_LPF_0_0_0 BFT, LA_SLP_14_0_0, PS_LPF_14_0_0 for BFT at harvest (also other metiers that came up with ranking system that do not target large pelagic species; if LPF are caught accidentally with these metiers, they are also sampled)

Spain: LLD_LPF_0_0_0 SWO, LLD_LPF_0_0_0 BFT, LLD_LPF_0_0_0 ALB, FPN_LPF

Species sampled

Cyprus: All species encountered during sampling

Italy: *Coryphaena hippurus*, Istiophoridae, *Sarda sarda*, *Thunnus alalunga*, *Thunnus thynnus*, *Xiphias gladius*

Malta: *Thunnus thynnus*, *Xiphias gladius*, *Coryphaena hippurus*, *Tetrapturus belone*, large pelagic sharks and all other large pelagic fish encountered during sampling

Spain: LLD_LPF: *Thunnus thynnus*, *Thunnus alalunga*, *Xiphias gladius*, *Katsuwonus pelamis*, *Isurus oxyrinchus*, *Prionacea glauca*, *Coryphaena hippurus*, and all other pelagic fish encountered during sampling. FPN_LPF: *Sarda sarda*, *Auxis rochei*, *Euthynnus alletteratus*, and all other pelagic fish encountered during sampling.

Description:

Cyprus: Objectives of sampling scheme: i. concurrent length sampling of retained and discarded catches (all species), ii. evaluation of discard volumes (in terms of weight and numbers).

Temporal stratification for the estimation of metier-related variables on a quarterly basis (as required by DCF).

Target Population: all catches made by the Cyprus licensed vessels operating the relevant metiers.

Sampling frame: the list of the licensed vessels, with the vessel being the PSU and the SSU the trips by each vessel in the stratum.

Selection of vessels & trips: Vessels and their trips are selected quarterly by random sampling.

Sampling location: at sea and at shore (landing sites). No auction market in Cyprus.

Number of trips: the minimum requirements for sampling have been selected, considering the relatively small fleet (i.e. 2 sampled trips per quarter for discard

sampling, 1 sampled trip per month for sampling landings). SWO main fishing season: March – September. ALB fishing season: May – August.

	Sampled trips at sea	Sampled trips at landing site
LLD_LPF_0_0_0 SWO	2 per quarter (6)	4
LLD_LPF_0_0_0 ALB	2 per quarter (4)	12

Data collected from on-board sampling:

- All hauls are sampled.
- At trip level: port, vessel name, dates and hours of departure and arrival, total number of fishing operations
- At Haul level: date, haul number, Soaking time, depth, number and size of hooks, quantity (in weight and numbers) of all species retained and discarded, length-weight measurements from all species caught (retained and discarded). Sex and maturity information for SWO (which is gutted on board) and also for ALB, BFT if gutted on board.

Data collected at landing site:

- Trip details: port, vessel name, dates and hours of departure and arrival, total number of fishing operations, average depth of fishing operations, total fishing time, total number and size of hooks.
- Quantity (weight and number) of all landed species (Weight recorded by presentation type e.g. gutted). Length-weight measurements from all landed species.

Minimum number of length (and weight) measurements: ALB: 400, SWO: 180, BFT: 30

Italy:

Thunnus thynnus: The total number of specimens to sample is distributed proportionally between the different fishing gears (purse seine, tuna traps, drifting longlines) and it covers all the Italian coasts. This total number includes also the number of specimens collected with the tuna cages following the ICCAT rules.

Sampling with Purse seine

Tuna fishing with purse seine can be conducted every year from 1st January to 30th June (ICCAT Rec. 05-05).

At least 20% of vessel operating with purse seine must be monitored. The observer on board could also collect data on the presence of death specimens and landed, and transmit every quarter these kind of information.

Following ICCAT (Rec. 06/07) and CE rules, is mandatory to make a sample during the slaughter process. This sample should provide, at least, length and weight of the single specimen.

Number of specimens to be collected is around 100 specimens every 100 tons or 10% of the total number of individuals. Collecting all the other parameters (sex, maturity) should be possible following the different phases of the tuna processing. At least 40 sampling days are foreseen.

Sampling with tuna traps

For *T. thynnus* is foreseen also a sampling program on tuna traps, even if a small number of individuals is caught with this kind of fishing activity.
Following ICCAT (Rec. 06/05) rules, all tuna traps must be monitored.
Collecting all the other parameters (sex, maturity) should be possible following the different phases of the tuna processing.
At least 5 sampling days are foreseen.
Sampling with drifting longlines
Following ICCAT (Rec. 06/05) rules, on board observers must be cover at least 20% of vessel (with LFT > 15 m) operating with drifting longlines. Observers should refer on the length of specimens caught and transmit those kind of information.
Tuna fishing with drifting longlines can be conducted every year from 1st January to 31st May (ICCAT Rec. 06- 05).
The landing sampling scheme covers a series of ports, at least one for region. During the fishing season, in each port, observation is conducted once every two weeks (or more depending from the fishing season).
At landing site is collected, for a single vessel, length and weight of single specimens, and weight and number of the total capture. The total number of fishing operations, for each fleet segment, is also monitored.
Some specimens could be landed already eviscerated, so it could be difficult to obtain information on sex.
CPUE index, following ICCAT methodology, is evaluated, on monthly and annual basis.
At least 50 sampling days are foreseen.
Age sampling
To determine age, at least 640 specimens of Thunnus thynnus are sampled.
The age analysis is based on the sample of the first spiniform ray of the dorsal fin and the subsequent count of the translucent zones. Age sampling should cover all the lengths frequencies of the landing.
Xiphias gladius: The total number of specimens to are distributed proportionally among the different fishing gears (drifting longlines and miscellanea) distributed along the Italian waters.
Sampling with drifting longlines
Following ICCAT recommendations (ICCAT Rec. 06-05) X. gladius fishing with drifting longlines, stop every year from 15th October to 15th November.
The sampling scheme cover a series of ports, at least one for region. During the fishing season, in each port, observation are conducted once every two weeks (or more depending from the fishing season).
Length and weight of single specimens, and weight and number of the total capture are collected at landing site for a single vessel. The total number of fishing operations, for each fleet segment, are be also monitored.

Some specimens could be landed already eviscerated, so it could be difficult to obtain information on sex.
CPUE index, following ICCAT methodology, is evaluated, on monthly and annual basis.
At least 30 sampling days are foreseen.
Sampling with other gears
The same methodology used for the drifting longlines will be applied for these activities.
Some specimens could be landed already eviscerated, so it could be difficult to obtain information on sex and maturity stages.
CPUE index, following ICCAT methodology, will be evaluated, on monthly and annual basis.
At least 15 sampling days are foreseen.
Age sampling
To determine age, at least 900 specimens of Xiphias gladius are sampled. The age analysis is based on the sample of the second spiniform ray of the of the anal fin and the subsequent count of the translucent zones. Age sampling should cover all the lengths frequencies of the landing.
Thunnus alalunga: The total number of specimens to sample are distributed proportionally among the different fishing gears (drifting longlines and miscellanea) covering all the Italian waters.
It must be pointed out as the fishing period of the species presented a high seasonality more or less concentrated during the spring and autumn.
Sampling with drifting longlines
The landing sampling scheme cover a series of ports, at least one for region. During the fishing season, in each port, observation are conduct once every two weeks (or more depending from the fishing season).
Length and weight of single specimens, and weight and number of the total capture are collected at landing site, for a single vessel The total number of fishing operations, for each fleet segment, is also monitored.
Some specimens could be landed already eviscerated, so it could be difficult to obtain information on sex.
CPUE index, following ICCAT methodology, are evaluated, on monthly and annual basis.
At least 15 sampling days are foreseen.
Sampling with other gears
For a set of a miscellaneous gears *T. alalunga* represents a by-catch. Even if sampling with other gears present more difficulties than drifting longlines, the same methodology is applied to monitor all other gears catching *T. alalunga*.
Some specimens could be landed already eviscerated, so it could be difficult to obtain information on sex and maturity stages.

CPUE index, following ICCAT methodology, is evaluated, on monthly and annual basis.
At least 10 sampling days are foreseen.
Age sampling
To determine age, at least 440 specimens of *Thunnus alalunga* are sampled.
The age analysis is based on the sample of the first spiniform ray of the dorsal fin and the subsequent count of the translucent zones. Age sampling should cover all the lengths frequencies of the landing
Sarda sarda: The total number of specimens to sample is distributed proportionally among the different fishing gears covering all the Italian waters.
It must be pointed out as the fishing period of the species presented an high seasonality more or less concentrated during the year and in the different areas.
Sampling
The landing sampling scheme cover a series of ports, at least one for region. During the fishing season, in each port, observation will be conduct once every two weeks (or more depending from the fishing season).
Length and weight of single specimens, and weight and number of the total capture are collected at landing site, for a single vessel. The total number of fishing operations, for each fleet segment, is also monitored.
Some specimens could be landed already eviscerated, so it could be difficult to obtain information on sex.
CPUE index, following ICCAT methodology, are evaluated, on monthly and annual basis.
At least 15 sampling days are foreseen.
Age sampling
To determine age, at least 70 specimens of Sarda sarda are sampled.
The age analysis is based on the sample of the first spiniform ray of the dorsal fin and the subsequent count of the translucent zones. Age sampling should cover all the lengths frequencies of the landing.
Coryphaena hippurus: The total number of specimens to sample are distributed proportionally among the different fishing gears (hand-lines; purse seine; FADs) covering all the Italian waters. Even if specimens of Coryphanea hippurus are collected with purse seine and/or hand-lines, it should be noted that both
fishing activities are carried out in presence of FADs. FADs will be considered the target metiers for this species.
Fishing period of the species presented an high seasonality more or less concentrated during the year.
Sampling with FAD (Fish Aggregating Devices)
Sampling with FAD presents and high seasonality, summer and autumn, mainly concentrated in the south part of Italy.

The landing sampling scheme cover a series of ports, at least one for region. During the fishing season, in each port, observation are conducted once every two weeks (or more depending from the fishing season).
Length and weight of single specimens and weight and number of the total capture are collected at landing site, for a single vessel,. The total number of fishing operations, for each fleet segment, is also monitored.
CPUE index is evaluated, on monthly and annual basis.
At least 15 sampling days are foreseen.
Age sampling
To determine age, at least 1000 specimens of Coryphanea hippurus are sampled.
The age analysis is based on the sample of the first spiniform ray of the dorsal fin and the subsequent count of the translucent zones. Age sampling should cover all the lengths frequencies of the landing.
Istiophoridae (*Tetrapturus belone)*: The total number of specimens to sample is collected through harpoon that is considered the target metier for this species. Fishing season of the species is sporadically and presents a high seasonality more or less concentrated during the year.
The total number of specimens to sample is distributed at national level proportionally between the different fishing periods and covering the Italian waters.
Sampling with harpoon
The landing sampling scheme covers a series of ports, at least one for region. During the fishing season, in each port, observations are conducted once every two weeks (or more depending from the fishing season).
Length and weight of single specimens and weight and number of the total capture are collected at landing site, for a single vessel. The total number of fishing operations, for each fleet segment, is also monitored.
CPUE index is evaluated, on monthly and annual basis.
At least 5 sampling days are foreseen.
Age sampling
The age analysis is based on the sample of the first spiniform ray of the dorsal fin and the subsequent count of the translucent zones. Age sampling should cover all the lengths frequencies of the landing.

Malta: Combination of on-board observations and port sampling of vessels using such metiers. For LLD, 2 trips per month are sampled randomly while for LA, a minimum of 1 trip per month is sampled. All Group 1, 2 and 3 species encountered are sampled for metier-related variables. If very high numbers of a species are present, a sub-sample (50) is taken from each.
For PS targeting BFT, observers are present at harvest (also conducted by ICCAT regional observers where 10% of BFT harvested are sampled during every harvesting operation)

Spain: LLD_LPF: Combination of on-board observations (census of the catch) and sampling of landing on shore. Sampling coverage ranged from 22% to 78% of trips made during the sampling year. Coverage of the sampling on board varies between 6% and 37% depending on the metiers. All species encountered in the catches are sampled for metier-related variables.
FPN_LPF: All sampling for FPN_LPF are made on-board. Two trips per week are sampled randomly. Sampling coverage is about 14% of trips made during the sampling year. All species encountered in the catches are sampled for metier-related variables. Due to the high numbers of specimens caught, a sub-sample is taken of each species.

Stock-related variables

Metiers

Cyprus: LLD_LPF_0_0_0 SWO, LLD_LPF_0_0_0 ALB
Italy: LLD_LPF_0_0_0 ALB, LLD_LPF_0_0_0 BFT, LLD_LPF_0_0_0 SWO, PS_LPF_14_0_0, MISC
Malta: LLD_LPF_0_0_0 SWO, LLD_LPF_0_0_0 BFT
Spain: LLD_LPF_0_0_0 SWO, LLD_LPF_0_0_0 BFT, LLD_LPF_0_0_0 ALB, FPN_LPF

Species sampled

Cyprus: For weight data: All species caught. For sex and maturity data : SWO, BFT and ALB. For age data: ALB
Malta: *Coryphaena hippurus*, *Thunnus thynnus*, *Xiphias gladius*, *Tetrapturus belone* (for this species all stock-related variables except age)

Description

Cyprus: BFT: In accordance with the regional agreements (2011 PGMed) on the coordination of sampling of large pelagics, Cyprus is not required to collect stock-related variables for BFT (Table 1.6 of 2011 PGMed report). However, individual length & weight data are collected while sampling the metiers LLD_LPF_0_0_0 SWO and LLD_LPF_0_0_0 ALB for metier-related variables. Sex and maturity data are also collected while on-board sampling for metier-related variables (if individuals are gutted at sea). The above stock-related variables are collected annually, since there are no additional cost implications.
SWO: In accordance with the regional agreements (2011 PGMed) on the coordination of sampling of large pelagics, Cyprus is not required to collect stock-related data for SWO (Table 1.7 of 2011 PGMed report). Nevertheless, stock-related variables (except age data) are collected during sampling for metier-related variables with no additional cost implications (sex and maturity data are collected only while sampling on-board, since usually SWO is gutted on board). These stock-related variables are collected annually (considering also that sex data on SWO is an annual ICCAT requirement).

ALB: In accordance with the regional agreements (2011 PGMed) on the coordination of sampling of large pelagics, Cyprus is required to collect stock-related data for ALB (Table 1.8 of 2011 PGMed report). Age data are collected on a triennial basis (for 2011-2013 NP will be collected in 2013). Sex and maturity data are also planned to be collected on a triennial basis (ALB is landed whole and is not possible to collect these variables during sampling for metier-related variables). Weight data are collected annually, during sampling for metier-related variables.

Malta: For *Coryphaena hippurus*, *Xiphias gladius* and *Tetrapturus belone* samples are randomly bought from the market (only one fish market present in Malta) where a field recorder is present every day who is responsible for purchasing such samples coming from longlines (for all species above), lampara nets using FADs (for dolphinfish only). Samples are collected throughout the year (segmented by quarter) for these species to ensure that the number to be sampled planned in the EU DCF National Programme is fulfilled.

For *Thunnus thynnus*, stock-related variables are collected from the harvesting observations done during the harvesting season (generally October to December) of Bluefin tuna caught by purse seiners and transferred to the fish farm cages. Observers are present during the majority of harvesting operations to collect such data. Only for 2010, no observers from Malta were sent at harvest as this was done by the ICCAT regional observers. Some stock-related data is also collected during onboard observations / landing observations on drifting longlines.

Annex VII. Example of the ToRs of a Benchmark meeting

WKFLAT – Benchmark Workshop on Flatfish Species and Anglerfish

2011/2/ACOM47 A **Benchmark Workshop on Flatfish Species and Anglerfish** (WKFLAT), chaired by External Chair Joanne Morgan, Canada, ICES coordinator Rob Scott, UK, and invited external (Richard Methot (USA) and Paul Nitschke (USA)) experts will be established and will meet in Derio, Bilbao, Spain, 1–8 March 2012 to:

a) Evaluate the appropriateness of data and methods to determine stock status and investigate methods for short term outlook taking agreed or proposed management plans into account for the stocks listed in the text table below. The evaluation shall include consideration of fishery-dependent, fishery independent, environmental, multi-species and life history data.
b) Agree and document the preferred method for evaluating stock status and (where applicable) short term forecast and update the stock annex as appropriate. Knowledge about environmental drivers, including multispecies interactions, and ecosystem impacts should be integrated in the methodology.
c) If no new analytical assessment method can be agreed, then an alternative method (the former method, or a trends based assessment) should be put forward;
d) Evaluate the possible implications for biological reference points, when new standard analyses methods are proposed. Propose new reference points taking into account the WKFRAME results and the introduction to the ICES advice (section 1.2).
e) Develop recommendations for future improving of the assessment methodology and data collection;
f) As part of the evaluation:
    i. Conduct a one day data compilation workshop. Stakeholders shall be invited to contribute data (including data from non-traditional sources) and to contribute to data preparation and evaluation of data quality. As part of the data compilation workshop consider the quality of data including discard and estimates of misreporting of landings;
    ii. Consider further inclusion of environmental drivers, including multispecies interactions, and ecosystem impacts for stock dynamics in the assessments and outlook
    iii. Evaluate the role of stock identity and migration

Stock	Stock leader
Anglerfish (L. piscatorius) (Divisions VIIb-k and VIIIabd)	Inaki Quincoces
Anglerfish (L. budegassa) (Divisions VIIb-k and VIIIabd)	Jean Claude Mahe
Anglerfish (Divisions IIa and IIIa, Subarea IV and Subarea VI)	
Anglerfish (L. piscatorius) (Divisions VIIIc + IXa)	Paz Sampedro
Anglerfish (L. budegassa) (Divisions VIIIc + IXa)	Ricardo Alpoim
Sole in Division VIIe	Sven Kupschus
Megrim (Divisions VIIb-k and VIIIabd)	Marina Santurtun

The Benchmark Workshop will report by 15 March 2012 for the attention of ACOM.