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Assessment of the Implementation and revision of the Action Plan for the Conservation of Cartilaginous Fishes (Chondrichthyans) in the Mediterranean

In the framework of a sustainable development approach, this document will be available only in electronic format during the meeting.

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Introduction

The aim of RAC/SPA is to assist and support Mediterranean countries in the implementation of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (the SPA Protocol) and its related Action Plans.

The *Action Plan for the Conservation of Cartilaginous Fishes (Chondrichthyans) in the Mediterranean* (UNEP MAP RAC/SPA 2003), hereinafter referred to as the *Shark Action Plan*, was approved at the XIII Conference of Contracting Parties to the Barcelona Convention. In addition to guiding activities within the context of the Barcelona Convention, the *Shark Action Plan* was also developed in line with the UN FAO's International Plan of Action for the Conservation and Management of Sharks (IPOA–Sharks), the UN Fish Stocks Agreement, and the World Summit for Sustainable Development.

The *Shark Action Plan* focuses attention onto the Mediterranean species of shark, rays, skates and chimaeras, as a contribution towards a general goal of ensuring the sustainable exploitation of marine goods and services in the Mediterranean Sea. It sets out six major conservation and management objectives, general priorities for action to achieve these objectives, and specific implementation measures for action at national and regional level. Annexed to the 2003 *Shark Action Plan* is a five year Implementation Timetable, cumulating in the final year in a meeting to review progress. The RAC/SPA accordingly hosted a meeting of independent chondrichthyan fish experts in May 2009 (referred to in this report as the expert group) in order to review the implementation of the *Shark Action Plan* and elaborate a calendar of actions for the coming four years. See Annex IV for a summary report of this meeting.

This document covers the following elements:

i. A review and evaluation of activities undertaken at regional and national levels to implement the original work programme set out in the *Shark Action Plan*.

ii. Proposals to update the work programme and catalyse further actions to promote the implementation of the *Shark Action Plan*, particularly for threatened species of cartilaginous fish, as developed by the expert group during the implementation review meeting convened in May 2009.

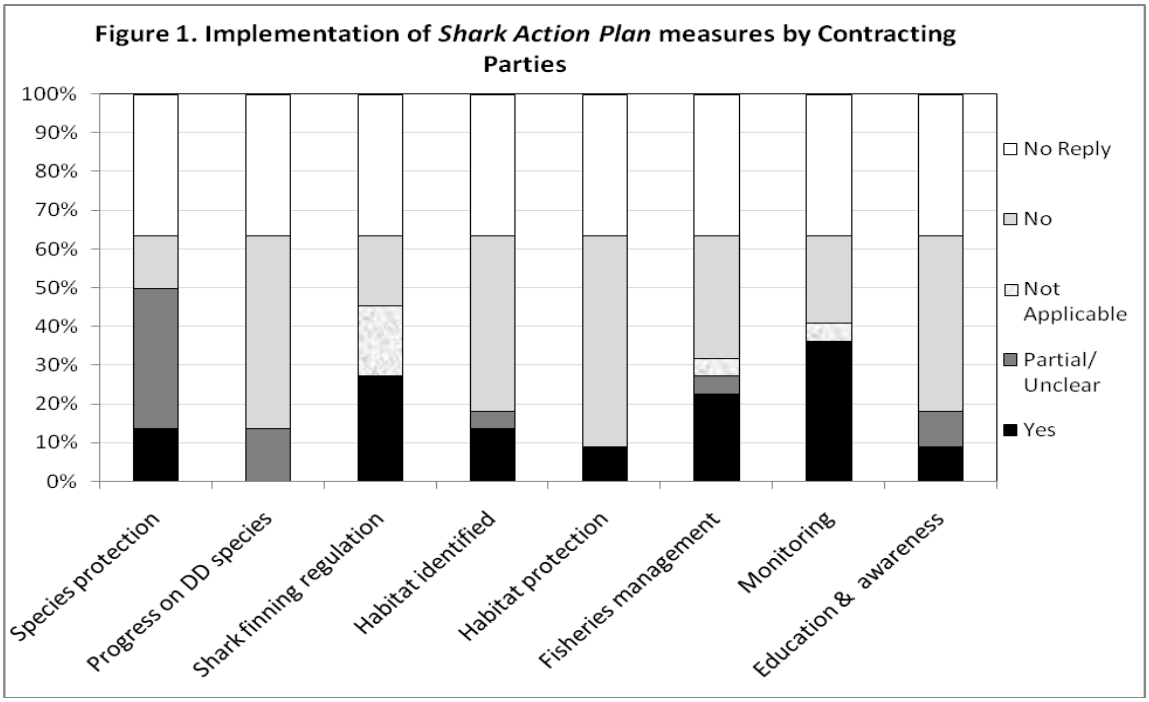
2. Review of Implementation of the *Shark Action Plan*, 2003–2008

The RAC/SPA circulated a short questionnaire in March 2008, asking Contracting Parties (CPs) to the Barcelona Convention SPA Protocol to provide a brief update on steps taken at national level to implement the *Shark Action Plan* (UNEP-MAP RAC/SPA, 2003). This was further updated in April 2009. The results of this questionnaire survey are presented in tabulated form in Annex I.

These results and other information on actions undertaken by RAC/SPA and other organisations were supplemented by personal communications from regional experts. These sources were used to evaluate overall performance against the actions listed in the Implementation Timetable set out in the *Shark Action Plan*. A tabulated summary of this evaluation is provided in Annex II, and the findings are expanded in Section 3 below.

It is important to note, however, that this evaluation cannot provide a complete picture of activities in the Mediterranean, since eight CPs did not reply to the questionnaire. Two of these eight were EU Member States, whose implementation of the *Shark Action Plan* will be governed to some extent by actions adopted at European Community level. Two CPs responded, but reported that no action had been taken. The European Commission was not consulted, because information on existing measures had recently been published in the form of the consultation on the proposed development of a Community Plan of Action (CPOA) (European Commission 2008), an impact assessment (European Commission 2009b), a Shark Assessment Report (European Commission 2009c), and the CPOA itself (European Commission 2009a), which has now been adopted by the Council of Ministers.

Figure 1 presents a graphic representation of implementation by CPs of the implementation measures set out in the Shark Action Plan, based on the results in Annex I.



It is apparent from the results that fewer than 50% of CPs have implemented fully any of the actions identified in the Implementation Timetable. (The next section presents more information on

implementation measures taken.) This poor performance is perhaps understandable, to some extent, because the conservation and management of chondrichthyan fishes is widely recognised as challenging (FAO 1999). However, it is disappointing that even the most simple of measures, such as protection for the three species listed in Annex II of the Convention, has been implemented fully by less than 20% of Parties, while only 50% have protected some Annex II species. Fewer than 30% of CPs have adopted finning bans or other fisheries management measures, and monitoring is being undertaken by only about 35% of CPs – despite legal obligations for monitoring of bycatch and fisheries. This picture would have appeared even worse had the European Community Finning Regulation[1] and Shark Plan not been adopted.

The high risk of extinction faced by the world's cartilaginous fishes is widely acknowledged. Species that formerly supported target fisheries have now been so seriously depleted that, in the absence of conservation measures, they are at risk of being driven to extinction as bycatch in fisheries targeting more abundant species (Camhi *et al*. 1998, Fowler *et al*. 2004). Other species that were formerly a discarded bycatch are now increasingly in demand in markets and form an important component of landings from multispecies fisheries. The International FAO IPOA-Sharks was adopted in 1999 in order to address this issue worldwide and, for the same reasons, the RAC/SPA was directed in 2001 to develop a Plan for the conservation of chondrichthyan fish populations in the Mediterranean Sea.

It is widely acknowledged, even by FAO itself, that the implementation of the FAO IPOA-Sharks has been disappointing (Lack and Sant 2006; Cavanagh *et al.* 2008). Ten years after the deadline for shark fishing States to adopt their national Shark Plans, only a small proportion has done so. Perhaps it is not surprising that, five years after their adoption of the Mediterranean *Shark Action Plan*, the majority of CPs also appear not to have implemented many of the actions that it proposed. Meanwhile, however, improved knowledge of the status of the chondrichthyan fish fauna of the Mediterranean has confirmed that this is the world's most dangerous sea for these species, with over 40% of species threatened with extinction (Cavanagh and Gibson 2007).

The May 2009 meeting of experts that reviewed progress against the actions proposed in the *Shark Action Plan* expressed concern regarding this poor level of implementation of the measures set out to combat threats to the chondrichthyan fishes of the Mediterranean. They reiterated the importance of CPs taking up the actions identified in the original implementation schedule, and made recommendations for a new Implementation Timetable for the period 2010 to 2013 with the aim of addressing these threats. These new actions are presented in Section 4, while Annex IV presents the summary report of the expert meeting.

3. Assessment of activities undertaken to implement the *Shark Action Plan*

3.1. Legal Protection

Legal protection for endangered species is one of the main objectives of the *Shark Action Plan* (A.10.2), which identified the 'urgent provision of legal protection status' for endangered species as the first priority for action (B.11.1) and implementation measure (C.1). Contracting Parties (CPs) were asked, in Action 10, to implement legal protection for endangered species by one year after adoption. This Action was not only directed at the three species listed in Annex II to the Protocol (basking shark *Cetorhinus maximus*, white shark *Carcharodon carcharias* and giant devil ray *Mobula mobular*), but also recommended for other species that had been assessed as

[1] Regulation EC No. 1185/2003 bans removal of fins followed by the discard of carcass at sea.

Endangered and Critically Endangered in the IUCN Red List, including sawfishes *Pristis* spp,, the sandtiger sharks *Carcharias taurus* and *Odontaspis ferox*, and grey or common skate *Dipturus batis*.

Croatia and Malta are the only two CPs that have reported adopting specific measures under national legislation to protect all three species listed in Annex II to the Protocol, in direct response to the *Shark Action Plan*. Malta has also listed Annex II species on the appropriate schedule. Israel, however, legally protected every single species of chondrichthyan fish within its waters in 2005. Montenegro reported protecting white shark and porbeagle shark *Lamna nasus* (an Annex III species) under threatened species legislation, while Turkey reported protecting basking shark and sandbar shark *Carcharhinus plumbeus* (a species with a pupping area in Turkish waters) under fisheries law.

A few CPs reported that species identified in relevant Multilateral Environmental Agreements (MEA) (e.g. Convention on International Trade in Endangered Species (CITES), Convention on the Conservation of Migratory Species (CMS), and Barcelona Convention) are protected, but did not provide information on the species protected, legislation applied or dates of adoption, as requested by RAC/SPA. In the case of EU Member States (MS), it is unclear whether this refers to actions at EU level, or to domestic regulations that are wholly independent of EU activities or are required to implement certain EU policies or activities. Other CPs (European Community, Slovenia) have protected basking shark and white shark, but not the giant devil ray. This omission suggests that these measures may have been taken in order to implement the listing of the two sharks in Appendix I of CMS, rather than to implement the Protocol of the Barcelona Convention.

The EU has applied fisheries rather than biodiversity regulations to prohibit the catch, retention on board and landing of basking shark and white shark, but has not extended these provisions to the giant devil ray. These measures have applied since 2007 throughout EU waters and to the whole EU fleet, wherever the latter is operating. Although some EU MS that are Party to the Barcelona Convention reported that they have not granted protected status to any species, their vessels must still comply with these fisheries regulations. Recent media reports of the landing and marketing of a protected species in a CP that is an EU MS indicates that enforcement and awareness of these measures require improvement, at both public and governmental levels, in some CPs.

None of the CPs has taken protection measures for the other Critically Endangered and Endangered species recommended for protection under the *Shark Action Plan*, despite all species of sawfishes having been listed in the Appendices of CITES in 2007.

Overall, the level of improved protection granted to the chondrichthyan fish species listed in Annex II of the Protocol has been disappointing. All CPs have national protected species lists. The addition of threatened fauna, particularly those that are reportedly not commercially exploited in the Mediterranean, is presumably a relatively simple process under existing domestic wildlife or fisheries legislation and should certainly have been achievable during the five year period covered by the original *Shark Action Plan* implementation schedule. This Action is therefore recommended for inclusion in the updated Implementation Timetable, as a matter of urgency.

The expert group also noted that a large number of additional endangered species, including those listed above, are currently being recommended for addition to Annex II (some are recommended for uplisting from Annex III). See Table 1.

3.2. Data Deficient species

The *Shark Action Plan* identified a lack of data on potentially threatened species, such as hammerhead sharks *Sphyrna* spp., guitar fishes *Rhinobatos* spp. and the Mediterranean endemic speckled skate *Raja polystigma* as an important issue (B.11.2). It also noted that the status of the chondrichthyans should regularly be reviewed in order to recommend, where necessary, legal protection for threatened species (C.1.12). CPs had been asked, as a matter of urgency, to assess the status of these species, at national and regional level (Action 10b). The majority of CPs that responded to the questionnaire reported no action, or difficulties with progressing this issue due to lack of information or national capacity for undertaking assessments. A few reported that national evaluations were underway for a few species, including one stock assessment for the speckled skate in Italian waters, and collection of data on the common guitarfish *Rhinobatos rhinobatos* in Tunisian waters.

This issue has made greater progress at regional level (Action 18). The RAC/SPA commissioned a report on the status of Mediterranean chondrichthyan species (UNEP-MAP RAC/SPA 2007) and the IUCN Shark Specialist Group (SSG) held an international expert Red List workshop in 2003 to evaluate the Mediterranean chondrichthyan fish fauna and to formulate priorities for conservation and management action in the region (Cavanagh and Gibson 2007 – see Annex III).

The results of the IUCN Red List assessments were used as the basis for evaluating the status of species already listed and Critically Endangered or Endangered species that might be proposed for listing in Annexes II and III to the SPA Biodiversity Protocol. Data sheets were developed utilising this information for submission to the Ninth Meeting of Focal Points for SPAs (Malta, June 2009), with a view to submitting proposals to amend the Annexes to the Sixteenth meeting of the Contracting Parties to the Barcelona Convention in late 2009. Table 1 summarises the results of this review of threatened taxa.

Table 1. Threatened Mediterranean chondrichthyan fish species proposed for listing in the Annexes of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean. (Species already listed in the Annexes are highlighted.)

SCIENTIFIC NAME	COMMON NAME	IUCN Red List status		Proposed for Annex
		Mediterranean assessment	Global assessment	
Squatina spp.	Angelsharks	CR	CR (2006)	Annex II (uplist)
Pristis spp.	Sawfish	CR	CR (2006)	Annex II
Oxynotus centrina	Angular roughshark	CR	VU (2007)	Annex II
Carcharias taurus	Sand tiger shark	CR	VU (2000)	Annex II
Gymnura altavela	Spiny butterfly ray	CR	VU (2007)	Annex II
Dipturus batis	Common skate	CR	CR (2006)	Annex II
Leucoraja melitensis	Maltese skate	CR	CR (2006)	Annex II
Rostroraja alba	White skate	CR	EN (2006)	Annex II (uplist)
Isurus oxyrinchus	Shortfin mako	CR	VU (2009)	Annex II (uplist)
Lamna nasus	Porbeagle shark	CR	VU (2005)	Annex II (uplist)
Rhinobatos spp.	Guitarfish	EN	EN (2007)	Annex II/Annex III?
Odontaspis ferox	Smalltooth sand tiger	EN	VU (2009)	Annex II
Carcharodon carcharias	Great white shark	EN	VU (2000)	Annex II (no change)
Leucoraja circularis	Sandy skate	EN	VU (2009)	Annex II
Carcharhinus plumbeus	Sandbar shark	EN	VU (2009)	Annex II/Annex III?
Squalus acanthias	Spiny dogfish	EN (VU Black Sea)	VU (2006)	Annex III
Mobula mobular	Giant devilray	EN	EN (2006)	Annex II (no change)
Sphyrna spp.	Hammerhead sharks	NE	EN/EN/VU	Annex II
Raja undulata	Undulate ray	NE	EN (2008)	Annex III
Mustelus spp.	Smoothhounds	VU/DD	VU/LC/DD	Annex III
Galeorhinus galeus	Tope shark	VU	VU (2005)	Annex III
Cetorhinus maximus	Basking shark	VU	VU (2000)	Annex II (no change)
Alopias vulpinus	Thresher shark	VU	VU (2009)	Annex III
Heptranchias perlo	Sharpnose sevengill shark	VU	NT (2003)	Annex III
Prionace glauca	Blue shark	VU	NT (2000)	Annex III (no change)
Centrophorus granulosus	Gulper shark	VU	VU (2006)	Annex III

Some chondrichthyan fish species are still assessed as Data Deficient. These include species that are extremely rare or only rarely recorded; it will be difficult to change these assessments. Others, however, occur in relatively large numbers in fisheries and data should be available, albeit unpublished, that could allow more useful assessments to be developed. SSG experts also expressed concern that some species assessed as Near Threatened may be found to qualify for a Threatened category once additional data on population trends or occurrence in fisheries become available. The expert group that reviewed progress made on the *Shark Action Plan* therefore recommended a new action point: to review the Data Deficient and Near Threatened species, with priority placed upon endemic species such as the rough ray *Raja radula*, the commercially

exploited blackspot smoothhound *Mustelus punctulatus*, the requiem sharks *Carcharhinus* spp., and other large sharks.

3.3 Fisheries management

The *Shark Action Plan* identified and aimed to promote sustainable fisheries as a primary objective of the Plan (A.10.1). It recognised the importance of fisheries management for achieving the conservation of chondrichthyan fishes in the Mediterranean (B.11.3), including the implementation of Shark Plans under the FAO International Plan of Action for the Conservation and Management of Sharks (IPOA–Sharks) (C.2). It was acknowledged that such management should be implemented at national level, and at regional and international levels through the appropriate Regional Fisheries Management Organisations (RFMOs) (C.2.18). Actions placed on CPs and RFMOs, where appropriate, included the description of fisheries and identification of management needs (Action 19), the elaboration of National Chondrichthyan Plans (Action 20), and the elaboration of management plans for fisheries exploiting chondrichthyan fishes (Action 21) (where these exist). These actions also appear in the FAO IPOA–Sharks, which urged States that take sharks in target or bycatch fisheries to develop Shark Plans by 2001.

The response of the CPs to the RAC/SPA questionnaire identified little progress in the specific inclusion of sharks in national fisheries management programmes, with the exception of the 2009 European Community Plan of Action for Sharks (CPOA, which applies to all EU vessels wherever they fish), and a few national initiatives. Italy reported that an Italian Shark Plan is pending, and Slovenia that a Shark Plan will be drafted in 2009. Tunisia reported minimum landing sizes for skates, rays and torpedos. There is no requirement for a management plan in Israel, where all species are protected. It was noted by several CPs that chondrichthyan fishes benefit indirectly from some general fisheries management measures, such as the ban on driftnets that captured pelagic sharks and the ban on deepwater trawling that took vulnerable deepwater chondrichthyan fish species.

The widespread lack of action was usually explained by the absence of directed shark fisheries in CP waters. It is important to note, however, that bycatch is widespread in the Mediterranean, most CPs report shark landings to FAO (Table 2), although under-reporting is considered to be significant for many States, and that the FAO IPOA–Sharks envisages that bycatch fisheries should also be covered by species-specific management.

The lack of action in the development of Shark Plans and fisheries management plans by CPs mirrors the disappointing implementation of the FAO IPOA-Sharks worldwide (out of 134 States reporting shark catches to FAO worldwide, only 13 countries and the EU have formally adopted Shark Plans). This is, however, a particularly disappointing result in view of the high technical capacity of the Mediterranean region as a whole to undertake research and introduce fisheries management measures, the extremely long history of Mediterranean fisheries, and the biodiversity importance of this Sea.

Table 2. Landings of chondrichthyan fishes in the Mediterranean and Black Sea reported to FAO, 1996–2006. Source: FAO Fishstat 2008. Fishing entities are listed in descending order of volume of landings during the past ten years.

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Tunisia	1,202	1,847	1,750	2,018	1,921	2,332	2,375	2,231	2,053	1,760	1,961
Egypt	1,120	1,629	1,211	1,383	1,197	2,143	2,020	1,395	1,251	577	3,450
Italy	4,960	5,946	3,443	1,557	969	912	823	964	1,060	2,612	1,974
Turkey	2,724	2,075	1,975	2,115	4,040	1,575	1,073	966	1,018	1,535	1,532
Greece	1,752	1,697	1,407	1,602	1,688	1,243	1,114	985	911	849	963
Spain	1,531	1,719	2,435	1,466	1,328	1,179	1,158	624	837	720	791
Algeria	1,237	535	1,317	1,061	522	977	1,010	666	342	374	370
Syrian Arab Republic	50				187	150	182	184	190	135	196
France	110	82	82	156	157	152	156	156	158	124	105
Albania	153	60	129	120	151	45	209	28	55	179	210
Israel	330	49	59	58		35	32	28	89	280	179
Croatia	401	358	225	121	107	116	68	64	67	156	139
Morocco	76	75	32	73	58	34	64	66	66	91	146
Lebanon	50	50	50	50	60	55	60	60	60	55	58
Portugal					14	72	18	3	164	74	27
Malta	43	43	42	32	41	27	36	28	30	32	34
Palestine, Occ. Tr.	53	33	38	41	37	32	31	34	54	11	7
Cyprus	14	17	10	12	22	28	22	13	13	21	25
Montenegro	22	22	20	21	20	18	18	17	13	13	13
Slovenia			1	1	2	4	2	5	5	2	2
Japan	3	1		1				1	1	2	
Taiwan Prov. of China											1

The most straightforward call for management action adopted in the *Shark Action Plan* concerned the enactment of regulations to prohibit 'finning[2]' (B.11.4, C.2.19, Action 11). The International Commission for the Conservation of Atlantic Tunas (ICCAT) has prohibited finning and this ban was adopted by the General Fisheries Commission for the Mediterranean (GFCM). Many other RFMOs worldwide have adopted similar measures. All EU vessels must comply with Regulation EC No. 1185/2003, which banned the removal of fins and discard of shark carcasses at sea. Spain permits the removal of fins at sea under special permit, issued under the EU Regulation (but carcasses must also be landed, within a specified fin:carcass weight ratio). None of the non-EU CPs reported the adoption of national finning bans. Some explained that they had not regulated shark finning in their waters because they do not consider that this activity occurs there.

The expert group observed that, although national fleets may not undertake shark finning, it is possible that foreign fleets passing through territorial waters or landing at their ports might be engaged in finning. It is therefore desirable for finning bans to be enacted to support the GFCM prohibition and this action was incorporated into the new implementation schedule.

3.4 Fisheries monitoring

The lack of information on fishing effort and statistical data on catches and landings by species is widely recognised to pose a major constraint upon the development of stock assessments, and

[2] Finning is defined as the removal and retention of shark fins and the discard of carcasses at sea.

hence the introduction of sustainable management measures, worldwide. The need for field identification sheets to be published in appropriate languages in order for it to be possible to record species-specific data was identified in the *Shark Action Plan* (C.2.15). A number of actions therefore addressed the fundamentally important issue of monitoring fisheries and sightings (Actions 2, 4, 15, 16).

Since the majority of chondrichthyan fishes are captured in fisheries targeting other species, bycatch or incidental catch and recording of this catch had been identified as an important management issue (B.11.4, C.2.16 & 17, C.4.24). The preparation of guidelines for reducing and releasing unwanted by-catch and protected species, and their circulation to all potential users in the appropriate languages, had also been identified as priorities (Action 6). The expert group observed, however, that 'unwanted bycatch' of cartilaginous fishes probably does not exist in the region, with the exception of strictly protected species.

Several CPs reported no monitoring of shark fisheries and bycatch, a few explaining that this is because there are no such fisheries (despite their landings reported to FAO – see Table 2). Others referred to their standard fisheries data collection programmes, rather than to species-specific efforts. Several CPs reported that they contribute to existing data collection and monitoring programmes: MEDITS, MedLEM and GRUND. Turkey and Tunisia reported the collection of data on guitarfishes and sandbar sharks, respectively. Monitoring of shark catches is covered in detail by the EU CPOA. The EU recognises that it is very important to improve knowledge of shark fisheries through the collection of data on catches, landings and trade and the CPOA sets out a number of actions in this area for action over the next three years. These will, if implemented, go a long way towards delivering these aspects of the Mediterranean *Shark Action Plan*.

The expert group recognised important efforts by some CPs, but considered that a great deal of work remained to be undertaken to improve species-specific monitoring activities within the Mediterranean. They also observed that this is already an obligation for CPs that are Members of the GFCM or the EU. The need for a variety of tools to increase regional capacity for fisheries monitoring was recognised. Several actions were carried forward from the original *Shark Action Plan* and new actions added to supplement these, identifying some priority regions for action and recommending increased use of observers on board vessels.

3.5 Critical habitats and environment

Chondrichthyan fish species are often dependent upon certain critical habitats during their life cycle – for example breeding and pupping grounds. They may also be highly vulnerable to fisheries when aggregated in these locations. The identification and protection of such habitats was identified as a key objective (A.10.3) and priority for action (B.11.5, C.3, Actions 12 and 17), whether through biodiversity or fisheries legislation.

Unfortunately, progress has been limited. A few CPs reported having identified some critical habitats for chondrichthyans or that surveys are underway, but Turkey is currently the only CP to provide legal protection specifically for the critical habitat of a shark species. The expert group recommended that national inventories are completed as soon as possible and protection granted to critical habitats as soon as these are identified.

3.6 Scientific research and monitoring

Knowledge of shark species (their distribution, life history, biology and ecology), fisheries, bycatch and discards is still poor in the Mediterranean and hampers the development of conservation,

assessment and management measures for sharks. One of the key objectives of the *Shark Action Plan* is the improvement of scientific knowledge (A.10.4). It recommended the development of new research programmes and extension of existing programmes to the whole of the Mediterranean (C.4, Actions 14–17). This subject was not specifically covered in the questionnaire to CPs, but it is apparent that relevant research is not underway in all CPs.

Although some chondrichthyan fish research proposals have been prepared by RAC/SPA (e.g. UNEP-MAP RAC/SPA 2005, Serena and Barone 2008), there is no obligation for CPs to fund them. The expert group agreed that scientific research and monitoring remains a high priority and identified some new actions building upon work already undertaken and focusing upon regions with the highest biodiversity.

3.7 Capacity building/training

Expertise in research, monitoring, conservation and management of cartilaginous fishes is not evenly spread among the CPs. Additional action could be undertaken within the framework of the *Shark Action Plan* to share expertise and improve capacity for research, monitoring and management in States that do not yet have national experts in this specialised field. Means for addressing this include the development by RAC/SPA, with the support and endorsement of an external panel of experts, of a directory of national, regional and international chondrichthyan fish experts. Research proposals should include elements of capacity building and training, utilising these experts, for example through missions to work with key individuals in States where chondrichthyan fish biodiversity is high but research, monitoring and management capacity is low. It is also considered important that CPs support the participation of the most relevant national experts in meetings and workshops of Regional Fisheries Organisations and their advisory bodies, to maximise potential for sharing expertise and improving technical capacity across the region.

3.8 Education and public awareness

Increased awareness remains an extremely high priority for action to implement objective A.10.6 and implement measures recommended under C.6. Several CPs reported no progress in this area, despite three Actions (5–7) having been identified in the original implementation table. Legal protection of species and habitats and reporting of catches and landings cannot be effective if awareness of the relevant regulations and understanding of the need for these measures is lacking. Awareness by decision makers and public support is also important to encourage CPs to adopt measures under the *Shark Action Plan*.

The expert group agreed that information campaigns should target the general public, managers and researchers. Existing materials should be more widely disseminated, and new products prepared. Sport and recreational fishers were identified as an important target, with the aims of reducing mortality, increasing reporting, and seeking opportunities for anglers to become involved in research programmes, such as tag and release programmes.

One of the original tools recommended for development under the *Shark Action Plan* had been guidelines for chondrichthyan watching (Action 7). RAC/SPA had consulted experts from other regions with a view to developing these, but concluded that this activity is not taking place widely in the Mediterranean. The expert group agreed that this is not a high priority for action and indeed that it would be inappropriate to encourage this activity, particularly for threatened species. It was not included in the new Implementation Timetable.

3.9 Regional coordination

Primary responsibility for the implementation of the *Shark Action Plan* rests with the national authorities of the Contracting Parties (which are responsible for facilitating coordination between their national environmental and fisheries departments). International and regional responsibility for the implementation of the *Shark Action Plan* and promotion of transboundary cooperation, however, lies with the Mediterranean Action Plan's (MAP) Secretariat, through the Regional Activity Centre for Specially Protected Areas (RAC/SPA). RAC/SPA has successfully coordinated implementation by, *inter alia*, taking responsibility for ensuring that standardised protocols were defined and developed for the species-specific monitoring of commercial landings, discards and sightings of rare or threatened species (Actions 3 & 4), publishing materials to promote public awareness (Action 5), and coordinating or supporting regional scientific and technical meetings (Actions 8 & 9). RAC/SPA has prepared *Guidelines for reducing the presence of sensitive chondrichthyan species within by-catch* (Action 6), (UNEP-MAP RAC/SPA 2006). It has also commissioned *Guidelines to reinforce legislation and regulations for the conservation and management of cartilaginous fish*, for presentation to the Ninth Meeting of Focal Points for SPAs (Action 13).
It is envisaged, however, that Actions will also be delivered by other organisations, including regional fisheries organisations, non-governmental organisations, associations and national environmental bodies. Several other regional or international bodies have contributed significantly, either directly or indirectly, to increased knowledge of cartilaginous fishes in the region and to the implementation of the *Shark Action Plan*.

The UN Food and Agriculture Organization (FAO) has prepared and published a *Field identification guide to the Sharks and Rays of the Mediterranean and Black Sea* (Serena 2005). This publication has also been used as the basis for the development of FAO Field Guides for Syria and Lebanon, in English and Arabic, including local names for sharks, which will be published in 2009.

The General Fisheries Commission for the Mediterranean (GFCM) has adopted the Recommendations on Sharks developed through the International Commission for the Conservation of Atlantic Tunas (ICCAT). These include calls for full utilisation of sharks, restrictions on finning[3], release of live shark bycatch (especially of juveniles) and research into more selective fishing gear (ICCAT Rec. 2004-10 adopted as GFCM/2005/3, and amended by ICCAT Rec. 2005-05 adopted as GFCM/2006/8(B)), and calls for improved data collection and submission (ICCAT Recs. 2006-10 and 2007-07).

GFCM also supports the MedLEM (Mediterranean Large Elasmobranchs Monitoring) programme set up in 1985. Furthermore, the GFCM Sub-Committee on Marine Environment and Ecosystems (established under the Scientific Advisory Committee) established in 2008 a cross-cutting Working Group on bycatch. In 2009, Working Group will undertake studies of the population dynamics of protected species of conservation concern, including basking shark and white shark. A Memorandum of Understanding has been established between RAC/SPA and the GFCM.

As already noted above and summarised in Annex III, the IUCN Species Survival Commission has undertaken a detailed review of the conservation status of Mediterranean chondrichthyan fishes, as part of its global shark Red List assessment.

There is provision for CPs to formalise the participation of other bodies in implementation activities by granting them the status of 'Action Plan Associate' or 'Action Plan Partner'. No Associates or

[3] Finning is defined as the removal and retention of shark fins and the discard of carcasses at sea.

Partners were appointed during the period reviewed, although applications are being submitted to the June 2009 meeting of the Focal Points.

4. Proposals for a new Actions and Implementation Timetable, 2010 to 2013

A small expert group meeting was hosted by RAC/SPA in Tunis on 14 May 2009. The meeting was attended by chondrichthyan fish experts from Spain, Italy, Croatia and Tunisia, and facilitated by RAC/SPA and Naturebureau International (which has hosted the Shark Specialist Group Secretariat for many years). The objective of the meeting was primarily to develop a new calendar of actions for the period 2010 to 2013, inclusive, although also briefly to review actions undertaken during 2003 to 2008 in order to deliver *Shark Action Plan* Implementation Measures (as discussed in the preceding pages). Annex IV presents a short report of this meeting and list of participants. Table 3 lists the new actions proposed.

Table 3. Proposals for an updated Implementation Timetable 2010–2013.

Action	Deadline	By whom
Tools		
1. Establish directory of national, regional and international experts on chondrichthyan fish taxonomy, biology, stock assessment, conservation and management, supported by an external panel of experts.	1 year after adoption	RAC/SPA, advised by IUCN Shark Specialist Group, ICES & ICCAT Shark Working Groups
2. Develop, print and distribute regional and national field identification guides and sheets, highlighting diagnostic characteristics, for improved monitoring of elasmobranch fisheries and landings by government bodies and fishermen. Priority areas: i) Southern and eastern Mediterranean (in Arabic, French, Spanish); ii) Adriatic, Aegean, Ionian (in Croatian, Albanian, Italian, Greek, Turkish); iii) Northwestern Mediterranean (French, Spanish).	1 year after adoption (basic ID sheets) 2–3 years (more detailed guides)	GFCM/FAO National scientific and management bodies Regional cooperation agencies
3. Promote use of existing standard monitoring protocols and forms (RAC/SPA, FAO) for landings, discards and observations of threatened species;	Immediate & continuous	National scientific and management bodies, Regional cooperation agencies, GFCM and FAO
4. Develop protocols and programmes for improved compilation and analysis of data, for contribution to regional stock assessment initiatives.	1 year after adoption	
5. Formalise/reinforce synchronous submission of catch, bycatch and discard data to both scientific and management bodies, and annually to the GFCM.	Immediate & continuous	
6. Add further information on elasmobranch bycatch to national reports to GFCM, for incorporation in GFCM database, as recommended by GFCM workshop on bycatch (Rome, 2008)	1 year after adoption	Contracting Parties, GFCM
7. Undertake information campaigns, improve the provision of materials for publication, and disseminate more widely existing RAC/SPA, FAO and other products (e.g. the RAC/SPA *Guidelines for reducing the presence of sensitive species in by-catch*). These activities should target managers, researchers and the general public.	2 years after adoption	AP Partners, Associates and donor agencies
8. Develop guidelines and/or a code of conduct for the management of shark and ray sport/recreational fishing. These will promote catch and release, describe protocols for handling catches in order to minimise stress and improve survival, and encourage reporting of such catches.	1 year after adoption	RAC/SPA, GFCM Scientific Committee
9. Promote a shift in focus of shark and ray sport/recreational fishing towards catch and release, contributions to research activities (for example through engagement in tag and release programmes), and improved reporting of catches.	2 years after adoption	Contracting Parties

Action	Deadline	By whom
Legal processes		
10. Establish strict legal protection for threatened and endangered species listed in Annex II through appropriate national laws and regulations.	As soon as possible	Contracting Parties
11. Establish and promote national, sub-regional and regional plans or strategies for the conservation, recovery and/or management, as appropriate, of species listed in Annexes II and III.	4 year after adoption	Contracting Parties, RAC/SPA, GFCM
12. Support GFCM finning prohibition by enacting national regulations for the prohibition of finning at sea, transport, landing and transhipment of fins without corresponding carcass, by all vessels in national and international waters.	As soon as possible	Contracting Parties
13. Protect critical habitats for chondrichthyan fishes, as soon as they are identified.	Continuous	Contracting Parties, MEAs,

Action	Deadline	By whom
Monitoring and data collection		
14. Promote existing research proposals developed under the RAC/SPA Action Plan (Eastern Adriatic, Balearics, Gulfs of Gabes and Sirta) by adapting them to funding proposals for the consideration of potential funding bodies, partners and Contracting Parties.	1 year after adoption	RAC/SPA
15. Initiate comprehensive programme/campaign to support data collection efforts in: i) Gulfs of Gabes and Sirta, Levantine basin (areas of highest biodiversity importance for chondrichthyan fishes in the Mediterranean and a high priority for development of precautionary management measures); and ii) Eastern Adriatic (an important region for demersal fisheries and for large rare Mediterranean elasmobranchs).	2 years after adoption 3 years after adoption	National scientific bodies/institutes, Regional cooperation agencies, GFCM
16. Promote input to the MEDLEM database under the appropriate protocol, to ensure shared access to information on chondrichthyan fishes across the Mediterranean.	Immediate, continuous	Contracting Parties, GFCM
17. Complete and disseminate inventories of critical habitats (mating, spawning and nursery grounds)	2 years after adoption	Contracting Parties
18. Increase efforts to comply with obligations to collect and submit species-specific data on commercial chondrichthyan fish catch and bycatch to FAO and GFCM, including through increased use of observers on fishing vessels.	Immediate & continuous	Contracting Parties
19. Comply with obligations under existing ICCAT/GFCM Recommendations to collect and submit data on pelagic shark catches.	Immediate	Contracting Parties
20. Improve programmes for the collection of data from coastal fisheries.	Immediate	Contracting Parties
21. Support the participation of relevant experts on the conservation of cartilaginous fishes in RFMO (e.g. ICCAT, GFCM) meetings and workshops, in order to share expertise and improve capacity to undertake data collection, stock assessment and bycatch mitigation.	Immediate	Contracting Parties, RFMO, RAC/SPA

Action	Deadline	By whom
Management and assessment procedures		
22. Review existing sources of data and undertake new studies if necessary to clarify the status of species that are/were not rare in the Mediterranean but are assessed as Data Deficient or Near Threatened, prioritising *inter alia*: *Raja radula* and other endemics, *Mustelus punctulatus*, *Carcharhinus* spp. and other large sharks	2 years after adoption	Contracting Parties, Partners
23. Monitor Critically Endangered, Endangered and endemic species	Continuous	Contracting Parties
24. Provide to the GFCM an annual description of all national target and/or bycatch chondrichthyan fisheries, in the form of annual Shark Assessment Report.	Every year	Contracting Parties
25. Develop and adopt as a matter of urgency where these do not exist national Shark Plans within the framework of the FAO IPOA–Sharks, incorporating specific regulations for fisheries exploiting chondrichthyans, whether target or bycatch.	1 year after adoption	Contracting Parties individually and through GFCM
26. Undertake discussions with GFCM with a view to promoting the eventual development of a Regional Shark Plan and associated fisheries management measures and regulations outside territorial waters, to complement and assist with the implementation of activities under the RAC/SPA Action Plan.	2 years after adoption	Contracting Parties, GFCM
27. Review national and regional Shark Plans every four years	4 years after adoption	Contracting Parties, GFCM
29. Implement a programme for the development of stock assessments, by area (Adriatic, Gulf of Gabes, Levantine Sea), and by species.	2 years after adoption	Contracting Parties, GFCM

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Annex I. National implementation of the Action Plan for the conservation of cartilaginous fishes (Chondrichthyans) in the Mediterranean Sea

The following table summarises the answers provided to a short questionnaire circulated in March 2008, and further updated in April 2009, asking Parties to the Barcelona Protocol to provide a brief update on steps taken at national level to implement the Action Plan for the Conservation of Cartilaginous Fishes (Chondrichthyans) in the Mediterranean Sea (UNEP-MAP RAC/SPA, 2003). The European Community was not directly consulted because information on existing measures had been recently published through the ongoing consultation process to develop a Community Plan of Action on Sharks.

Country	Species protection status (name of legal instrument and competent ministry)?	Progress on data deficient species?	Regulation of shark finning?	Habitat protection/MPAs to support shark conservation?	Coverage of sharks in fisheries management programmes?	Monitoring of shark fisheries and bycatch?	Education and public awareness?
Albania							
Algeria							
Bosnia & Herzgovina	No	No	No	No	No	No	No
Croatia	Strict protection for *Cetorhinus maximus, Carchadon carcharias Mobula mobular* (also covers trade and transport including in EEZ) under Ordinance on Proclamation of Wild Taxa as Protected or Strictly Protected (OG n°7/2006, issued by Nature Protection Directorate, Ministry of Culture).	*Raja polystigma* is still DD: the official Red list of Croatian Saltwater Fishes has not yet been issued.	Not legally regulated as "there is no problem with shark finning in Croatia".	Ordinance prohibits damage to breeding and resting sites in waters under national jurisdiction. Sharks are protected in MPAs along with other marine species but no MPA established specifically for these species.	None. Protected sharks are automatically excluded from the list of fishing species in the Marine Fisheries Act. No directed fisheries in Croatian waters but they are caught as bycatch and may also be bycaught in big game fishing.	No	No
Cyprus							

Country	Species protection status (name of legal instrument and competent ministry)?	Progress on data deficient species?	Regulation of shark finning?	Habitat protection/MPAs to support shark conservation?	Coverage of sharks in fisheries management programmes?	Monitoring of shark fisheries and bycatch?	Education and public awareness?
European Community	Catch, retention on board, transhipment and landing prohibited since 2007 for *Cetorhinus maximus* and *Carchadon carcharias*.		Regulation EC n°1185/2003 bans removal of fins followed by discard of the carcass at sea. Finning with retention of carcasses on board is permitted in accordance with the provisions of Regulation.	None.	Community Action Plan for Sharks published in February 2009. Some general provisions already contribute to reduction of bycatch (e.g. ban on driftnets, more selective fishing gear) and overfishing (eg closed seasons). The TAC for deep-sea sharks will be reduced to zero by 2010.	Covered by the Community Action Plan.	
Egypt							
France							
Greece	Protected species are the ones that are mentioned in CITES Convention (competent ministry – Ministry of Rural Development and Food), Bern convention and SPA – Biodiversity protocol of Barcelona Convention (competent ministry – Min. For the Environment, Physical planning and Public Works)		Regulation EC n°1185/2003 bans removal of fins followed by discard of the carcass at sea. According to the Ministry of Merchant Marine that controls the implementation of the Regulation, the national fishing fleet does not perform finning.	There are no MPAs for shark conservation.	Fisheries management programmes do not refer specifically to shark fishes because they are not commercial species. Driftnets are prohibited, contributing to reduction of bycatch .	Fisheries data including bycatch have been collected for some years under responsibility of Ministry of Rural Development and Food. In the frame of the application of Council Regulation (EC) No 199/2008 a new project for the years 2009-2010 will be procured. Research and data collection is also carried out by individual scientists.	No actions for the time being.

Country	Species protection status (name of legal instrument and competent ministry)?	Progress on data deficient species?	Regulation of shark finning?	Habitat protection/MPAs to support shark conservation?	Coverage of sharks in fisheries management programmes?	Monitoring of shark fisheries and bycatch?	Education and public awareness?
Israel	All Cartilaginous Fishes (Class Elasmobranchii, including Order Sellachii and Order Batoidae) are being protected from any type of harm or damage at the entire Israeli water region. This inclusive protection is given to sharks being Cartilaginous Fishes declared as a protected natural value (2005 declaration within the legislative framework of National Parks, Nature Reserves and National Monuments 1998 – The Ministry of Environmental Protection).	No quantitative data and limited capacity for this taxonomic group	No (no fining activities).	Currently, all organisms are declared protected within the borders of Israeli marine nature reserves (6) and Marine Protected Areas (2 "Mediterranean Sea Reserves"). Commercial fishing of any species or other harmful activities is forbidden at those areas. Critical areas for sharks were not determined yet, and there is no specific declaration of MPAs for the sake of sharks conservation.	Sharks should not be fished under any occasion, and therefore are not included in any management plan.	No	Not on a regular bases. The issue is being widely exposed and discussed by the Media upon targeted hunting of Cartilaginous fishes or massive by catch. Protective legislation is presented to the public on these occasions.
Italy	Applies to species listed for strict protection under Barcelona Protocol, Bern Convention and in CITES Appendices.	Data lacking for *Sphyrna* spp. and *Rhinobatos* spp. Stock assessment under way for *R. polystigma* based on data from trawl surveys	No finning permits have been granted pursuant to EC Regulation n°1185/2003	No legal protection for critical habitats though these have been identified for some species (mating, spawning and nursery grounds for *Raja asterias*, *Scyliorhinus canicula*, *Galeus melastomus*, *Etmopterus spinax*, etc.). The trilateral Pelagos Sanctuary could have benefits for pelagic sharks.	Pending. The final report for an Italian Action Plan was produced mid 2007 by ICRAM with the support of the Ministry of the Environment and Sea (MATTM).	Yes, through MEDITS, GRUND (assessment of demersal resources in N.Thyrrenian/ Ligurian Seas, and MEDLEM.	Some initiatives targeted at public, students and other stakeholders but no overall EPA plan.
Lebanon	No	No	No	No	No	No	No

Country	Species protection status (name of legal instrument and competent ministry)?	Progress on data deficient species?	Regulation of shark finning?	Habitat protection/MPAs to support shark conservation?	Coverage of sharks in fisheries management programmes?	Monitoring of shark fisheries and bycatch?	Education and public awareness?
Libya							
Malta	Strict protection for *Carcharodon carcharias* *Cetorhinus maximus* *Mobula mobular* (Sch.VI).14 species listed in Sch.VIII (species of national interest whose taking in the wild and exploitation may be subject to management measures) *Alopias vulpinus* *Carcharhinus brevipinna* *Carcharhinus limbatus* *Carcharhinus plumbeus* *Carcharias taurus* *Galeorhinus galeus* *Hexanchus griseus* *Isurus oxyrinchus* *Lamna nasus* *Leucoraja melitensis* *Prionace glauca* *Pristis pristis* *Rostroraja alba* *Squatina squatina*. Protection conferred through Flora, Fauna and Natural Habitats Regulations (311/2006) issued under the Environment Protection Act (Malta Environment and Planning Authority).	All species in Maltese waters classified as DD. Nature Protection Unit (Environment & Planning Authority) commissioned study and associated database *Threatened Fish of the Maltese Islands* (ADI & EcoServ, 2006).	The national fishing fleet does not perform finning. No special permits have been issued pursuant to EC Regulation n° 1185/2003.	Critical habitats have not yet been identified. Some mapping of nursery areas and spawning ground for some demersal sharks being carried out by the Veterinary Affairs &Fisheries Division (VAFD). Legislation provides for creation of Marine Conservation Areas which can support protection of nursery grounds and protection of juveniles.	No management programmes covering shark species. A Fleet Management programme will be set up to efficiently manage the national fishing fleet on the basis of the gear utilised. This will indirectly assist in proper management of bycatch e.g. through more selective use of gear in surface longlining and bottom trawling. Fisheries enforcement comes under the responsibility of the Armed Forces (limited capacity because of other responsibilities). Onboard fisheries inspections only carried on in waters under national jurisdiction.	Yes, under the Malta Centre for Fisheries Science, conducted by VAFD. Two data collection programmes/ surveys (MEDITS and MEDLEM) plus collection programmes for Fisheries Landing Data (see Box 6).	No but under consideration by VAFD. Will involve fishers, the Armed Forces of (Malta Maritime Squadron) due to their involvement in fisheries enforcement) and the general public.

Country	Species protection status (name of legal instrument and competent ministry)?	Progress on data deficient species?	Regulation of shark finning?	Habitat protection/MPAs to support shark conservation?	Coverage of sharks in fisheries management programmes?	Monitoring of shark fisheries and bycatch?	Education and public awareness?
Monaco	Protection is mainly delivered through legislation for implementation of CITES (Ordonnance Souveraine n° 67 du 23 mai 2005, Journal de Monaco du 26 mai 2006 n° 7757).	No	No	Two MPAs: Larvotto (Ordonnance Souveraine du 25 avril 1978) and Spélugues (Ordonnance Souveraine du 29 août 1986) as well as the trilateral Pelagos Sanctuary. Not established with reference to sharks.	Not applicable as there are no fisheries in Monaco.	There is no monitoring system as there are no fisheries.	No
Montenegro	Strict protection for *Carcharodon carcharias* and *Lamna nasus* under the Decision on Endangered or Threatened Species of Flora and Fauna (2006) and CITES implementation legislation (Decision on control list of import, export and transit: Official Gazette RME, no. 28/06).	No available data or capacity for this taxonomic group		Ministry of Agriculture, Forestry and Water Management has jurisdiction over fisheries. The new Law on Marine Fisheries regulates commercial fishing and mariculture and provides for protection of marine biodiversity. EU support to Montenegro focused on strengthening administrative structures to ensure effective implementation of fisheries policy.	Nothing specific for sharks, though marine fisheries management plan is under preparation. National Strategy for Sustainable Development prepared in 2006: targets include protecting at least 10% of the coastal zone by 2009. National ICZM Strategy being finalised.	None.	Nothing specific but members of Institute for Marine Biology attend training courses, seminars and workshops.
Morocco							
Slovenia	Strict protection for *Carcharodon carcharias* and *Cetorhinus maximus* (covers harm, disturbance, poisoning, killing, hunting or keeping in captivity) under Decree on Protected Wild Fauna, Official Bulletin 46/2004 (Ministry of Environment and Physical Planning)	Some data now available on species found in Slovenian waters and their status is being evaluated.	Finning not specifically mentioned but falls under the general protection regulations.	No legal protection of shark critical habitats or proper fishery management programmes	Fisheries management programmes do not refer specifically to shark fishes. Bycatch is the major problem. An Action Plan is to be drafted in 2009.	No mandatory monitoring but ongoing research and data collection carried out by the Marine Biological Station.	None.

Country	Species protection status (name of legal instrument and competent ministry)?	Progress on data deficient species?	Regulation of shark finning?	Habitat protection/MPAs to support shark conservation?	Coverage of sharks in fisheries management programmes?	Monitoring of shark fisheries and bycatch?	Education and public awareness?
Spain	None.		Permitted only under special permit in accordance with EC Regulation n° 1185/2003		Integrated national management plan for the conservation of the fisheries resources in the Mediterranean Sea (*Order APA 79/2006*, Ministry of Agriculture, Fisheries and Food). No specific provisions on sharks but general provisions for closed seasons for trawling and other fisheries; ban on bottom trawling below 1000m depth; protection of critical vulnerable habitats e.g. seagrasses, maerl beds, coral reefs.		Workshop on Sharks Sustainable Fisheries (Feb 2008) jointly organised by Fisheries Department and the Spanish Fisheries Alliance with stakeholder participation. Proposals include rapid production of species identification brochure.
Syria							
Tunisia		Yes for *Rhinobathos rhinobatho s*	No	There are critical habitats in the Gulf of Gabès but these are not legally protected.	Some. It is prohibited to fish rays and skates less than 40 cm and torpedos below 20 cm in length, measured from tip of snout to start of tail (Decree 28.9.1995, Minister of Agriculture)	Yes. Monitoring covers many species (research projects plus the MEDLEM framework.	Limited. Few actions with fishers.

Country	Species protection status (name of legal instrument and competent ministry)?	Progress on data deficient species?	Regulation of shark finning?	Habitat protection/MPAs to support shark conservation?	Coverage of sharks in fisheries management programmes?	Monitoring of shark fisheries and bycatch?	Education and public awareness?
Turkey	Strict protection for *Carcharhinus plumbeus* and *Cetorhinus maximus* (covers harvesting and trade) under Circulars on Fisheries, (related to Fisheries Law:1380) Ministry of Agriculture and Rural Affairs.	No specific research on population dynamics or migratory routes.	Not regulated, as finning does not take place in Turkish waters.	Mating and breeding habitats of *Carcharhinus plumbeus* in the Bay of Boncuk are protected by the Environmental Protection Agency for Special Areas	No programmes specifically for sharks as there are no directed fisheries.	Determining the occurrence and distribution patterns of C.plumbeus within the survey area, using *in situ* observation techniques, Annual survey (Two Months) in Bay of Boncuk for *Carcharhinus plumbeus.* Determining the possible threats on local sand- bar shark population, Processing all the observation and threat data using GIS (global information system) on 1/25000 scale maps,	Several brochures have been prepared and distributed for public awareness, in addition to the book entitled "Conservation and Monitoring Project of Sandbar Sharks (*Carcharhinus plumbeus*) in Boncuk Bay, Gökova Special Environmental Protection Area".

Annex II. Review of delivery of actions in Implementation Table, 2003–2008 inclusive.

	ACTION	DEADLINE	BY WHOM	IMPLEMENTED
	Tools			
1	Establishing of network and directory of collaborators	2004/5 – 1 yr after adoption	RAC/SPA	Directory of collaborators prepared but not fully operational, due to a lack of validation procedure.
2	Field identification sheets available in appropriate languages	2004/5 – 1 yr after adoption	CPs & RFMOs	FAO Mediterranean Field Guide published 2005. FAO field guide prepared for Syria and Lebanon, in English and Arabic with local names, derived from Med guide, to be published in 2009. Field ID sheets prepared but are not yet published. Field ID guide to rays of the Med, guidelines for data collection and analysis (Serena) in preparation.
3	Support the defining of a protocol for monitoring commercial landings and discards by species	2004/5 – 1 yr after adoption	RAC/SPA and CPs	Draft protocols presented in BAŞUSTA *et al*. 2006 (see 8), and presented to 8th meeting of focal points in 2007. UNEP(DEPI)/MED WG.308/Inf.08.
4	Protocols for recording data on rarely observed, endangered and protected species	2004/5 – 1 yr after adoption	RAC/SPA	MedLEM protocol disseminated through RAC/SPA, e.g. in Serena and Barone 2008.
5	Information campaigns and publishing materials for public awareness	2005/6 – 2 yrs after adoption	RAC/SPA	Action Plan and colour poster published and distributed. Illustrations prepared for publication and awareness, but no funds available for use.
6	Guidelines for reducing the presence of sensitive species in by-catch and releasing them if caught, prepared and published in appropriate languages	2005/6 – 2 yrs after adoption	RAC/SPA	UNEP-MAP RAC/SPA, 2006. Guidelines for reducing the presence of sensitive chondrichthyan species within by-catch. By Melendez, M.J. & D. Macias, IEO. Ed. RAC/SPA, Tunis. 21pp. Online as pdf., but not printed or disseminated
7	Guidelines for chondrichthyan watching	2006/7 – 3 yrs after adoption	RAC/SPA	Consultation undertaken with experts from other regions (e.g. South Africa). Shark watching is not an issue in the Mediterranean. This is not considered either to be a high priority for action under the AP, or appropriate to encourage this activity.
8	Symposium on Mediterranean chondrichthyan fishes	2006/7 – 3 yrs after adoption	RAC/SPA	Held in 2005. BAŞUSTA, N., KESKİN, Ç., SERENA, F., SERET, B. (Eds.), 2006. "*The Proceedings of the Workshop on Mediterranean Cartilaginous Fish with Emphasis on Southern and Eastern Mediterranean*" Turkish Marine Research Foundation. Istanbul- TURKEY. Publication Number: 23.
9	Meeting to review progress made on the Action Plan	2008/9 – 5 yrs after adoption	RAC/SPA	Expert meeting held May 2009

	Legal processes			
10a 10b	Legal protection established for endangered species, recommended in this Action Plan, identified by country Urgent assessment of the status of data deficient species	2004/5 – 1 yr after adoption	CPs, intervening at national and regional level	Croatia and Malta (all three Annex II species strictly protected); EU, Slovenia (basking shark and white shark – likely stimulated by CMS Appendix I listings, not Barcelona Convention); Israel (all chondrichthyan species); Greece, Italy, Monaco (species names and precise details of legislation not provided); Montenegro (white shark and porbeagle shark); Turkey (basking shark and sandbar shark – latter result of identification of nursery area in Bay of Boncuk).
11	Regulations enacted for prohibiting 'finning'	2005/6 – 2 yrs after adoption	CPs & RFMOs	EU 2003, proposals under EU CPOA. GFCM 2005 (adopting ICCAT 2004).
12	Critical habitats legally protected to reduce negative effects of human activities	2007/8 – 4 yrs after adoption	CPs	Turkey is only CP to have protected an area specifically for sharks – sandbar shark pupping ground.
13	Facilitating the enforcement of legal measures aiming to set up a system for enforcement of monitoring fisheries in international waters	2007/8 – 4 yrs after adoption	CPs and RAC/SPA	Review document prepared [Shine 2009], but this action is most appropriate for implementation by the GFCM.
	Monitoring and data collection			
14	Establishing research programmes, mainly on the biology, ecology and population dynamics of the main species identified by the countries	2004/5 – 1 yr after adoption	CPs	Research programmes are underway in some CPs, including collaboration in regional research projects: MedLEM, MEDITS and GRUND. Individual scientists and marine stations or institutes also undertake research and monitoring in some CPs. RAC/SPA has prepared some research proposals, not yet implemented, but there are no obligations for CPs to fund these: UNEP-MAP RAC/SPA, 2005. Chondrichthyan fishes of Libya: Proposal for a research programme. By Seret, B. Ed. RAC/SPA, Tunis. 31pp Serena and Barone eds 2008. Chondrichthyan fishes of Slovenia, Croatia, Bosnia & Herzegovina and Montenegro: Proposal for eastern Adriatic research programme: workshop and report commissioned by RAC/SPA Contract RAC/SPA, N°53/2007. 66 p.
15	Implementing a monitoring system for commercial and recreational fisheries	2004/5 – 1 yr after adoption	CPs	EU (under Community shark plan). Monitoring underway in most countries under general fisheries regulations. Some engage in MedLEM, MEDITS and/or GRUND projects.
16	Support the establishing of, or feed the existing, databases	2004/5 – 1 yr after adoption	CPs and RAC/SPA	RAC/SPA and MedLEM databases.
17	Preliminary inventory of critical habitats (mating, spawning and	2005/6 – 2 yrs after adoption	CPs	A few CPs have identified critical habitats (Tunisia: Gulf of Gabes; Turkey: Bay of Boncuk). Italy and Malta have commenced inventories of critical areas.

	nursery grounds)			
	Management and assessment procedures			
18	Review of the status of Mediterranean chondrichthyan species	2004/5 – 1 yr after adoption	International organisations	Cavanagh and Gibson 2007. *Overview of the Conservation Status of Cartilaginous Fishes (Chondrichthyans) in the Mediterranean Sea*. IUCN, Gland, Switzerland and Malaga, Spain. vi + 42 pp. UNEP-MAP RAC/SPA, 2007. Report on the status of Mediterranean chondrichthyan species. By Melendez, M.J. & D. Macias, IEO. Ed. RAC/SPA, Tunis. 241pp Some national initiatives (Red Books). A few species remain DD. These assessments may not be reviewed until additional data become available from fisheries and research sources.
19	Description of fisheries and identification of management needs	2004/5 – 1 yr after adoption	CPs & RFMOs	Shark Assessment reports (under FAO IPOA-Sharks) only undertaken by EU(?), although all States agreed to produce these documents.
20	Elaboration of National chondrichthyan Plans	2004/5 – 1 yr after adoption	CPs	Only in EU. Italian plan in preparation. (Shine 2009 prepared)
21	Elaboration of management plans for fisheries exploiting chondrichthyan fishes	2007/8 – 4 yrs after adoption	CPs & RFMOs	Only in EU. Most CPs not aware of fisheries exploiting chondrichthyans. Minimum landing sizes for batoids in Tunisia.

Annex III. IUCN Review of status of Mediterranean chondrichthyan fishes

The IUCN Species Survival Commission's Shark Specialist Group (SSG) has recently completed a ten year programme to prepare species assessments for the *IUCN Red List of Threatened Species*^{TM} of every species of chondrichthyan fish species described in the scientific literature before the end of 2007. This *Global Shark Red List Assessment* has been undertaken primarily through a series of regional and thematic workshops, in order to facilitate detailed discussions and the pooling of resources and regional expertise.

In 2003, under this programme, the SSG, in collaboration with the IUCN Centre for Mediterranean Cooperation, established a regional group of experts to work towards improved conservation and management of chondrichthyan fishes in the Mediterranean. One of the primary aims of the group was to assess the threatened status of every chondrichthyan species that occurs in the Mediterranean by applying the IUCN Red List criteria. This was achieved through a workshop held in 2003, during which 30 experts from 14 countries produced regional IUCN Red List assessments for the 71 species of chondrichthyan fishes known to occur and breed in the Mediterranean Sea (vagrants and rare visitors were not evaluated). The methodology used and the results of this workshop, a overview of the conservation status of the chondrichthyan fish species known to occur and breed within the Mediterranean Sea, are summarised in an IUCN regional report (Cavanagh and Gibson 2007). Detailed reports on the status of each Mediterranean species are available from the IUCN Red List (www.iucnredlist.org), where updated assessments will regularly become available.

The IUCN SSG *Global Shark Red List Assessment* concluded that the Mediterranean Sea holds a higher proportion of threatened species than other regions reviewed. Forty-two percent (30 species) of Mediterranean fishes were assessed as Threatened (13% Critically Endangered, 11% Endangered and 13% Vulnerable), with 18% Near Threatened, 14% Least Concern, and 26% Data Deficient. The following Table lists the Mediterranean species of chondrichthyan fishes, their regional and their most recent global Red List assessments.

The authors drew upon the results of the above programme to prepare a data sheet for the 30 taxa listed by IUCN as regionally Critically Endangered, Endangered or Vulnerable in the Mediterranean Sea, including species already listed in the Annexes to the SPA/BD Protocol. These data sheets were circulated to regional experts for comment before distribution to Focal Points.

Following completion of the data sheets, the results were reviewed and recommendations made for listing the threatened taxa in the appropriate Annex, including some proposals for uplisting species from Annex III to Annex II. Table 1 summarises these recommendations. A few data sheets were presented by genus, rather than by species. This was done if all species in the genus are threatened by the same activities (e.g. *Mustelus*), or if all are very similar in appearance and not usually recorded to species level when observed in fisheries or in the wild (e.g. sawfishes (*Pristis* spp.), hammerhead sharks (*Sphyrna* spp.), angel sharks (*Squatina* spp.) and guitarfishes (*Rhinobatos* spp.). In these cases it is considered to be most appropriate and effective to direct conservation and management measures at the level of genus, rather than species.

Annex IV. Report of Expert Meeting to review implementation of the Action Plan

Expert Meeting to review implementation of the Action Plan for the Conservation of Cartilaginous Fishes (Chondrichthyans) in the Mediterranean Sea

RAC/SPA, Tunis, 14 May 2009

MEETING REPORT

1. D. Cebrian Menchero, RAC/SPA Programme Officer, opened the meeting by welcoming the participants and introducing the agenda.

2. S. Valenti summarised the results of the recent consultation on potential amendments to the Annexes of the Barcelona Convention, referring to Action Plan Priorities and presenting potential new species-specific actions for the consideration of the meeting. It was noted that many of these taxa have been listed in or identified as potential candidates for listing in the Appendices of other Multilateral Environmental Agreements (MEAs): the Convention on International Trade in Endangered Species (CITES), the Convention on the Conservation of Migratory Species (CMS) and the Bern Convention for the Conservation of European Wildlife. D. Cebrian explained that the data sheets describing the Threatened taxa proposed for consideration for listing had been sent to Focal Points for discussion at their forthcoming meeting.

3. D. Cebrian Menchero invited all participants to share their views on important discussion points relevant to the Action Plan. The group then discussed the Implementation Timetable point by point, reviewing progress and identifying new actions needed under the updated Plan over the coming four years. The main discussion points, key issues identified and experts' recommendations are summarised below. The new Table of Actions prepared for the consideration of the Focal Points in June 2009 is appended to this report.

<u>Tools</u>

5. Participants highlighted the need to ensure that professionals with the appropriate expertise in chondrichthyan fish taxonomy, biology, stock assessment, conservation and management attend the meetings that will contribute to the implementation of the Action Plan, such as those under the auspices of the General Fisheries Commission for the Mediterranean (GFCM), International Commission for the Conservation of Atlantic Tunas (ICCAT), *etc*. To ensure that experts with the appropriate expertise are called upon for these meetings, they recommended that RAC/SPA consult an external panel of chondrichthyan fish specialists to develop a directory of regional and international experts in this field.

6. Because different taxonomic names are used by different sources, one consistent systematic list should be used across the region. The checklist used in the FAO *Field Guide to Sharks and Rays of the Mediterranean* (Serena *et al.* 2005) was proposed as the primary reference, since this has been developed in discussion with colleagues working on chondrichthyan taxonomy.

7. The importance of clearly annotating the diagrams or photos used in Field Identification Sheets with each species' main diagnostic characteristics was noted. Clear labelling is needed to facilitate quick and accurate identification and help to avoid misreporting. For example, one participant described the misidentification of porbeagle shark as shortfin mako shark by fishers in the southern Adriatic. This type of error could be avoided

through the use of Field Identification Sheets that clearly label the porbeagle shark's characteristic white spot on the dorsal fin.

8. Participants highlighted the need for tools for the protection and management of elasmobranchs and effective methods for implementing these. Effort should focus on the implementation of guidelines and actions developed under the Action Plan at the operational level by ensuring that these are made available widely and used successfully. There is an important need to improve not only the data available, but also to ensure that conservation measures are adopted and implemented effectively, including the measures incorporated into the European Community Plan of Action for Sharks (CPOA). Tools should be easily modified when new information is provided.

9. Experts agreed on the importance of developing stock assessments for elasmobranch species in the Mediterranean. To date only two stock assessments have been undertaken for starry ray *Raja asterias* and thornback ray *Raja clavata*, based on data from the MEDIterranean Trawl Surveys (MEDITS). The development of stock assessments for other species has been impeded by a lack of reliable data on catches throughout each species' range, partly because some Parties are disinclined to share data. Contracting Parties should therefore be encouraged to provide data for stock assessments by formalising the process used for submission of catch, bycatch and discard data to both scientific and management bodies and to the GFCM, so that it may be centralised.

10. A meeting between GFCM and the International Council for the Exploration of the Seas (ICES) on the maturity stages of chondrichthyan fish will be held in Malta in 2010. This will contribute towards the information needed for stock assessments, which rely on age and growth data as well as catch data.

11. Several participants recommended that FAO is contacted to request that a training programme/ workshop be organised for Mediterranean countries on chondrichthyan taxonomy, species identification, stock assessment and conservation. These are high priority areas for capacity building, and such a workshop would also promote collaboration on these issues throughout the region. This request should come from a Party or from GFCM, rather than from RAC/SPA.

12. Participants discussed the type of education and public awareness campaign that would be most effective for elasmobranch conservation in the Mediterranean. It was considered that such a campaign could be effectively aimed at sport/recreational fishers in the region to encourage a shift towards catch and release and to stimulate interest in chondrichthyan biodiversity among these fishers. Guidelines/a code of conduct should be developed for sport/recreational fishing aimed at improving survival. By encouraging reporting and contributions to research (for example, through engagement in tag and release programmes) these tools could also lead to improved scientific knowledge of chondrichthyans in the region.

13. GFCM held a workshop on bycatch in Rome during 2008, which recommended that further information on elasmobranch bycatch should be provided in national reports to GFCM. Participants reiterated the need for Parties to fulfil this recommendation.

14. The development of guidelines for chondrichthyan watching had been included under the original Action Plan Implementation Timetable. However, participants agreed that it

was not necessary to develop such guidelines because chondrichthyan watching is not actively practised in the Mediterranean. Furthermore, it would not be appropriate to encourage this practise in the region, since it may detrimentally affect strictly protected species.

15. Participants identified a number of additional actions taken by countries under the Action Plan that had not been reported in the official responses from countries surveyed regarding progress. Some countries are not reporting their progress and full engagement in the reporting process should be sought.

Legal processes

16. Very few Parties have implemented the current Annex II listings for three elasmobranch species under the Barcelona Convention Protocol by strictly protecting them under national legislation. Participants agreed that Contracting Parties should be urged to protect all Annex II species as soon as possible.

17. The EU is the only Contracting Party that has adopted a finning regulation – but this covers all EU Member State vessels and waters. Several Parties reported that they have not adopted a regulation to prohibit finning at sea because their domestic fleets do not practise finning. However, participants stated that it would still be advisable for these countries to implement national prohibitions on finning and the transport, landings and transhipment of fins without corresponding carcasses, since this would prevent vessels flagged in other States from finning, landing or transporting fins through territorial waters.

18. Several critical habitats for chondrichthyan fishes have been identified within the Mediterranean. These include the Gulf of Gabes (Tunisia), Boncuk Bay on the southern Aegean coast and inshore waters off the coast of Lebanon. Inventories of chondrichthyan critical habitats in the Mediterranean need to be completed and widely disseminated. It is important that Parties protect these habitats as soon as they are identified.

19. Participants agreed that Action Point 13 under UNEP MAP (2003) – “Facilitate the enforcement of legal measures aiming to set up a system for enforcement of monitoring fisheries in international waters” – was outside of the remit of RAC/SPA. Actions towards this aim should be established under GFCM. GFCM should, through its Contracting Parties, also be asked to develop a Regional Shark Plan that introduces fisheries management in international waters, to assist with the implementation of activities under the RAC/SPA Action Plan in territorial waters.

Monitoring and data collection

20. As elasmobranch researchers, the participants recognised that regional shark projects are often difficult and expensive to conduct. They stated the need to increase investment in these projects to provide information on the distribution, biology, life-history and population trends of these species.

21. Differences in the status of certain stocks in the northern and southern Mediterranean Sea were discussed. It is widely acknowledged that several species of large sharks have virtually disappeared from the northern Mediterranean, where meta-analyses of population trends in large predatory sharks (Ferretti *et al.* 2008) estimate declines of up to 99% during the 20th Century, following a long history of intensive fishing effort. Several benthic species, including guitarfishes *Rhinobatos* spp, have also disappeared from their former range or declined dramatically in the northern Mediterranean, where bottom trawling has been intensive. Populations of these species may still persist or even be

relatively common in the southern Mediterranean, where fisheries have been less intensive. For example, the common guitarfish *Rhinobatos cemiculus* is still fished off the coast of Tunisia by a small artisanal fleet of ten boats (M.N. Bradai pers. comm.), and is seen by divers off the Lebanese coast where bottom trawling is prohibited. If bottom trawl fisheries begin to exploit this area, this would be very dangerous to the remaining populations. The history of population depletion in the northern Mediterranean clearly demonstrates the vulnerability of these species to intensive fisheries and emphasises the need to develop conservation actions, monitoring and research throughout the range of endangered and threatened species.

22. Basic research programmes in important areas for chondrichthyan biodiversity that have been little studied (e.g. Libya) are required to build a complete picture of the situation in the Mediterranean. Several relevant research programme proposals have been developed under RAC/SPA as a contribution towards to the implementation of the Action Plan. These need to be developed into full funding proposals with budgets and promoted to potential donors to secure funding.

23. Participants noted that increased input is required into the existing regional centralised databases, such as the Mediterranean Large Elasmobranch Monitoring (MedLEM) database. Participation in these initiatives is currently limited and needs to be encouraged, particularly from areas where little is currently known.

24. Participants noted that reliable fisheries catch data are rarely available and that landings data sets can vary considerably depending upon the source, even within the same Ministry. Parties need to comply with obligations to report full chondrichthyan catch data to the relevant bodies. For example, some participants explained that it is not possible to use the ICCAT database for the Mediterranean Sea because reporting by Parties is very poor and/or incomplete. In some cases data is being collected but not analysed and it is not centralised or shared immediately. The important need for all Parties to collect and report all shark catch data to GFCM and ICCAT to contribute to centralised databases and stock assessments was identified.

25. One participant noted that participation in important meetings is often low because some RFMOs do not fund the participation of countries and scientists. Support is required to improve capacity, share expertise and promote collaboration among all areas.

26. Participants agreed that programmes for the collection of data from coastal fisheries should be improved because the catches of these fisheries are often not reported or under reported and include important species.

<u>Management and assessment procedures</u>

27. The status of Mediterranean chondrichthyan species has been assessed through the IUCN Shark Specialist Group's Red List programme. A regional Red List workshop was held in 2003, attended by 30 experts from 14 countries, and the results published in an IUCN summary report (Cavanagh and Gibson 2007). A large proportion (>40%) of Mediterranean chondrichthyans are evaluated as Threatened. The group noted that some unpublished data are available from ongoing research programmes on species that have been categorised as Data Deficient or Near Threatened, and that these assessments should be revisited and updated in view of this information to clarify their status. Participants also emphasised that data must be collected to monitor all

chondrichthyan species, particularly those that are assessed as Threatened, Near Threatened and Data Deficient, and those that are endemic to the region.

28. The current European Community Plan of Action for Sharks (CPOA) is targeted mainly at the Northeast Atlantic and includes little reference to the Mediterranean Sea. This should be addressed by developing specific complementary measures in the Mediterranean.

29. Participants suggested that Parties should provide a description of their target and/or bycatch chondrichthyan fisheries (a Shark Assessment Report) to the GFCM.

30. In addition to the EU's CPOA, a few States have produced draft National Plans of Action for Sharks (NPOAs), but the majority have not completed this as urged by FAO. Participants noted that these plans should be developed and adopted as a matter of urgency, where they do not already exist. Furthermore, Shark Plans should be reviewed periodically (every four years) as stipulated under FAO's IPOA Sharks.

31. It was noted that GFCM's recommendations on sharks currently mirror those of ICCAT, which is primarily focused on the Atlantic (e.g. ICCAT's recommendation on shortfin mako shark was formulated for the entire Atlantic). It would be appropriate for the GFCM to develop separate recommendations on shark management that are specific to the Mediterranean (it may be possible to address this under the MoU between GFCM and RAC/SPA).

32. The possibility of developing a Mediterranean initiative was considered, under which implementation of the FAO IPOA–Sharks and the MAP Shark Plan could be encouraged and facilitated. In addition to capacity-building workshops, this programme might use individual shark experts to act as mentors for experts in each participating country, in order to build expertise and help to guide Action Plan development and actions.

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