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NOTE ON THE IMPLEMENTING OF THE ACTION PLAN FOR THE CONSERVATION OF MARINE VEGETATION IN THE MEDITERRANEAN SEA AND PROPOSAL OF UPDATED WORK PROGRAMME AND TIMETABLE

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NOTE ON THE IMPLEMENTATION OF THE ACTION PLAN FOR THE CONSERVATION OF MARINE VEGETATION IN THE MEDITERRANEAN SEA AND PROPOSAL OF UPDATED WORK PROGRAMME AND TIMETABLE

I. OVERALL CONTEXT

The Action Plan for the conservation of marine vegetation in the Mediterranean Sea was adopted in 1999 at the Eleventh Meeting of the Contracting Parties to the Barcelona Convention (Malta, 27-30 October 1999).

This Action Plan aimed mainly at:

- ensuring the conservation of macroscopic marine vegetation species and vegetal assemblages in the Mediterranean by implementing management and legal protection measures;
- avoiding loss and degradation of the seagrass meadows, and other vegetal assemblages of importance for the marine environment, and keeping them in a favourable conservation status;
- ensuring the conservation of marine vegetal assemblages that could be considered natural monuments, such as barrier reefs of Posidonia, and organogenic surface formations, terraces (platforms with vermitids covered by soft algae) and certain Cystoseira belts.

Furthermore, it gave priority to 14 species of marine flora listed in Annex II of threatened or endangered species to the Protocol concerning Specially Protected Areas and Biological Diversity (SPA/BD Protocol; Table 1) and identified a work programme to be put into effect between 2000 and 2006.

Table 1: Species taken into priority account in the context of the Action Plan for the conservation of marine vegetation in the Mediterranean Sea

Magnoliophyta	*Posidonia oceanica, Zostera marina, Zostera noltii*
Chlorophyta	*Caulerpa ollivieri*
Phaeophyta	*Cystoseira amentacea, Cystoseira mediterranea, Cystoseira sedoïdes, Cystoseira spinosa, (inclus C. adriatica), Cystoseira zosteroides, Laminaria rodriguezii*
Rhodophyta	*Goniolithon byssoïdes, Lithophyllum lichenoides, Ptilophora mediterranea, Schimmelmannia schousboei*

In 2005, an assessment was made of the implementing of this Action Plan (UNEP-MAP-RAC/SPA, 2005) and a new work timetable was established for the period 2005-2011 and adopted by the Contracting Parties at their 14th Ordinary Meeting (Portoroz, Slovenia, November 2005).

Lastly, at their 16th Ordinary Meeting (Marrakech, Morocco, November 2009), the Contracting Parties amended the Annex II list of species in order to take account of the taxonomic changes that had taken place since 1999, and to add species of marine flora and fauna (UNEP-MAP, 2009).

In the light of all this, it thus seemed useful to make an assessment of what had been achieved in the context of this Action Plan, and to identify actions to be undertaken in the future.

II. ACHIEVEMENTS IN THE CONTEXT OF THE ACTION PLAN FOR THE CONSERVATION OF MARINE VEGETATION IN THE MEDITERRANEAN SEA

Since the Action Plan was adopted, RAC/SPA has striven to help the countries implement it. This has been done over the past years by carrying out several activities (Table 2).

Table 2: Actions planned in the context of the 2005 work programme, and corresponding achievements with RAC/SPA's participation over the period 2006-2011

Action planned	Activity to implement the Action Plan	Achievement
1. Ratification of the new SPA/BD Protocol	Ratification by those Parties that have not yet done so	By April 2010, only 4 countries had not yet ratified the new SPA/BD Protocol
2. Mediterranean symposium	Organising a symposium every 2 or 3 years	Two symposia were organised in 2007 (UNEP-MAP-RAC/SPA, 2007a) and in 2010 (UNEP-MAP-RAC/SPA, 2010). These symposia are a key element in the Action Plan, for they allow the scientific community to exchange views on current topics and make concrete suggestions that are submitted to the Focal Points for their views and may give rise to recommendations or decisions
3. Guidelines for impact studies	- Encourage the countries to set up procedures for environmental impact studies, and help those who have these to integrate these guidelines therein - Regularly review the guidelines according to all new data	The guidelines were drawn up in 2000 and revised in 2007 (UNEP-MAP-RAC/SPA, 2007b). By 2009, 13 countries out of 19 said they had regulations on environmental impact studies that take into account the impact of human activities on meadows and other important plant assemblages, and one country said that such regulations were in the process of being crafted (UNEP-MAP-RAC/SPA, 2009a)
4. Mediterranean database	- Make the existing database accessible - Ensure regular updating in coordination with the various partners - Set up systems for the collection and exchange of data between the partners	A bibliographical database was created with over 270 references on the biology, ecology, taxonomy, cartography or conservation of Mediterranean marine magnoliophyta. Accessible via the RAC/SPA website, it can be incremented by the entire scientific community. The Mediterranean symposia, with their growing number of participants (43 in 2000, 120 in 2010), also represent an efficient system of exchange of information and experience

5. Directory of specialists, laboratories and organisations concerned by marine vegetation in the Mediterranean	- Complete and revise the directory of specialists and laboratories, institutes and organisations concerned - Enrich the inventory by references and fields of competence of the specialists	The inventory of Mediterranean marine vegetation specialists includes over 210 entries. It is regularly updated, in particular when symposia take place
6. Launching of procedures for the legal protection of the species at national level	- Urge the countries to get legal protection measures - Help those countries that have legal protection measures to make them operational and efficacious	In 2009, 9 countries had a list of protected species based on Annex II to the SPA/BD Protocol, and 4 countries were preparing these lists (UNEP-MAP-RAC/SPA, 2009a) The amending of Annex II to the SPA/BD Protocol enabled species of marine flora to be better taken into consideration with the adding of 11 species and one genus, the genus Cystoseira in its entirety with the exception of the species *Cystoseira compressa*, which represents over 40 species
7. Elaboration of national plans for the conservation of marine vegetation	- Urge those countries which have not yet done so to develop short-, medium- and long-term action plans according to national and regional priorities - Help countries implement the action plans	Algeria, Croatia, Monaco, Montenegro and Slovenia have set up National Action Plans for the conservation of marine vegetation. National Action Plans are being prepared for Cyprus, Egypt, Libya and Malta Many public awareness activities have been undertaken at national level with leaflets, signs, and posters or the publication of synthesis documents
8. Inventorying of seagrass meadows and other marine vegetal assemblages that could be considered as natural monuments	- Collect and make available, on RAC/SPA's website, the existing data - Have more training courses on the use of the SDF - Harmonize the SDF with the pertinent inventorying systems	In 2009, with the active participation of the countries, RAC/SPA synthesized all the available cartographical data on the distribution of magnoliophyta meadows in the Mediterranean (UNEP-MAP-RAC/SPA, 2009b). The data were integrated within the Centre's geographical information system (MedGIS). Training courses in the use of the SDF were organised within the context of RAC/SPA's regular funding (MTF) and also within the context of the MedPosidonia Project, implemented by RAC/SPA in 4 Mediterranean countries, with the financial backing of the Total Foundation. Making inventories to identify sites for setting up new SPAs enabled new SDFs to be filled in

9. Preparation of management plans for protected area	- Enhancing protection for marine plants by setting up a representative network of marine protected areas	In the context of the regional synthesis on the representativeness of the Mediterranean Marine Protected Areas (UNEP-MAP-RAC/SPA, 2009c), an assessment was made of the presence of Annex II macrophyta in the existing MPAs. This approach, although a preliminary one, shows that with the exception of the marine magnoliophyta, the other macrophyta are rarely considered. Similarly, apart from Posidonia, fewer than 10 countries have at least one MPA where the studied macrophyte is mentioned
10. Preliminary inventory of species	- Establish a programme for making national inventories of macrophyte species, with staggered planning according to the regional priorities - Implement the draft initiative for developing the taxonomy of Mediterranean flora	As part of the MedMPAnet project (coming under the aegis of the 'Med Partnership' and funded by the EC, AECID and FGEF) that concerns 12 Mediterranean countries, actions were undertaken or are being carried out to inventory potential sites for creating future SPAs. These actions also enabled national workshops to be set up for training in taxonomy
11. Setting up of networks for the monitoring of marine vegetation	- Establish a programme of setting up marine vegetation monitoring networks on a national and regional scale - Help countries identify and implement tools likely to permit efficacious monitoring of marine vegetation - Set up and/or extend monitoring networks in the Mediterranean	As part of the MedPosidonia Project (UNEP-MAP-RAC/SPA, 2009d), that concerns four countries, training actions on setting up monitoring networks were given (one regional and three national). As well, two monitoring systems were set up, with the backing of the national authorities, in Tunisia and Turkey, and one in Algeria. At the same time, to provide suitable tools, guidelines on mapping and monitoring Mediterranean marine magnoliophyta were prepared in consultation with the scientific community, and then discussed at the 4th Mediterranean Symposium on Marine Vegetation (Yasmine-Hammamet, December 2010). These guidelines were presented to the Focal Points for their opinion at their 10th Meeting in Marseilles (UNEP(DEPI)/MED WG.359/8)

12. Mapping of seagrass meadows and other vegetal assemblages of importance for the marine environment	- Establish a programme for mapping remarkable sites - Help the countries implement tools likely to permit a mapping suited to the marine vegetation - Harmonize cartographical data and facilitate access to this at national and regional level	As part of the MedPosidonia Project (UNEP-MAP-RAC/SPA, 2009d), mapping actions were carried out on one site in Algeria, on four sites in Libya, on five sites in Tunisia and on two sites in Turkey. Training workshops in mapping marine magnoliophyta were organised (one regional workshop and three national workshops). As stated in Item 11, the established guidelines (UNEP(DEPI)/MED WG.359/8) concern both monitoring and mapping. The harmonization and accessibility of existing cartographical data have already been made clear in Item 8

To these activities, carried out in a regional context, must be added the national actions often carried out directly by the Contracting Parties. Thus, as for the creation of protected areas devoted to the conservation of marine vegetation (Item 9), seven countries (Algeria, Cyprus, Greece, Italy, Monaco, Spain and Tunisia) said that in 2009 they had set up protected areas devoted to meadows and other important vegetal assemblages, while Syria stressed that its protected areas contained significant organogenic assemblages. Croatia, Egypt, Malta and Montenegro envisaged the setting up of such protected areas (UNEP-MAP-RAC/SPA, 2009a).

Similarly, nine countries (Cyprus, Egypt, Greece, Italy, Libya, Monaco, Slovenia, Spain and Tunisia) said they had carried out studies to inventory and map (Item 8) those marine vegetal assemblages that are natural monuments, while Libya, Malta and Montenegro were developing such studies.

Lastly, Albania, Algeria, Cyprus, Greece, Italy, Monaco, Slovenia, Spain, Tunisia and Turkey said they had set up programmes to map the main meadows and other important vegetal assemblages (Item 12), while such programmes were at project stage in Croatia, Egypt and Montenegro (UNEP-MAP-RAC/SPA, 2009a).

III. ASSESSMENT AND ACTIONS TO BE ENVISAGED IN THE CONTEXT OF PURSUING THE ACTION PLAN

An assessment of all these activities shows that much has been done at regional and national level to implement the Action Plan efficaciously. That being so, we notice both a strong geographical disparity (western/eastern basin) and also a disparity between species concerned by the Action Plan (magnoliophyta/other macrophyta) and between the different kinds of action planned (cf. Table 2). A glance at the whole set of activities allows us to identify five major kinds of action: those related to regulatory aspects, those to help improve scientific knowledge and communication, those for inventorying and mapping the main vegetal assemblages, those on monitoring and follow-up over time of the main vegetal assemblages, and those aimed at greater appropriation of the Action Plan by the countries.

1. Regulatory aspects

Regulatory aspects are generally well taken into account, with all or some of the vegetation species appearing in the national legislation, permitting either the direct protection of the species (being put on the list of protected species at national level) or the indirect protection (regulations prohibiting certain activities that are harmful to the species, like the ban on trawling over coastal shallows). Similarly, doing impact studies before carrying out developments in the marine environment is increasingly often the rule, and we notice better integration of threatened species of flora within these impact study procedures. This being so, we note that the marine magnoliophytes, in particular Posidonia (*Posidonia oceanica*), are given more consideration than other plant species. This state of things seems to be due to the fact that the wider public and the concerned actors know more about Posidonia meadows than the other plant assemblages listed in Annex II, and also that it is more difficult to identify the other protected species and recourse to specialists is almost obligatory. Putting the genus Cystoseira (except for *Cystoseira compressa*) in Annex II to the SPA/BD Protocol is an attempt to partially respond to this point (only one Cystoseira species to be identified with precision, all the others to be protected). From this angle the Action Plan should be updated in order to take account of the amendments to Annex II and also to envisage a fairly general presentation of these macrophyta and to provide simple means of identification, and also to explain their importance in the same way as is done for the meadows (e.g. summarized sheets).

2. Scientific knowledge and communication

Generally speaking, one can notice an increased interest in the knowledge of marine vegetation species and growing attendance, allied to greater geographical diversity, among the scientists who participate in the 'marine vegetation' symposia.

There too we notice great disparities between the magnoliophyta and the other marine macrophyta. The indexed scientific publications on the *Posidonia oceanica* species (an endemic species, whose distribution is restricted to the Mediterranean) have gone from nearly 300 in 1995 to over 1,000 today (Web of Science). Similarly, at the level of 'marine vegetal' symposia, the papers on magnoliophyta are on the increase (25% in 2000, 37% in 2003, 50% in 2007 and 55% in 2010).

Lastly, these symposia often offer a unique opportunity for the scientists of the basin to have their work known by the international community, to exchange views and to initiate cooperation. Finally, the conclusions of the symposia are often the occasion for concrete suggestions, reflecting the expectations of the scientific community as regards management measures. One can mention, for example, the demand for standardised tools for the mapping and follow-up of magnoliophyta meadows, at the Marseilles symposium, or for the listing of new species in Annex II to the SPA/BD Protocol at the same symposium. Also, despite the high cost of these events, we should try to keep them up insofar as the cost/benefit balance sheet remains largely positive.

3. Inventorying and mapping the main vegetation assemblages

In the context of the Strategic Action Programme for the Conservation of Biological Diversity in the Mediterranean Region (SAP BIO), the Contracting Parties stressed the importance of the actions of inventorying and mapping priority habitats and the big gaps in this field (UNEP-MAP-RAC/SPA, 2003). Outside the few initiatives to exhaustively inventory marine vegetal assemblages started in the European countries as part of the Natura 2000 programmes, most mapping actions have focused on the magnoliophyta meadows. But we have to admit that the data still remains very fragmentary, with low percentages of the surface areas mapped (UNEP-MAP-RAC/SPA, 2009b). This assessment can be explained by the conjunction of many factors:

- the important cost which a precise mapping survey represents
- the sometimes extremely large coastline of certain Mediterranean countries
- the lack of knowledge and training regarding mapping survey techniques.

To overcome these difficulties, several activities were undertaken, like looking for specific funding (e.g. MedPosidonia Project) that enable mapping actions to be started, and providing training on these mapping methods or suggesting standardised methods suited to the objectives being pursued (UNEP(DEPI)/MED WG.359/8). In spite of this, significant progress cannot be made without identifying specific funding (e.g. MedPosidonia Project). Also, on the basis of the available scientific knowledge (physical data, bibliographical documents), it would be a good idea to make maps of probable 'theoretical' habitat distribution in a way that would limit the inventorying effort to the geographically less extensive priority sectors. Lastly, this effort in terms of cartographical inventorying should not be restricted to the magnoliophyta species alone but should concern all the priority habitats identified (UNEP-MAP-RAC/SPA, 2002).

4. Monitoring and following up over time the main plant assemblages

The activities carried on to monitor the main vegetal assemblages are relatively reduced at regional level except for the implementing of the monitoring side of the MedPosidonia Project, which concerned Algeria, Tunisia and Turkey. Alongside, some national initiatives were developed in the European countries in the context of applying the European Framework Directive on Water and taking the biological quality element into account: the Posidonia meadow (Boudouresque *et al*., 2006).

As well as this regulatory monitoring, mechanisms of fighting climate change must encourage a better conservation of the magnoliophyta meadows, in particular the Posidonia meadows, insofar as these play an important part in fixing and locking carbon. It thus seems indispensable to set up monitoring measures that are easy to implement and cheap so that these assemblages can be lasting, and to possess tools for identifying any regression as early as possible.

5. Taking on the Action Plan and enhancing national capacities

Improving the way the Action Plan is taken into account necessarily involves great involvement at national level and the enhancing of actors' capacities. As well as creating National Action Plans, several national capacity-building activities were successfully carried out. These activities remain fundamental for enabling national managers and scientists to commit themselves effectively to implementing the Action Plan. Unfortunately the cost of regional training does not permit these activities to be generalized, and they remain too one-off. It therefore seemed desirable to try to set up a network of 'liaison executives' who would be given adapted training and would then be able to implement national training, thus enabling a greater number of participants to be hosted on the national sites and significantly improving the skills of the local actors.

IV. PROPOSAL FOR THE UPDATED WORK PROGRAMME AND TIMETABLE

In the light of what has gone before, a work programme that takes account of the amendment of the Annexes to the SPA/BD Protocol and an updated timetable can be suggested (Table 3).

Table 3: Work programme, and timetable for the period 2012-2017

Type of action planned	Activities for implementing the Action Plan	Deadline
1. Regulatory activities	- Parties which have not yet done so ratify the SPA/BD Protocol	As soon as possible
	- Help the Parties take new vegetation species in Annex II into account	As soon as possible
	- Help the countries which have legal protections make them operational and efficacious	From 2013
	- Urge the Parties to create MPAs to conserve marine vegetation	As soon as possible
2. Scientific knowledge and communication	- Update the text of the Action Plan to integrate the amendments to Annex II to the SPA/BD Protocol	As soon as possible
	- Organise a symposium every 3 years	From 2013
	- Extend the bibliographical database to all the vegetal species in Annex II to the SPA/BD Protocol and regularly update it	From 2013
	- Make the information layer on distribution of meadows accessible (MedSIG)	As soon as possible
	- Update the information layer on mapping priority habitats	Every two years
	- Complete and regularly revise the directory of specialists and laboratories, institutions and organisations concerned	When there are symposiums
3. Inventorying and mapping the main vegetal assemblages	- Set up a programme for making national inventories on macrophyta species, with staggered planning according to the regions' priorities	From 2012
	- Make theoretical probable distribution maps for the main plant assemblages	As soon as possible
	- Implement targeted mapping and inventorying actions (Annex II species, priority sites)	From 2012
4. Monitoring and following up over time the main vegetal assemblages	- Establish a programme for setting up monitoring networks for the main marine plant assemblages at national and regional level	As soon as possible
	- Help the countries set up and/or extend their networks for follow-up of plants in the Mediterranean	From 2013
5.Taking on the Action Plan and enhancing national capacities	- Urge the countries that have so far not done so to develop short-, medium- and long-term action plans according to national and regional priorities	From 2012
	- Help countries implement action plans	As soon as possible
	- Set up training of 'liaison executives' responsible for providing national training courses	From 2013
	- Help the countries set up regular national training	From 2014

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