



# MARBENA

Creating a long term infrastructure for marine biodiversity research in the European Economic Area and the Newly Associated States.

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## Deliverable

**MERGE OF CONTRIBUTIONS FROM THE SOUTHEASTERN MEDITERRAENAN REGION**

By Paolo Magni

**Topic 1. The status of marine biodiversity research and potential extensions of the related network of institutes**

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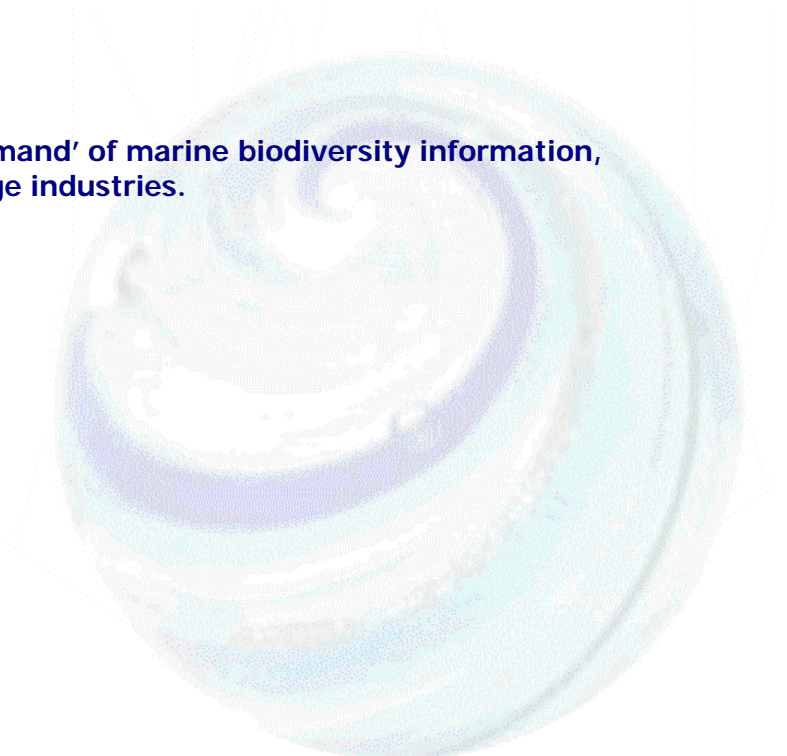
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## Topic 1. The status of marine biodiversity research and potential extensions of the related network of institutes

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Research related to the inshore and coastal marine biodiversity in Algeria poses several problematic; the most important constraints are certainly those relative: **(i)** to the absence of a unifier axis that translates a global strategy aiming the knowledge, the protection and the valorization of the most remarkable elements of this biodiversity and its most strategic components; **(ii)** to the deficit concerning capacities of appraisal and the means of research, these capacities, in spite of the public power effort, stay insufficient and some maladjusted times taken into consideration the importance of the inshore marine domain; as well as their distributions inequitable home and do not encourage a balanced scheduling delaying the efficient emergence of intra national poles. Finally **(iii)** the capacities system of exchange and backing, through the regional south - south and north - south axes does not success again to define, sufficiently, efficient mechanisms to allow, especially, setting to level the relative questions, the bio accumulation and to the relative aspects to the bio accumulation, to the bio scorers and to the spontaneous phenomenon as the poisonous proliferation or invasive species. The cooperation actions stay prompt and limited both on spatial plan that temporal, yet the regional settings that are the most often the products of the Convention of Barcelona exist and only need to be explored deeply in a larger concerted frame and less restraining. The last initiative in date, in this case the SAP MED constitutes the more indicated frame, actually. On the other hand, there is a place to signal that the majority of the south strand countries of the Mediterranean do not have the means of investigating and research in the deep waters and to this title an important part of the deep Mediterranean heritage remained even unknown.

When we tackle the research – marine biodiversity problematic, important question imposes: **(i)** What is the place of research on the marine and inshore biodiversity in the national disposal of the scientific research? **(ii)** How to stall or to center research in this domain with the questions related to the socioeconomic development? **(iii)** How to encourage the setting up of mechanisms to guarantee surroundings a national integration then under regional and finally regional of this type of research? **(iv)** What are the national priorities in relation to this thematic? **(v)** What are the mechanisms to put in place in order to limit and to reduce the delay concerning research in this domain? **(vi)** On what basis have the approach to construct of south- south and north south cooperation in this domain? **(vii)** What are the constraints that meet the integration to the national and regional level?

As many questions that deserve an all particular attention of deserving and in the first place on behalf of the academic specialized in this thematic, the public powers and the Non Governmental Organizations.

In Algeria about ten (10) laboratories activate on items related to marine biodiversity with backdrop a lack of coordination and concerted scheduling that drives indisputably to a lack of visibility. The development of a biodiversity concerted research and not only dealing with objectives in technical and

scientific performance term but also in socioeconomic development term is an equation that must be adjusted so that the product of this research becomes really a " product " of help and orientation of the decision making, notably on the resources questions exploited and of their accompanists corteges of species.

On the south strand of the Mediterranean, without pretension to be exhaustive, we can consider objectively that more of about fifty academic laboratories of research that have a regular activity of research on the thematic marine and inshore biodiversity or the related activities of research exist. However, very little number of those laboratories communicates between them as for the circulation of the scientific information is episodic, or even almost absent. In these conditions it is difficult to consider a setting to level or develop consequent research strategies.

Among the major objectives of the knowledge improvement on the marine biologic diversity, the conservation and the valorization of its components stay key objectives. To this effect, the protected marine and inshore areas constitute privileged research spaces for what they offer like originalities and natural process maintain ever they are biologic or sedimentary. There is place to recall the shift concerning in situ protection and conservation between the countries of the north strand that have proven traditions in this domain whereas on the south strand especially in the western basin and in Algeria we start politics aiming to the setting up of protected marine and inshore areas in the absence, especially, of specific legal and adapted arrangements to this item and with capacities of scheduling and management limited yet. This question that is eminently under striven by the research scientist's activities that constitute an indispensable pedestal to assure a sustainable development of specific and eco-systemic component of these areas is, directly, in relation with the incompetence above-mentioned.

Cooperation and in particularly the capitalization of the north strand experiences for the account of the strand south countries becomes in these conditions one of the research success elements related to the in situ conservation.

Besides, the absence of a relative dynamic data base to the different components of the inshore and coastal marine biodiversity, especially in its relative elements to the scientific research handicaps the scheduling and the resources management related to the subject to this biodiversity as well as to the development of an efficient, sustainable strategy, and in measure to conform the waiting, of national then regional surroundings.

The relative research to the marine biodiversity remains the public domain exclusively through the university and specialized institutes scattered along the coastal cities. In general, three main academic poles, Algiers, Oran and Annaba have a great role in this domain but without pushing this research, truly, toward actualized aspects, it deal in most programs and projects of research with the fundamental aspects (basic knowledge on identification and inventories, the geographical and bathymetric distribution and if the case arises the interactions between species and ecosystems). The dominant options in these research deal with the systematic, the trophic regimes, the socio-phytology and the transect analysis, of the populations dynamics, especially exploited, of the relative aspects to the benthic bio indicator and accessory to questions bound to the toxicity and the parasitism.

It stays, actually, that the true question is the big shift that exists between on the one hand the socioeconomic needs, especially those bound to the development and on the other hand the main research themes in the marine and coastal biodiversity domain whose academic aspect dominates again in a large measure. Even if it is difficult to estimate the budget allocated to the various activities of research that have a direct or indirect relation with the thematic inshore and coastal marine biodiversity, it is nearly certain that this budget stays yet limited and cannot permit in the present configuration a breakthrough in this domain. The national financing system that is the exclusive resort of the state and completed incidentally by regional financings of center or the cooperation organs of (UNEP, UNDP, METAP,...) or in the setting of the bilateral cooperation (Algerian - Spanish for the knowledge and the piscatorial resource assessment, Algerian - French for the conservation and

protective aspects of the marine and inshore ecosystems) in addition to the inter academic cooperation through the mobility of the researchers with the countries of the north strand of the Mediterranean.

The question of financing is also bound to a certain culture of the academic in Algeria that does not dare or shows a little "aggressiveness" especially for the research of outside financings of the traditional channels by the public and private industrial sector. This question also shows the ditch that separates the world of the enterprises especially the small and middle enterprises and the one of the universities. By ignorance of the fulfill potential by the entrepreneurs and often of their "feeling *the cold*" to invest relative milieu to the marine biodiversity, a relatively important layer of marine and inshore species remained back of the national economic activity.

The academic research must play a consequent role once again while orienting the new marine resource exploitations until now marginalized or non exploited by raising the indispensable reference marks in relation to the preservation of the habitats and the balances of the stocks. Some exploratory assessments are necessary to hope to encourage this kind of activities.

The academic laboratories of research must also invest with an intense and permanent manner the environmental monitoring networks in coastal zone and the inshore marine domain; of the networks that assure the monitoring of the elements of biodiversity (threatened species, species exploited to strong value bargain, of the remarkable habitats as the ecosystems of *Posidonia oceanica*, the coral and *vermetus* sidewalks, of the insular sites, of the coastal humid zones) and to intensify the monitoring networks that exist concerning the monitoring of the navy pollutions, the "hot points" and the "important zones" that have an incontestable and certain impact on biodiversity. The means of research must partially be oriented toward these research and monitoring networks to permit the setting up of tables of environmental indicator sides.

Before approaching the regional integration question (Mediterranean) or under regional (north Africa, South Mediterranean), it is important to recall that this integration must be operated in to the national level between the various laboratories of academic research and other national institutions in charge of the inshore and coastal marine biodiversity question. The setting in operational connection of the different centers of research aims to a better orientation of the research activities in relation with the vocation and the means of the considered establishments, especially on the questions: **(i)** of the fundamental research; **(ii)** of the species and habitats targeted; **(iii)** on the aspects of profitability, the exploitation, the production and the productivity of the ecosystems; **(iv)** and finally on the shutters preservation, protection and valorization. The integration must take place, in a second time, between the institutions, agencies, observatories and administrations that have expertise and of the prerogatives on the aspects of biodiversity and ecosystems with one central question as the best way explorations and means in order to assure the institutional and financial sustainability of the activities carrying on biodiversity. The integration must finally interest the NGO activating in the protection of the environment and the preservation of the biodiversity domain in a specific manner.

We consider that for the success of the integration of the relative research to the marine and inshore biodiversity to the national level the efficient implication, person concerned and sustainable of four categories of actors is indispensable: **(i)** Universities and Laboratories of research; **(ii)** Agencies, Observatories, national and local Administrations as chambers of fishing and aquaculture, Directorate of the Environment of Wilaya (City), Direction of the Tourism of Wilaya (City), Direction of Fishing of Wilaya(City), ...; **(iii)** Coastal townships; **(iv)** NGO and other biodiversity users as the public or private industrial sector professional in fishing, tourism and the small and middle industries domains.

**(i) Academy:**

- Sciences of the Sea and the Coastline Planning Institute (ISMAL);
- Marine Biology laboratory, Fish laboratory (Houari Boumediene University of the Sciences and Technology (USTHB));
- Laboratory Network of Environmental Monitoring (LRSE, University Sénia of Oran);
- University Badji Mokhtar (Annaba);
- University of Mostaganem;

- University of Bejaia;
- Academic Center of El Tarf.

**(ii) Institutions:**

- National Observatory of the Environment and Sustainable Development (ONEDD);
- National Center for the Development of Research on Biodiversity (CNDRB);
- National Observatory of the Coastline (CNL);
- Agency for the Protection and the Promotion of the Algiers' Coastal (APPL);
- National Center for Fishing and Aquaculture Development (CNDPA);
- Chamber of fishing and aquaculture;
- Direction of the Environment of Wilaya (City);
- Direction of the tourism of Wilaya (City);
- Direction of the fishing and the aquaculture of Wilaya (City);

**(iii) NGO's and other users:**

- NGO's;
- Public industrial Sector;
- Private industrial Sector.

It is necessary to recognize that the National Agency for the Development of the Academic Research (ANDRU) under the aegis of the Ministry of the Higher Education and the Scientific Research (MESRS) in its strategy of framing and developing of the research activities had initiated a step and attempt a setting in consistency between the economic development - marine biodiversity couple through the integration of research on the biologic marine diversity in Agriculture and Food Program; this experience must be capitalized and the public power effort in this domain must be maintained and sustained. It seems that in the present configuration, this agency is the more indicated structure to pilot coordination operation concerning the thematic or the marine and coastal Biodiversity axis taken into consideration its experience and its various resources.

The integration of the research activities in relation directly or indirectly with the relative questions to marine and coastal biodiversity in Algeria goes through:

1. The definition of important research axes targeting the identified species in the national report SAP BIO as being key species for the Algerian marine ecosystem, especially the species in danger on the Algerian coast, on a part of the Mediterranean Sea or on the whole of the Mediterranean region (MPA Protocol);
2. The setting up of standardized indicators for the following-up of the marine and inshore biodiversity main components;
3. The setting up of networks of monitoring and following-up of these components;
4. The intensification of the training on the systematic marine aspects (point indicated in the 3rd National Report of the Convention on the Biologic Diversity);
5. The efficient setting of the plans of specific actions elaborated with the RAC SPA ASP UNEP/MAP for Algeria and an implication of the research academic laboratory on the whole of the settlement process of the plans and their following-up as well as the assessment of this implementation;
6. Definition of a research strategy in relation to the high value bargains exploited species that risk if the effort of fishing is sustained to know critical situations of stocks balance (shrimps, lobster...).

In the present situation state real networks of research do not exist indeed for the marine and inshore biodiversity in the south of the Mediterranean, even of the specific networks as the MedMpa program that is apart of the RAC SPA and that is a protected marine and inshore area network, therefore that treats a specific aspect of the ecosystem approach. Some relative prompt initiatives also exist to the most symbolic species and those in peril as the seal monk of Mediterranean *Monachus monachus* or the marine turtles. Of course the set of these initiatives are framed for the majority by the focal points that are under the aegis of the Ministry of the Environment and not of the Ministries of the scientific

research or higher Education even though the development of preservation and protection plans is elaborated by academics.

It becomes fundamental in these conditions to function according to the networks logic for various reasons, of which most important are: (i) the optimization of the human resources and the means of research, (ii) to permit a fluidity of the researchers, (iii) to assure the training of the formative, (iv) to standardize the approaches methods and the analysis techniques and treatment of the samples and data.

Such a network to the south of the Mediterranean could articulate in one first phase on an academic representation by country that will play the role of coordination or focal point to the national level for the relative questions to biodiversity, and in one second phase, once the mechanisms of cooperation and collaboration will be well in place with concrete results, concerning distribution of the missions of research and exchanges of experiences and results the network will enlarge notably to the set of the national components that deal with the question “marine and inshore biodiversity”. The matter is, therefore, about putting some flexible and sustainable mechanisms for an under regional integration of surroundings to the strand South level of the Mediterranean Sea. For the launching of the network, the national institutions that could take these items in charge would be:

- Sciences of the Sea and the Coastline Planning Institute (ISMAL/ Algiers, Algeria),
- National Institute of Piscatorial Research (Rabat, Morocco),
- National Institute of the Sciences and Technologies of the Sea (INSTM/Tunisia),
- National Institute of Oceanography and Fisheries (NIOF/Alexandria / Egypt),
- High Institute of Marine Research (Tishreen University, Lattakia, Syria),
- Marine Biology Research Centre (Tajura, Libya),
- National Center of Marine Sciences (Lebanon),
- Institute of Marine Sciences and Technology (Izmir, Turkey),
- Marine Science Station (Aqaba, Jordan).

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### ***I-A. Introduction***

Marine biodiversity studies in the Mediterranean sea were not well developed in the countries from the southern coasts. One of the reasons was the political situation occurring in all of them in the late 19<sup>th</sup> century: Morocco Algeria and Tunisia being under the French occupation, Libya under the Italian one and Egypt under the UK military and political leadership.

The beginning was rather hard, as autochthons were –in general- not allowed to pursue higher education degree, and only scientists from western countries were able to study the marine biodiversity. This was done either via the limited study of local collections / or biota (see Topsent studies on sponges from the gulf of Gabès (1894), or the Arzw region (1928), or the papers of Molinier and Picard on the bionomy of the Tunisian coasts (1954) etc.) or through larger marine campaigns such as « Violante » from 1875 to 1879, « Corsaro » in 1889, the « Thor » in 1908, the « Pourquoi pas », « la Perche », « l’orvet », l’ « Hortensia » and the « Tanche » in the 20s etc or the one of the Calypso in 1956 (see Peres et Picard, 1956).

Such situation lead to a late development of the marine sciences in theses countries, even though the first marine lab ever established in the Arab and African countries was the one of Sfax (In the gulf of Gabes, southern region of Tunisia), in 1903 (Ledanois, 1903) to study the biology of the sponges *Hippospongia communis*, followed by the establishment of the Station Océanographique de Salammbô in 1925 ( ).

## ***I-B. Marine Biodiversity research in the southern Mediterranean region***

### **Present status**

But since the end of the 50<sup>th</sup>, and after few decades of education and training of southern Mediterranean scientists in European marine labs, things changed, and at the end of the 60s the first Tunisian scientists with high education degree (*Thèse de troisième cycle et thèse d'état*) were able to come back home and contribute to organize marine sciences education and research in the country. Nowadays and from an institutional and academics point of view, we have several universities and institutions focusing on marine biodiversity. Tunisia hosts a specific academic programme, running since 3 years, and named "Edora" under the umbrella of INSTM (ex INSTOP, ex SOS). The purpose of these courses is a high degree education and training on marine sciences in several fields. Seven speciality are developed such ecology of the ecosystems, physics of the sea, pollution and chemistry, aquaculture, biotechnology etc., and several institutions from all over the country and belonging to the ministry of higher education, the ministry of agriculture and the ministry of scientific research participate to this course/training;

Furthermore, INSTM hosts 4 national marine labs (Marine Biodiversity and Biotechnology, Marine resources management; Marine environment, Aquaculture), and runs 13 national program of research for a budget of 3,5 millions Tunisian dinars (2002-2006); it employ more than 70 full time researchers, some 15 part time researchers and hosts the study work of 40 students (Msc and PhD). The institute is implanted in several region of Tunisia (Kheredine, Goulette, Sfax, Monastir, Sfax, and Gabes), and new centers are planned (2006-2009) in Madhia, Kerkennah, Tabarka, with the strengthening of the Gabes centre and the newly one in Zarzis.

The laboratory of marine biodiversity and biotechnology is the youngest one (since 2002) and the most important one (HR and budget).

### **Strength and weakness**

So, the image seems positive, from the intuitional part, the human resources and the budget. Nevertheless if we want to bring simple answers to most important questions such as, How many species lives in Tunisian waters? What are the main groups/phyllums living in the main habitats? What are the relationships driving the structuring of main phylum populations? What areas are covered by most important marine habitats and where this occurs? etc. will be very hard to answer, as we can see, gaps exists in several area related to marine biodiversity knowledge.

As we saw in the first part of this paper, INSTM plays a unique and main role in marine biodiversity studies in Tunisia, but at the same time INSTM is requested to bring answers and put proposals forwards for political developers such as stock assessments, fishing periods, fishing areas, biology of main fished species, aquaculture development, freshness of fish products etc. The balance between what we should do as priority and what we wish to do as scientists is not easy, even if research programmes are adopted and runs.

The second thing to raise is the lack of expertise, in some important scientific domain such as systematic, IT (image analysis, recognition assisted with PC etc.), biotechnology (scanning of natural products from marine organisms). This has to be linked with the lack of financial resources to deal with such important (and expensive) area as well as the lack of commitment from young researcher and students to start their professional career with / in such difficult research fields.

The lack of resources act also as a break to the global development of such institute, as it create unappropriate handicap to the editing of a marine bulletin of high level and stops the researcher efforts to publish in international revues (for instance we can not publish a paper on systematic of new species without electronic microscopic images).

Marine research in general and marine biodiversity research in particular suffer also:

- from the scattering of the themes *i.e* there is not a common axis which gather such research themes: Research do not focus nor on a geographical area (*e.g* study of the gulf of Gabes marine habitats... ) neither on a common theme (*e.g* megabenthos functioning from Posidonia meadows ....)
- and from the duplication/replication (a lot of efforts on soft substratum habitats, same things for the environmental parameters, focus on exotic species etc.) of themes

But in countries like Tunisia we should afford such situation and work more on core research project.



## **Recommendations to improve marine biodiversity studies in Tunisia for a better integration**

The following recommendation aims firstly to erase the gaps and enhance this scientific discipline in Tunisia (or in the southern countries) in order to let local researcher (or local institutes) reach a certain competitiveness which should allow for a better integration with the network of institutes.

- Scan all the work already done in the field of marine biodiversity (national level)
- Enhance specialized library such the one of INSTM; by contributing with all papers and thesis in relation with marine biodiversity from Tunisia and the region.
- Put all the data in data base and if possible create appropriate GIS, and set-up national networks
- When planning for research programmes dealing with marine biodiversity, integrate these programmes to the development axis considered by the five year social and national development plan and take into account the main regional (Mediterranean) problems and perspectives (and prospective) (UNEP, CIESM, FAO, UE, UMA etc.).
- Give the time to researches to edit papers in “valuable” journals: We are often not able to publish in such marine journal due to the lack of time (I’m speaking for full time researchers from INSTM, hired not to publish, but to do field work related to some development issues.
- Enhance the INSTM bulletin in order to make it an international “valuable” revue in marine sciences.
- Develop local e-mail specialized groups and forums
- Encourage and enhance exchange of expertise from different Tunisian universities and from Tunisian regions (south-north, coastal-internal regions)
- Develop common field work and marine campaigns (not only to standardize data acquisitions and analysing methods, but mainly to enhance the exchange of expertise and the training for new techniques)
- Encourage local research to tackle un-conventional / un-usual research projects

I think that we should not work for integration unless institutions from both side of the Mediterranean are in a “similar position” in term of excellency

### ***I-C. Possibilities of the extension of the network in the southern Mediterranean region***

**Present status:** I do not see existing integration from southern team working on marine biodiversity within UE networks. Some common work exists for “core fashioning species/theme” such as the cetaceans, the marine turtles, the protected habitats like Posidonia one,” but there is not serious attempt from both side of the Mediterranean to work together on such “not attractive issues (either because they are boring, or they last a long period or they need a bigger investment effort –in logistics, HR and finances- ”: Systematic, inventories and mapping of species and habitats, scanning for natural compounds, estimation of ecological indexes for Tunisian waters habitats (Minimal qualitative area; Fagor’s index, biodiversity indexes for megabenthic species, bio geography etc.).

Such network exists for other discipline like physics, pollution and fisheries. It doesn’t mean that institution dealing with marine biodiversity has not yet reached the expected level to be integrated, but it seems that issues dealing with pollution or water circulation or (of course) fisheries, are more appreciate for such networking because the image they give is more regional (common resources).

### **Expected problems**

As it was developed in the first part of this document, before networking the institutions from both side we should ensure that they are both at the same development and excellency level. That means that **normative indices have to be established and agreed by both side<sup>1</sup>** in order to evaluate how far or how close are these institutions.

*The goal is one and unique: A better knowledge of the marine biodiversity of our common sea.* But we should make it clear that this goal have to be reached via a partnership process, where members are at the same level and share the same duties and responsibilities.

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<sup>1</sup> It also means that the UE institutes should push for more debate and proposals form our side in order not to copy norms that you already run in your institutes, but to “create” appropriate norms and thinking adapted to our situation; with the aim of a regional network integration.

### **Recommendation for integration**

We should think on the following recommendations:

- Ensure that the recommendation at the national level are done (see above)
- A better marketing strategy for the network focusing on institutes from southern countries of the med and capitalizing on the cultural diversity of such network.
- Start a meeting/workshop campaign/process for a better understanding of the network benefices (including political and administrative leadership sensitisation)
- Thinking on a core(s) regional project(s) to be done under the network umbrella and in which each institution have to play a unique role as each one is the holder of the local knowledge (not only the heritage but mainly holding the knowledge on the local situation and how to approach and deal with the issue).
- Develop an appropriate work plan for the two coming years focusing mainly on joint marine campaign (**common field work should be an urgent priority**).
- Develop a more efficient partnership process (South > North) in the UE process of PCRD (programme cadre de recherché et developpement) and let institutes from the southern countries be more pro active.
- Encourage mixed group expert visits to institute from both side.
- Start with “easy” networking goals, such as the sharing of the data base, the network of the library, the training in some field/lab expertise, networking groups etc.
- Thinking on how to improve the publishing of papers by scientists from southern institute in valuable marine revue and improve the quality of the papers released in local revues and bulletin.

### ***1-D. Synthesis***

Marine biodiversity research is an important tool for the knowledge of the marine resources of our common sea and for the long term planning of their uses, management and conservation. Due to historical fact, this sciences did not reach the same development in institutes from both side of the Mediterranean; the existing gaps that southern institutes faces can be easily filled by a strong partnership with their homologue from the UE. But this should be done under standardized norms that recognise their diversity<sup>2</sup>.

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<sup>2</sup> Diversity means a better knowledge of local marine biodiversity by local institutes, for instance we worked on a Posidonia meadows 30nm from the shore, that presented the highest density of shoots and phenology indexes, but it was not possible to use standard classification indexes to classify it.

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#### **a) Short introduction**

The Mediterranean Sea is one of the most diverse seas around the world. Its species composition is undergoing changes due to anthropogenic environmental stresses like the opening of the Suez Canal, global warming, aquaculture, shipping, pollution in all its forms, etc... In addition, it is well recognized that the population of the riparian countries of the Mediterranean basin boosts 450 million inhabitants including 150 million coastal residents. Furthermore, Mediterranean coastlines receive more than 200 million tourists concentrated during a very short period of the year: the summer season. This human population pressure is surely impacting biodiversity in the Mediterranean basin.

Within this context, much effort is being invested in elucidating the status of biodiversity in marine Mediterranean ecosystems with government bodies, research institutions and Non-Governmental Organizations (NGOs) launching activities ranging from the listing of species to the raising of awareness on the importance of the protection and conservation of marine biodiversity.

#### **b) Marine Biodiversity Research in the Southern Mediterranean region (see below)**

##### **1. Present status (description)**

One of the main regional activities launched for the protection of biodiversity is the "Strategic Action Plan for the Conservation of Biological Diversity in the Mediterranean Region" (SAP BIO). In 1981, the Second Meeting of the Barcelona Convention decided that a Centre for Mediterranean Specially Protected Areas should be established as a national institution with a regional (i.e. Mediterranean) role to play, like the Regional Activity Centres already in operation as part of MAP (the Blue Plan in Sophia Antipolis, France, and the Priority Actions Program in Split). The Meeting accepted Tunisia's offer to host the Centre, RAC/SPA (Regional Activity Centre for Specially Protected Areas).

Under a GEF PDF-B grant, the SAP MED was developed within MAP, and was adopted by the Tenth Ordinary Meeting of the Contracting Parties to the Barcelona Convention, held in Tunis in 1997. As a follow-up, a project proposal on "Determination of priority actions for further elaboration and implementation of the Strategic Action Program for the Mediterranean Sea" was submitted to GEF by the MAP Co-ordinating Unit in association with the RACs (SPA/RAC, PAP/RAC, CP/RAC), FAO, WHO, METAP, FFEM, IUCN and WWF. The project, approved by the GEF Council in April 2000, includes the "Preparation of a Strategic Action Plan for Biodiversity in the Mediterranean Region", with RAC/SPA as the Lead Agency.

The main objective of the SAP BIO project is to establish a logical base for implementing the new Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean Sea. At the same time it should provide an outline of activities over a thirty-month period, in order to produce a Strategic Action Plan (SAP) for the conservation of marine and coastal biodiversity. This will be presented and adopted at the Thirteenth Ordinary Meeting of the Contracting Parties to the Barcelona Convention. To achieve this goal each of the countries participating in the program prepared a National Report that constituted a major input for preparing the SAP BIO.

Other initiatives have also been launched by more target oriented groups to place biodiversity conservation in the Mediterranean in the forefront. Groups like MARBENA (<http://www.marbef.org/>) CIESM (<http://www.ciesm.org/>), the IUCN (<http://www.iucn.org/>), the European Science Foundation (<http://www.esf.org/>), BIOMAR

(<http://www.biomareweb.org/>) and many others have been contributing to marine biodiversity research.

## **2. Strengths (description / personal view)**

The Mediterranean region has made extensive advances in the arena of biodiversity with networking at an all time high. Reports detailing the state of the environment in many south countries are being produced regularly, therefore highlighting the seriousness of this subject to governments. Public and research institutions are launching research and development projects in the field of biodiversity at several scales and according to available resources. The main strength at this stage is the fact that all concerned view the issue of marine biodiversity as integral for the survival of the Mediterranean basin. European countries, in addition, view that the transfer of knowledge to North African and East Mediterranean nations as essential, not only for the health of the Mediterranean sea, but also to the continuity of their heritage. Europe is coming to grips with the mistakes of the past that led to this deterioration of the Mediterranean ecosystem and is investing heavily in the remediation processes. This message is reaching South Mediterranean nations, albeit at different levels of intensity.

Another promising development is the growth in the number of scientists working in the field of environment in general and biodiversity in particular. This will ultimately lead to the development of extensive databases on biodiversity from all nations that will allow the gathering of the different pieces of the puzzle, therefore completing, to the extent possible, the picture of Mediterranean marine biodiversity. Another positive development is the launching of academic degrees in disciplines related to environmental science, health and management in all countries. This will directly contribute to the research activities in this arena as well as raise the awareness of the target populations on the benefits of biodiversity for mankind. Within the context of awareness, NGOs all around the Mediterranean have been active in promoting biodiversity conservation and many are working with schools to launch the education of young children on issues of environmental protection. This is expected to result in communities willing to participate more effectively in the advancement of ethical and competent environmental practices.

## **3. Problems / bottlenecks / gaps (description / personal view)**

Several problems plague the advancement in marine biodiversity research. First and foremost, the main problem is funding. Due to the bad economic situations in the South Mediterranean nations, many experts opt for professional positions in western countries leading to a progressive brain drain in Southern nations. In addition, many of those countries experience political upheavals that disturb the flow of research activities. Notwithstanding, the absence of job opportunities in the field of science adds to the immigration of individuals interested in promoting biodiversity conservation.

On the issue of funding, one fundamental problem arises: the funds dispersed by Europe to advance the field of biodiversity research and conservation are centered on the public sector. Many opportunities are just not available for private institutions to benefit from and produce results. Given the highly bureaucratic governance systems in most developing nations around the Mediterranean, it is disheartening to see that public sector institutions are unable to meet objectives of biodiversity research projects. Lack of institutional capacity, non-oriented legislation, and hesitant law enforcement are major constraints in addition to budgetary restrictions (more significantly inefficient budgetary allocations and waste). Furthermore, the absence of co-ordination and harmonization of various competing needs and requirements further complicates an already difficult situation, thus causing irreversible damage to the ecosystem and biodiversity. The interrelated responsibilities between ministries in addition to the governments' scarce financial resources are main limitations.

Another problem is the lack of understanding from European partners about the actual situation of the public sector in those countries. The Northern countries function under the motto "If it worked in Europe, it should work there". A fundamental review of this approach should be carried-out while taking into consideration that it is the private sectors in the South nations that drives development and is most concerned with the production of results. The public sector currently is paralyzed due to the many political, economical and developmental problems afflicting those nations. Needless to say, independent research institutions are more concerned with performance, transparency and accountability than public institutions.

#### **4. Recommendations to improve integration (personal view)**

- Direct more funding to private institutions
- Provide funding for research only without linking it to development
- Promote the bottom up approach to development
- Have more training missions taking place in European institutions
- Allow institutions from the MEDA countries to be partners in biodiversity projects/initiatives taking place in Europe
- Actively promote collaboration between research centers in Europe and private research institutions in MEDA countries
- Facilitate the exchange of information between the North and the South Mediterranean nations
- Better expose European institutions about the limitations and challenges they will face when working in partnership with south Mediterranean entities

#### **c) Possibilities for the extension of the network in the Southern Mediterranean region**

##### **1. Present status (description)**

As of this date, the author is not familiar with any activity or initiative being implemented in partnership with the MARBENA Protocol.

##### **2. Expected problems with the integration (linked with b.3?)**

The problems to be expected are the same as detailed in section b.3. In addition, integration has to take into consideration the specificities of each partner institution and their ability to implement actions in terms of human and material resources. Expected problems include:

- Introduction of very advanced technologies from the Northern countries to the Southern countries
- Availability of the appropriate equipment for analysis
- Financial resources for the purchase of the required equipment
- Financial resources for sustaining the operation of equipment
- Availability of experts to sustain research activities
- Financial support for experts from Europe
- Financial support for experts from Southern nations
- Interference from public institutions
- Lack of cooperation from stakeholders

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There has been a major transformation in the study of marine biodiversity during the last century and the beginning of this century in southeastern Mediterranean countries. In fact, the political and

security problems in these countries prevent them to keep up date with the scientific advance in the domain of marine biodiversity.

In fact, in Syria we are trying as scientists and researchers to bring attention to the problems of marine biodiversity as a national issue which should concern all the authorities. Our government has made a major effort to construct marine research centers and laboratories specialized in oceanography (marine chemistry, marine biology, marine geology and marine physics), secondly, they formed highly qualified scientists able to tackle the environmental problems of the marine ecosystem in Syria and to make many relations and cooperation programs with different countries.

There are different challenges related to the marine biodiversity in the southeastern Mediterranean, among them, we can cite the problems in the domain of qualification and scientific skills, the lack of materials and modern equipments. These problems do not allow an accurate evaluation of the changes concerned with the marine biodiversity.

So we can summarize our demands and needs to better understanding the marine biodiversity as follows:

- (1) Information and expertise exchange between different scientific research centers in the south and east Mediterranean coast;
- (2) Good support and finance to the scientific research from different national and regional organisms;
- (3) Preservation of marine biodiversity by national and international organisms;
- (4) Carry out simultaneous studies in marine biodiversity in the south and east Mediterranean sea by organizing a network involving all institutions working in marine research;
- (5) Analyzing the results and all information concerning the common data between different research centers using modern protocols.

We have to present our difficulties in studying marine biodiversity. It is very useful to put in place a regional program for facing these difficulties and to suggest future solutions and needs for cooperation between the authority and the environmental sectors.

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Although the development of marine research varies enormously from one Mediterranean country to the next, it is clear that the past few decades have seen a marked increase in research on the Mediterranean marine environment. However, this remains insufficient, and several marine environment conservation and wise management programmes are still handicapped by the lack of reliable scientific data. But it should be said that thanks to the action of some international organisations we are now seeing more harmony and more coordination between research programmes. The standardisation of some investigation and monitoring procedures is one example of such coordination.

### **Marine biodiversity research in the southern Mediterranean region**

The CIESM's directory of marine research centres <sup>(1)</sup> lists 79 centres in 18 Mediterranean countries. Some 70% of these centres belong to only 4 countries in the region, all on the northern shores of the Mediterranean. Only 15 marine research centres exist on the southern and eastern shores of the Mediterranean. This clearly illustrates the unbalanced situation in the Mediterranean marine research network.

As well as this geographical disbalance, there is a disbalance as regards the marine research subjects and disciplines covered. The most striking thing here is the alarming decline in the number of people specialising in taxonomy. This issue has been raised for several years now, without resulting in any solutions. When we know that the training of a high quality taxonomist requires several years of post-graduate activity we should indeed be anxious about the next few years of this basic discipline. We see this as one of the worst bottlenecks for Mediterranean marine biodiversity research. But this is so for other parts of the world too, and concerns not only the marine, but also the land, environment. We must hope that the Mediterranean taxonomy initiative launched as part of the Mediterranean Action Plan (MAP) will help reduce the problem. For this to happen, the scientific organisations and universities must join this initiative and take over from the MAP, for the MAP can only act as a catalyst in this field.

In a recent report on priority environmental issues in the Mediterranean, the European Environmental Agency laid stress on the fact that the lack of scientific data was one of the main problems <sup>(2)</sup>. According to the report, data is obtained through scattered studies, rarely through comprehensive national programmes. The report concludes, for example, that the level of information on the state of the environment and environmental trends is weak in the Mediterranean compared with the North Sea and the Baltic Sea, and that data concerning the southern and eastern Mediterranean comes from scattered research programmes that are inconsistent and sometimes unreliable.

Mediterranean marine research is funded via public funds and is thus subject to the budgetary restrictions that hit these state programmes. These restrictions mean that marine research is not done on a basis of long-term planning but opportunistically, exploiting those funding opportunities that present themselves to researchers. Budgetary constraint is not the only reason for the weakness of Mediterranean marine research. The lack of exchange and the scarcity – or even absence – of research networks is a real hindrance to its development. Apart from a few opportunities for meetings and/or exchanges offered within the framework of international organisations like CIESM or MAP, opportunities for exchange between the Mediterranean marine biologists are few and far from satisfactory.

### **Possibilities for the extension of the network in the southern Mediterranean region**

The need to extend the network of marine research centres in the southern Mediterranean is now obvious. Both the number of researchers and the research topics should be extended.

While preserving a certain freedom for the researcher to work on subjects that are of interest to him, it is crucial that Mediterranean researchers direct their programmes according to the priorities that have been selected as regards the environment and the sustainable use of marine resources. Environmentally, the biggest gaps in data concern pollution levels and concentrations, biological invasions, inventories of habitats and hotspots. As regards sustainable use of marine resources, priority must be given to a better understanding of how the ecosystems that are being exploited work, and to perfecting the exploitation methods that allow sustainability of marine resources use. Here, Mediterranean scientists can play for example an important part in implementing the ecosystem approach.

Strengthening the network of marine research in the Southern countries of the Mediterranean would also help improve the regional assessments. Indeed, the difference between countries regarding levels of research leads to errors in overall diagnosis. In several scientific publications on Mediterranean marine biodiversity, information on species distribution and the existence of problems is only given for the northern and western Mediterranean. This gives an incorrect picture of the overall situation for the Mediterranean.

The establishment of a balanced Mediterranean network of marine research centres appears also as a necessity since nowadays, many marine research programmes can only be carried out within the context of regional or sub-regional collaboration. This is so, for example, for research on marine

resources that are made up of migratory species whose populations' distribution areas cover several countries. Obviously, improving the situation of Mediterranean marine research requires increased coordination and more mutual assistance between the countries of the region.

<sup>(1)</sup> <http://www.ciesm.org/online/institutes/IndexInstituts.htm>

<sup>(2)</sup> EEA, 2006; Priority issues in the Mediterranean environment EEA Report No 4/2006 (90 pp)



## **Topic 2. The market of ‘supply and demand’ of marine biodiversity information, and the possible role of SME’s and large industries.**

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### ***II-A. Introduction***

The interest of the market (OG, NGO, SME’s and Industries) to marine biodiversity data is well established nowadays. But marine institutes from southern countries are not yet prepared to face such important requirement. We lack taxonomists, expertise in biochemistry of marine organisms, marine ecologist and biologist with expertise in hard bottom habitats, we lack a global and coherent vision of what the future will/should be. Furthermore the new rules driving biodiversity management *i.e* The United States Convention on Biodiversity (CDB), and the TRIP’s agreement (under the WTO) are not understood by our scientists.

### ***II-B. Present status for the demand***

In Tunisia, the sources of demands are mainly GO and companies (oil, aquaculture, tourisms). Recent joint programmes (under FAO / fisheries umbrella such as the copemed and the medsudmed projects) also requested for data. It’s obvious that demands are increasing, but are we ready to supply the market? The answer is rather ambiguous as we should work on a better development model for marine biodiversity laboratories from our southern countries: Better coordination of the programmes of research, centralisation of the data - running under data bases and SIG - better knowledge of the existing potential to better fill the gaps (either geographically or thematically). With a clear vision for the future, we will be able to drive the demands and, at the same time, to properly supply the market. Actually the demands from GO’s, NGO’s, SME’s and companies (mainly oil companies) are rather the same, some ecological indexes, some distribution maps (few cartography), a lot of impact studies. The pharmaceutical companies, which has not yet showed a big interest in marine BD data supply from southern countries, will be surely the challenges for us. The demands will be more accurate and the needs more important.

### ***II-C. Match and mismatch of the supply and demand***

One big problem deal with the data property: Legally do they belong to the lab/institute that provided them, or to the country (often it’s the case for our southern countries), or to the company that requested them? And what about patents?

Are we ready, as marine bd labs to –properly- negotiate with such corporations (SMEs, NGOs and Companies), we had a small experiment with a big pharmaceutical company few years ago, and we learnt that negotiating with such company require a lot of expertise (financial, legal and communication skills) that are absent from our know-how as governmental institutions.

Another point to be highlighted: At what extend are we able to divulgate data that we collected from the normal running of our national institutes and marine labs? I remember the censure that was set up (hopefully for a short period) in 2000 fro local scientist, when *C. taxifolia* was first recorded from Tunisia.

From another point of view, at what extend are we ready / able to think on (to) the conservation of the marine biodiversity while providing the necessary supply for the market demands? Should we let the demanders be the main driver of this market?

I think that that regional and international fora, such Marbena should play a catalyser role for us, in structuring a better way of planning a coordinating marine biodiversity research within a regional framework.

## ***II-D. Synthesis***

Marine biodiversity data should be improved (in quality and quantity) by a coordinating approach with the aim to supply the demands, in a way which ensure the conservation of this biodiversity. An important exchanges of view from several experts in biodiversity disciplines is necessary to improve our way of thinking and to lead us for a sustainable use of these resources.

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It is not sufficient to admit that there is a real negligence caused by the countries situated at the south and east Mediterranean sea, this negligence is related to a limited understanding of the importance of the marine biodiversity, causing deficiency in carrying out studies in marine biodiversity. We must confess that there is a large gap between our demands of marine biodiversity and available information at the national and regional levels.

We can resume our problems in Syria as follow:

- (1) The absence of sufficient collaboration between different national ministries and specially the sectors that affect the marine biodiversity (refineries, power stations, marine transport, ports, hunting, municipal and industrial pollution, taking in account that Syria has only small industries in the coastal region and there is no aquaculture until now, so we assume that the marine biodiversity in Syria is largely affected by external sources of pollution;
- (2) Lack of monitoring programs for pollution, coasts and climatic changes;
- (3) Scarcity of centers and institutes which treat the marine biodiversity problems.

So for solving all these problems, it is necessary to arrange a national program or guideline plan by all sectors of concerned public organizations and governmental authority which have to create a competent scientific cadre directed by skilled people able to exploit all data and information available. The accuracy of information and data presented by the participants in such programs are an important factor to get the success in such work.

The national administration is responsible for communication with the international and regional directions especially around the Mediterranean sea (GO's and NGO's, OSPAR, Helcom, CIESM, ICES, EEA). Regional programs must set all their date together and make a regional suggestions to be considered in the all future studies.

In addition, a better understanding of several marine issues, should be based upon the construction of a common data-base on marine biodiversity in the Mediterranean. This should be continuously updated according to the reports and information input from different participants.

Finally, workshop and conferences concerning the marine biodiversity between different countries are the best way to improve the level of our research and the development of our scientific programs.