



MED WAVES

MAP Coordinating Unit - News Bulletin Published in Arabic / English / French - N° 34

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for MAP

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the Bureau of
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DOSSIER: THE LATEST ON *CAULERPA TAXIFOLIA*

T

he spread of the marine algae *Caulerpa taxifolia* is posing a problem in the Mediterranean not only to those areas on the north-western rim which originally fell victim, but now also to areas as far-flung as the Tyrrhenian Sea and the Adriatic. It is possible that the coastline around the rest of the basin will not escape contagion, although scientists are divided as to the degree of risk. Since the late 80s,



therefore, the Mediterranean has been facing a new challenge which could entail repercussions on biodiversity, apart from the «traditional» challenges of pollution and the effects of human activity. Never before has recourse to the precautionary principle been more clearly justified than in the case of *Caulerpa*. - Page 11

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MAP CALENDAR

Second Meeting of the Mediterranean Commission on Sustainable Development (MCSD)	6-8 May 1997	Palma de Majorca Spain
Meeting of the Bureau of the Contracting Parties	9 May 1997	Palma de Majorca
Meeting of MEDPOL Coordinators	20-23 May 1997	Delphi Greece
Meeting of Government Designated Experts to Examine a Strategic Action Programme to Address Pollution from Land-Eased Activities (GEF Project)	15-18 June 1997	Ischia Italy
Meeting of MAP National Focal Points	7-9 July	Athens Greece
First Meeting of Experts on Liability and Compensation	September (tentative)	Split Croatia
Meeting of GEF National Coordinators	September (tentative)	Athens Greece
Meeting of the Bureau	September/October	
Second Meeting of the Bureau of the MCSD	September	Brussels Belgium



Cover photo:

Fishermen who have caught *Caulerpa taxifolia* in their nets. The algae is a nuisance to fishermen, who can unwittingly spread it over great distances.
Photo by Professor A. Meinesz.

WHAT IS MAP?

The Mediterranean Action Plan (MAP) strives to protect the environment and to foster development of the Mediterranean Basin. It was adopted in Barcelona (Spain) in 1975 by Mediterranean states and the EC, under the auspices of the United Nations Environment Programme (UNEP). Its legal framework is made up of the Barcelona Convention (1976, revised in 1995) and six Protocols covering certain specific aspects of environmental protection. The Action Plan is built up around an Athens-based Coordinating Unit, six Regional Activity Centres scattered around the whole of the Mediterranean, and a MED POL Programme on pollution monitoring and control. The Mediterranean states and the EU meet every two years to decide on MAP's budget and programme.

MEDWAVES is published quarterly by the Coordinating Unit for the Mediterranean Action Plan in Arabic, English and French. It is intended as an informal news bulletin and does not necessarily reflect the official view of MAP or UNEP.

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JANUARY- DECEMBER 1997:

A GEF MISSION FOR MAP :

A new boost for pollution elimination in the region

Since the start of the year, a grant from the Global Environment Facility (GEF, see box) has been available to the overall Mediterranean region, to be used for the setting up of a «Strategic Action Programme for the Mediterranean Sea», and with the express aim of tackling pollution from land-based activities. We are fully aware of how, in the Mediterranean as elsewhere, water quality has deteriorated largely as a result of land-based pollution and unchecked waste: chemical products such as POPs (persistent organic pollutants), fertilisers, pathogenic micro-organisms in wastewater, nutrients causing an oxygen deficit through eutrophication, sediments... The operational part of the GEF grant project is focused on international waters and such bodies of water as are of interest from the point of view of biological diversity.

The GEF Mediterranean grant amounts to \$340,000. This figure covers the drawing-up of effective anti-pollution measures: it is not just «another old programme» which would recover ground already covered. It is, rather, an exhaustive, intersectorial approach which makes it possible for countries around the basin cooperating within a joint framework- in this case MAP- to pool ongoing efforts and to work out a clearly targeted strategy with a cost analysis, which would swing in with existing instruments and programmes, and thus enhance their implementation. We are talking here about the Barcelona Convention's L.B.S. Protocol, MED POL, MAP II, the 1995 Washington Global Programme, not forgetting the Convention on the Law of the Sea and

the Convention on Biological Diversity which are affected by certain aspects of this project (marine resources, critical habitats, endangered species...). In accordance with GEF procedures, certain stages have to be worked through, with clear deadlines attached. These are:

- the nomination of national coordinators for the project (usually MEDPOL); the nomination of consultants for the main project documents: the Strategic Action Programme (SAP), the Transboundary Diagnostic Analysis (TDA), the "hot spots" report, and the Investment Portfolio; the meeting of the GEF/UNEP/UNDP/WB/MAP steering committee; an ad hoc consultation with regional experts: **January 1997;**
- completion of the draft «hot spots» document: **April 1997;**
- completion of the SAP and TDA drafts: **May 1997;**
- submission (in Ischia, Italy) of the SAP and TDA drafts to a meeting of Government-designated experts: **June 1997;**
- submission of the drafts and the «hot spot» report for scrutiny and approval at the Tenth Meeting of the Contracting Parties in Tunis: **November 1997;**
- finally, a Donors' Conference (Athens) to study the SAP and the TDA and to formulate a complete GEF project including specific proposals on regional transboundary pollution: **December 1997.**

This «high speed» year-long project would be an impossible feat if it were not for the lengthy experience of ...

WHAT IS THE GEF?

The Global Environment Fund (GEF) is a financial mechanism which was established at the behest of the international community to help solve ecological problems of a global nature. It was officially brought into being in October 1991 as a joint programme of the **United Nations Development Programme (UNDP)**, the **United Nations Programme on the Environment (UNEP)**, and the **World Bank**. It is directed by a Council representing its member states. At the end of the pilot phase (1991-1994) it was reorganised before moving into an operational phase known as GEF 1 (1994-1997), the basic trust fund having been topped up with more than 2 billion dollars to cover the three years. The GEF provides financial resources in the form of grants or low-interest loans to developing countries and economies in transition for projects which aim at improving the state of the environment in four main areas:

- the conservation of biological diversity
- the reduction of greenhouse gas emissions
- the protection of international waters
- the protection of the ozone layer.

Over 150 countries are involved at present. The Mediterranean project falls under the afore-mentioned «international waters» heading. The Black Sea project was launched in 1993 (9.3 million dollars) and gave rise to a complete rehabilitation programme for this sea, which will also create positive effects for the Mediterranean, bearing in mind the Dardanelles/Sea of Marmaris/Bosphorus link. The region also boasts a management project for Lake Ohrid (Albania, FYROM), a project on oil pollution involving Algeria, Morocco and Tunisia, and two projects involving Egypt (marine resources in the Red Sea, Lake Manzala). The aim of the GEF «international waters» activity is to assist countries or -preferably- groups of countries in using the full gamut of technical, financial, regulatory and institutional measures which are required if sustainable development strategies are to be implemented for international waters and their drainage basins.

...

MAP- and more particularly of MED POL and the various specialised Regional Activity Centres- in most of the areas being studied. Basically the project involves pooling all the data collected over recent years in the framework of regional cooperation into a concise package which can then be put to active use. This means information from national monitoring programmes, surveys of land-based sources, activities - regional or national - related to the implementation

of the L.B.S. Protocol, studies drawn up for the Coastal Areas Management Programmes, etc. Moreover, it does not require any new structures- Mr Saverio Civili from the MAP Unit is coordinating all the preparatory activities linked to the GEF grant (at the same time he is provisionally in charge of MED POL), whilst Mr George Kamizoulis, Senior Scientist, WHO/Euro Project Office at the

Athens Unit is responsible for coordination of the «pollution hot-spots»- related aspects. The Strategic Action Programme will thus allow for a certain «ranking» of priorities, the accent being placed on land-based sources of pollution, and will lead to the formulation of elements and guidelines for the preparation of national action programmes. The philosophy and the methodology of the programme are summed-up by four questions: **who** should intervene, **where**, and **how** and **when** should this be done? The Programme will be backed up by the Transboundary Diagnostic Analysis, a sort of regional overview which will, among other things, strive to assess and, if possible, quantify the problems of pollution and degradation of the marine environment and freshwater systems which create effects transcending national borders,

such as «hot spots», fluvial loads, POPs etc.. Each planned activity (or lack of activity) can be cost-assessed as accurately as possible using the «Investment Portfolio», so that when the time comes for political decisions to be taken, those responsible will have a complete overview of the economic implications. Only then will country-by-country solutions be sought, again cost-assessed and listing sources of funding and possible aid. GEF will cover the supplementary cost of certain specific projects. Thus, this is clearly a long-term commitment, and it will take years, if not decades, of sustained effort to solve the most complex problems. Included hereafter is an interview with Mr O.A.El-Kholy, an Egyptian scientist responsible for analysing the report on «pollution hot spots» in the Mediterranean, drawn up with the coordination and supervision of the WHO Bureau in the MAP Unit. Mr El-Kholy was in Athens from 7 to 10 April 1997 for consultation with experts on this report. His answers clearly illustrate the concrete scope of the grant and the project which it funds. ■

Regional experience summed up and put to good use

intervene, **where**, and **how** and **when** should this be done? The Programme will be backed up by the Transboundary Diagnostic Analysis, a sort of regional overview which will, among other things, strive to assess and, if possible, quantify the problems of pollution and degradation of the marine environment and freshwater systems which create effects transcending national borders,



Honorary Professor at Cairo University, Advisor to the Executive Director of UNEP from 1977 to 1992. At present Advisor to the Egyptian Environmental Agency.

Mr Osama El-Kholy, in charge of the «Hot spots» component of the GEF project:

«WE WERE TAKEN ABACK BY THE EAGERNESS AND CARE WITH WHICH THE MEDITERRANEAN COUNTRIES RESPONDED TO THE PROJECT...»

You are in charge of the report on pollution «hot spots» for the GEF project, coordinated by MAP's WHO Bureau, and have had to draw up a list of the priority spots in the region based on answers and reports sent in by the countries. So, to kick off: did the countries cooperate readily?

Yes, so much so that we were even taken aback ourselves! Not only did all the Mediterranean countries answer, but they did so with an eagerness and care not generally shown with past MAP/UNEP questionnaires or data collection exercises. Some of them sent in their data off their own bat, others recruited a

consultant to do so, but in either case the data we were expecting was in on time and allowed us to do some solid work.

The question which may well be raised by the grass-roots (public opinion) on this type of project is the following: fine, we're going to

see another report, no doubt an interesting one, with sensible recommendations and then, inevitably, it's all going to end up at the bottom of a drawer...

Well, public opinion is not always right, and this time would be downright wrong! These are not vague recommendations just to fob people off. The end product resulting from our project will be an «Investment Portfolio», drawn up in the light of priorities, which will go before a Donor's Conference so that everyone can finance the actions they feel fit, bearing in mind the requirements of the weakest countries economically speaking. This conference is to be held in late December, not sometime in the far distant future. There is a strict time schedule with concrete, immediate effects. The actions selected will be granted funding so that they can be implemented straight off.

And will this selection be made on the basis of objective criteria, no pressuring?

The priorities will be crystal clear, unquestionable. More to the point, this project has not materialised out of thin air. It is closely tied in with the implementation of the Barcelona Convention's L.B.S. Protocol in its post-1995 revamped form. We are moving from a stage of «monitoring the state of the environment» to an active stage of «pollution elimination», and over the next few weeks the GEF project is going to provide a «regional programme of strategic action» which will in turn produce offshoots in each country. The GEF project is thus serving various masters, in other words several legal instruments or programmes - I could also mention the Washington World Action Programme. It is also the first time that each country will have a list of its own priority «hot spots», apart from the overall regional table of the «transboundary» ones, as we call them in our jargon.

Might there not be doubts as to the reliability of the data which countries submit? When a country is burdened with major pollution «hot spots» isn't it in its interests to keep them hushed up, if only for the sake of a «good tourist image»-and all Mediterranean countries are pretty much tourist destinations?

That mentality dates back five or ten years, but it is on the way out. Why? Because national and local leaders have understood that profitable tourism does not square with a degraded environment. In other words, it is more expensive in the long run to hush up information and to refrain from intervening. Moreover, it's no longer easy to hide environmental problems, you know. When a country has major difficulties, large scale pollution, you can see it, you can even smell it sometimes, and news travels fast. Ask the travellers: the tourists immediately make tracks elsewhere. I think that all developing countries are fully aware of this and that they are now all for transparent and sound data. What's more, the international organisations themselves have plenty of data, which they also publish. What country would run the risk of being caught red-handed not providing information or even lying?

So there will be no gaps in this data?

There will, but these will be scientific gaps, not deliberate ones. To give you an example, we are lacking information on municipal waste, on the multitude of outfall structures which discharge into the sea. The same applies to industrial pollution where there is a grey zone in many developing countries due to inadequate measurements and a lack of means to take them. Moreover, on the issue of industrial pollution, mentalities are changing as well. We are moving away from the notion of «waste treatment» towards

one of «waste avoidance», «reduction of pollution at source». Experience shows that avoidance of pollution is a factor of economic profit since, when all is said and done, pollution boils down to a waste of resources. It has been calculated that in certain developing countries, 50% of pollution could be avoided with economic profit being made at the same time.

Let's move on to the «sensitive areas», the other aspect of your report apart from the «hot spots». These are areas which run a serious risk of being negatively affected by human activity. In this case, no provision has been made for concrete intervention measures based on the «Investment Portfolio», in other words, the costing. Isn't this a weak point?

I wouldn't go that far. We have highlighted the sensitive areas, and in many cases we have an initial cost estimate.

Without an «Investment Portfolio» ready and waiting...

There is a pre-draft which stems from the «transboundary diagnostic analysis». This is the regional overview rather than the purely national framework. But if we come across a sensitive area rich in biodiversity which appears to be under threat, obviously we will divert the threat to avoid having to fork out for real damage. I don't claim that we have fully cost-estimated protection of the sensitive areas, but we already have enough information to be able to plan certain actions. Finally I should point out that in view of our very tight schedule, the whole of this project is based on existing data, the fruit of twenty years of monitoring and assessment. In the future, new data collected by countries will shed light on certain areas which are still rather vague. Time is short but the efforts which are now being made are long term ones. ■

THE GEF/MAP PROJECT: A First Technical Data Sheet

One of the first tasks which Mediterranean countries have tackled in the framework of the GEF project with which MAP has been entrusted in the Mediterranean has been the drawing up of a list of pollution "hot spots" on their territory. In order to achieve this they have drawn on the full range of technical and scientific competence available to them. Obviously they have been aware of the majority of these "hot spots" for some years, thanks in particular to the data collected during national monitoring programmes in the MED POL framework. This time round, however, by drafting a systematic, graded (according to the degree of pollution), and cost-assessed list (i.e. the cost of measures required to tackle pollution), and by sitting down around the same table to compare their national situations, they have pieced together a clear overview which allows them to plan effective intervention according to priorities, along with the required financing. Without going into the technical details, which would exceed the limits of this summary of the GEF project, it may be useful to recall some of the basic elements of the "hot spots" report.

What is a pollution "hot spot"?

The term "hot spot" has two meanings:

- a **point source** of pollution on the coast, which could potentially affect human health, biodiversity, sustainability or the economy in a significant manner. They are the main points on the coast where high levels of pollution loads originating from domestic or industrial sources (sewage and factory effluents, respectively) are discharged into the sea.
- a **coastal area** where the marine environment is subject to pollution from one or more diffuse sources on the coast, which could potentially have the same effects as those just mentioned.

In order to identify "hot spots" scientists use "primary indicators" which they measure at regular intervals at fixed "stations" (or sampling points) in the water mass, sediment or living organisms which are made up of the main

recognised pollutants or other associated factors:

- **Biochemical oxygen demand (BOD)**, which is the amount of dissolved chemical oxygen used during the decomposition process of organic matter in the water; **chemical oxygen demand (COD)**, which is the amount of oxygen consumed by the chemical oxidation of pollutants under certain experimental chemical conditions;

- **nutrients** (such as phosphorus and nitrogen), usually transported by agricultural run-off (fertilisers), responsible for the multiplication of micro-algae, which, by consuming oxygen dissolved in the sea can asphyxiate other species (massive fish mortality): this is the so-called "eutrophication" (excess food) phenomenon which is quite common at certain points in the Mediterranean, such as the mouths of major rivers (Po, Ebre, Rhone, Nile), enclosed bays receiving the effluent from large towns (Gulf of Thermai/Thessaloniki, Saronic Gulf/Athens, Piraeus), lagoons (Venice), marinas, etc.;

- **suspended solids, organic pollutants** (including the highly toxic POPs, or persistent organic pollutants), **heavy metals** (cadmium, copper, chrome, lead, zinc), resulting from direct discharge, but compounded by atmospheric fallout (sometimes of very distant origin), and natural inputs (metal deposits, volcanic activity);

- **oil products** (from coastal refineries, tanker unloading bays; factories using fuel oil; oil changes in garages; the residues of fuel cracking, etc.);

- **waste** (solid waste): this indicator which is difficult to quantify is the sort of pollution which "sticks out like a sore thumb" on the beaches, where plastic is still the major culprit (and unfortunately a very long-term one, given its resistance to degradation). Even though this sort of damage may be first and foremost of an aesthetic nature, it is still becoming a major problem for tourism in the Mediterranean (tourism itself being partly responsible, due to the negligence of holiday-makers or some local authorities), and therefore has an economic cost. It is, however, also a threat to certain species of marine animals

(which get caught up in plastic bags or nets), or for entire ecosystems because it accumulates at certain points;

- **micro-organisms** (bacteria, viruses, parasites): usually this type of pollution, which is measured by the numbers of certain "indicator bacteria" (such as faecal coliforms, salmonella...) is largely of domestic origin, and increases in line with the density of the population on the coast. Knowing which points are most affected makes it possible to establish where sewage works need to be built: the target set by the 1985 Genova Declaration for the year 1995 (one sewage works for each town with more than 100 000 inhabitants) is far from having been reached, although clear progress has been made, particularly on the north-western rim of the Mediterranean. The GEF project will no doubt provide an opportunity to up the tempo in this field which also has major repercussions of an economic (tourism: quality of bathing waters) and health-related nature (consumption of contaminated seafood).

Classification of the risks and cross-border effects

Once the countries have listed their "hot spots", they have to classify them according to degree of risk using a points system of 1 to 6 for the effects created: on public health, the quality of drinking water, leisure, aquatic life (including biodiversity), the economy and the well-being of the population. Finally, the effects of "hot spots" which transcend national borders are mentioned for the following areas: fisheries, biodiversity, drop in the regional value of Mediterranean tourism, public health, habitats.

Once the "hot spots" list has been completed, the countries must fill in detailed questionnaires for each of the three main categories of discharge (municipal, industrial, rivers and canals), specifying the context, way of discharge, composition, quantity, time and rate of discharge. This helps to **back up the fact that these proposed "hot spots" really do exist** and require the financing of specific remedies. ■

Two months after the setting up of the MCSD in Rabat:

THE BUREAU OF THE MEDITERRANEAN COMMISSION ON SUSTAINABLE DEVELOPMENT HELD ITS FIRST MEETING IN ATHENS ON 20 AND 21 FEBRUARY.

The eight-member Bureau which was set up by the MCSD in Rabat held its first meeting in Athens under the chairmanship of Mr Nouridine Benomar Alami, the Moroccan Minister of the Environment. Its job was to examine the first work done by the two short-term thematic working groups. In his activity report the secretary of the meeting, Mr A. Hoballah, noted that certain fundamental issues were still pending (such as the working methods of the thematic groups and their ties with the regional support centres). The task manager of the «Management of Water Demand» group, Mr M. Ennabli, presented his preliminary report, stressing the «poorly controlled demand», «poorly defined requirements» and the need to «reduce over-consumption and wastage». For her part, Ms B. Layachi, task manager for the group on «Sustainable Management of

Coastal Zones», stressed the complexity of the theme, due largely to a clash of interests and the fragile nature of the coastal areas. She pointed out that, in general terms, working relations between the task managers, group members, supporting RACs and the Coordinating Unit needed to be improved so that the MCSD could gradually reach its cruising speed. The Bureau then examined the first outline of its rules of procedure, and revised them for submission to the second meeting of the MCSD in Majorca. At the end

of the meeting Mr L. Chabason, MAP Coordinator, provided information on the meetings of the United Nations' Commission on Sustainable Development and the Special Session of the General Assembly (in April and June 1997 respectively, in New York): he stressed the importance of MCSD participating in these two bodies entrusted with drawing up the post-Rio assessment. Following the meeting, UNEP granted MAP's request to include the Coordinator in its delegation to the fifth session of UNCSO in New York.

«The whole region is facing today, to varying degrees, the challenge of rational use of a natural resource which has become scarce and increasingly more costly. If up to now both planners and technicians in the field of water resources have been concerned mostly with developing and mobilising the resource rather than with its rational use, it is certain that in the future much greater attention will have to be paid to demand management.» (Preliminary report of the MCSD's short-term working group on management of water demand.)

The reform of MAP structures:

THE AD HOC GROUP'S RECOMMENDATIONS

This ad hoc group, brought into being by the Montpellier Extraordinary Meeting in July 1996, was mandated to review the status, functions, financial and personnel aspects of the MAP bodies: the Coordinating Unit, the MED POL programme, the Secretariat of the 100 Historic Sites and the six regional activity centres, taking account of the new responsibilities of MAP since Barcelona 1995 and the need to remedy, as far as possible, the discrepancies which exist between the centres.

Two days were not over-generous for the participants to examine these questions which, although entirely internal to MAP, nonetheless affect its efficiency and correct functioning. Should the Regional Activity Centres be harmonised? Should they all

have the same status? They each have their own past, reflecting the way in which Mediterranean cooperation has evolved. One of the oldest, REMPEC in Malta (1975) is related to a Protocol (Dumping). The Sophia Antipolis Blue Plan, launched by a UNEP decision (also in 1975) initially corresponded to MAP's «socio-economic component» and by its very vocation is today on the sustainable development front, as is the Split Centre, created 5 years later and which has built up a reputation on coastal management issues. With the Tunis Centre (1985) we come back to the Protocol link (Specially Protected Areas), whilst the two most recent centres in Palermo (Environment Remote Sensing, 1993) and Barcelona (Cleaner Production, 1995) are really national centres «made available to MAP» by their governments, with no MAP budget contribu-

tion being planned at the outset. In recommending that «a unified approach concerning the status of RACs be pursued as far as possible», the group left the remedying of these discrepancies - which doubtless involve the sensitivities of the host country - shrouded in an «artistic fog». It did, however, recommend that a greater proportion of the programme's support cost (administration by UNEP) should go to MAP structures, and adopted the principle that responsibility should be more clearly shared out between the two biannual executive bodies - the National Focal Points meeting should, as far as possible, be empowered to settle all the questions of detail related to the programme budget, so that the Ordinary Meetings of the Contracting Parties, preferably meeting at ministerial level, could then concentrate on the main political and strategic issues.

ECHOES FROM THE REGIONAL ACTIVITY CENTRES AND THE PROGRAMMES

MED POL Programme (Pollution Monitoring and Control):

The two year project on "Strengthening Environmental Data Processing in the Coordinating Unit (Athens)" (see MedWaves No.32) decided upon between UNEP/MAP and the Italian government was officially wound up by a meeting held in Rome on 6 March 1996. Trieste University's Laboratory for Marine Biology, and the International Centre for Science and High Technology, also in Trieste, had, respectively, provided a data analyst expert and a scientific advisor to the Project. The Rome meeting provided an opportunity to assess the project's concrete results: capacity building in MAP in terms of manpower, hardware, and software for the collection, computerisation, processing and storage of MED POL data, and its distribution to all Mediterranean countries. By way of follow-up to the project, the Athens Unit, which has been on the Internet since 1994, has drawn up a UNEP/MAP home page for the network which should be accessible by late spring 1997.

The meeting of MED POL National Coordinators (Delphi, 20-23 May 1997) which will be a landmark in terms of implementation of Phase III, decided upon by the Montpellier Extraordinary Meeting in 1996, has generated some intense preparatory work on two operational draft documents: "Trend Monitoring of Levels of Pollutants in Coastal Zones and Sensitive Areas", and "Monitoring of Conformity to Prescribed Standards". These documents take account of the role already ascribed to MED POL: to become a tool for achieving sustainable development, to assist in the effective implementation of the "L.B.S.", "Dumping", and "Hazardous Waste" Protocols, and to build-

up the capacities of developing countries in these areas.

Blue Plan (BP/RAC, Sophia Antipolis):

At the request of the Algerian authorities and in close cooperation with them, the Centre organised an international seminar in Algiers on 28 and 29 April 1997, entitled "Strategic and Prospective Assessment: From Aid to Decisions to Action".

On the "country profiles" which the BP/RAC is drawing up, those on France and Algeria are nearing completion and will be ready by September 1997. The profiles for Lebanon and Syria were launched in April 1997.

In cooperation with other partners, the Blue Plan has won a call for tender issued by DG XII of the EC for a PolAgwat Project (water use in agriculture) and has been granted financial support for three years under DG XI's LIFE programme for a project on indicators of sustainable development in the Mediterranean.

In the framework of the Mediterranean Environment and Development Observatory (MEDO) which is one of its components, the Blue Plan is working closely with four countries: it is assisting the Tunisian Observatory (OTDE) in identifying a set of indicators for the priority themes to be dealt with in Tunisia's next State of the Environment Report; it is working alongside Turkey whose Observatory (Ankara) should be up and running in June 1997, and with Lebanon and Syria on the initial preparatory studies for the setting up of their respective Observatories.

The Blue Plan is on the move! No, it is not an exercise in prospecting which has gone to its head, but rather

a genuine transfer within Sofia Antipolis to more spacious headquarters which have been made available for a ten year period by the Alpes-Maritimes Department (Nice).

Centre for Priority Action Programmes (PAP/RAC, Split)

The centre has been engaged by the METAP Programme of the World Bank to make an assessment of coastal zone management activities in the Mediterranean, with the purpose of identifying their successes and failures and thus to learn lessons for the future. The final draft report on coastal zone management initiatives is being prepared.

A Workshop for Carrying Capacity Assessment for Tourism (CCA) in Mediterranean Coastal Areas was held in January 1997 in Split. Participants evaluated the draft guidelines on this issue and also discussed the basic elements of the CCA studies for the Brijuni archipelago, Vis and the central/eastern part of the island of Rhodes.

A training course on Environmental Impact Assessment (EIA) was organised by the Centre in Tirana in January 1997, together with the Albanian Committee of Environmental Protection.

An Expert Meeting to edit the Guidelines for Mapping and Measurement of Rainfall-Induced Erosion Processes in the Mediterranean Coastal Areas took place in January 1997 in Rome.

Centre for Specially Protected Areas (SPA/RAC, Tunis)

Upon the request of the Croatian National Focal Point, the Centre is supporting a marine turtle project in

Croatia. The project consists of a survey of nesting beaches along the southern coast of Croatia in cooperation with the Croatian Natural History Museum, and a public awareness programme on this question (with a poster and a pamphlet).

In cooperation with the Cypriot Fisheries Department and the Cypriot Society for wild flora and fauna, the Centre is organising a study of the island's coastline in order to assess the presence of a colony of monk seals, and habitats suited to the species.

In the framework of the implementation of the Action Plan for the conservation of Cetaceans in the Mediterranean Sea, the Tunis Centre is organising a Research/Training course for the study of cetaceans in the eastern part of the Mediterranean Sea. The cruise will take part in the summer months of 1997 with the participation of researchers and train-

ees from Cyprus, Egypt, Greece, Israel, Italy and Malta. Thethys Research Institute (Italy) is entrusted by SPA/RAC with the scientific and technical coordination of the cruise.

Centre For Cleaner Production (CP/RAC, Barcelona)

On the occasion of the first meeting of its National Focal Points, to be held in Barcelona on 9 and 10 June 1997, the Centre is expected to present a bulletin explaining its objectives and functions. Some fact sheets called MEDCLEANER, illustrating success stories within the Mediterranean region are also to be published in order to show real examples of cleaner production achieved by different companies.

Centre for Environment Remote Sensing (ERS/RAC, Palermo)

The use of European ERS Satellites for the detection of oil spills is al-

ready common practice in Northern Europe. The ESA (European Space Agency) is interested in extending to the Mediterranean these applications which have proven to be very useful and cost effective. In this connection, ERS/RAC, in the framework of an ESA activity is performing a survey, at Mediterranean level, on the state-of-the-art of oil spill monitoring for surveillance and intervention in order to identify those countries which could use this satellite service.

Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC)

The first meeting of the Steering Committee for the development of spill response capabilities for Cyprus, Egypt and Israel took place in Cyprus on 24 and 25 March 1997 in the framework of a new three year LIFE project which the EU approved in December 1996.

ECHOES FROM THE COASTAL AREAS MANAGEMENT PROGRAMMES (CAMPs)

- **Fuka-Matrouh Camp (Egypt):** Processing of georeferenced data has been completed so that the final Land System Map can be produced. The document on land evaluation and the Soil Degradation and Desertification Study have also been completed. A feasibility study is being undertaken regarding the creation of a marine and coastal protected area at the Rass El Ekma site.
- **Sfax CAMP:** A PAP consultant on the Geographic Information System (GIS) visited Sfax and Tunis in March 1997. He checked the hardware to be used for the establishment of the GIS database. The timetable for the plan for integrated management of the coastal zone was examined and tasks were assigned to the local team. The first chapters of the Water Resources Management Study have been drafted. A summary report of the various activities undertaken by the different branches of MAP since January 1994 has been drawn up.
- **Albania CAMP:** The environmental impact assessment for a tourist complex and marina in the Ksamili region is being drawn up. The first part of the study on water resources for the Erzeni and Ishmi rivers has been completed.
- **Algeria CAMP:** The BP/RAC has been entrusted with preparing terms of reference and contracts for the Algerian team for the feasibility study.
- **Lebanon CAMP:** Even though requested by the Antalya meeting of the Contracting Parties (1993), it has still not been possible to launch this coastal management programme because of the prevailing conditions in the country, now undergoing reconstruction after 16 years of war. A Blue Plan mission went to Beirut from 8 to 11 April 1997 to review the original project and hold some working sessions with representatives of the Lebanese Ministry of the Environment on the preparation and selection of the site of this CAMP.
- **Israel CAMP:** Under this still very recent CAMP (the agreement was signed last November), the Split centre is currently preparing four documents: "First National Strategy for Sustainable Development", "Management of Coastal Resources and Hazards - Sediments and Cliffs"; "Economic Instruments" and "Coastal Management". As for the ERS/RAC, it finalised its remote sensing activities during a visit in March, 1997.

Marseille, 25-26 November 1996

THE EURO-MEDITERRANEAN CONFERENCE ON LOCAL WATER MANAGEMENT:

The Blue Plan's Contribution

This conference was organised on a French initiative, assisted by the European Commission. It was co-chaired by France and Ireland which at the time held the rotating EU Presidency. It slotted in with implementation of the Euro-Mediterranean Declaration adopted in November 1995 in Barcelona. Eighteen ministers responsible for water-related issues in EU Member States and their Mediterranean partners took part. As technical support for the meeting, the MAP Blue Plan had drawn up an introductory document "which described what lies at stake in water terms for half a billion Mediterraneans both now and in the future" (Mr Batisse, President of the Blue Plan).

The deliberations, based on recommendations made by experts from European and Mediterranean countries, led to the formulation of the main lines of action in four areas: water management for sustainable agriculture, household and industrial water, in-service training of water professionals, and the strengthening of institutions. As the water question will, in the near future, be the subject of a MedWaves dossier and since it is one of the two short-term priority themes («management of water demand») adopted by the MCSD at its first meeting in Rabat, we have chosen to reproduce as background informa-

tion the conclusions of the conference «The scope of Euro-Mediterranean cooperation on water issues» from the standpoint of the Blue Plan:

The perspectives of water shortage therefore vary in the Mediterranean depending on the countries and, within each country, according to the local parameters concerning ground and surface resources; in time, they also come under the effect of two major trends that are difficult to constrain: demographic growth and urbanization. It seems that the margins for manoeuvre have been eliminated within one generation's time in most Mediterranean countries. The stakes involving water are that urgent. The time when an area where shortage was imminent could count quickly on resources available elsewhere is a thing of the past. In other words, shortage depends more and more on local solutions. In particular, agricultural water which represents three quarters of Mediterranean consumption, will have to give way to domestic and industrial water, more solvent and profitable. However, this path is being prepared and posted through voluntary policies of interministerial and patrimonial water management. If the priority issue is to satisfy the water supply demands of the population, and to ensure a higher value-added factor for all production involving water, we have to bear in mind that other functions are also assigned to this

resource [...] Therefore, arbitration to allocate resources will be a redoubtable task for the future Mediterranean [...] In this context, Euro-Mediterranean cooperation could turn, as a priority issue and in conjunction with the METAP III proposals relative to water management, towards the two key sectors of agricultural and urban use and to the transversal approach governing the efficiency of any water policy: capacity building through the training of water professionals and through legal-institutional initiatives for integrated resource management. (Marseille conference, «Water in the Mediterranean Region», by Mohammed Benblidia, Jean Margat, Domitille Vallee, under the leadership of Bernard Glass, BP/RAC).

In a follow-up to the conference, in a resolution adopted on 13 March 1997 on the Euro-Mediterranean partnership inaugurated by the November 1995 Barcelona conference the European Parliament «sees the security of water supply and its fair distribution as an essential factor for development and security and therefore demands the creation of a Euro-Mediterranean agency to tackle these questions; whilst welcoming the «Marseille Declaration» on water management, unanimously adopted on 26 November 1996.

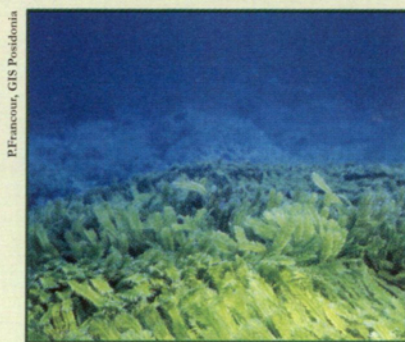


THE LATEST ON THE SPREAD OF THE *CAULERPA TAXIFOLIA* ALGAE IN THE MEDITERRANEAN

The chronology of the tropical algae *Caulerpa taxifolia* in the Mediterranean is clear-cut. In 1984 the algae was detected in one single site measuring one square metre on the French coast; in 1990, in three sites on the same coastline, covering 3 hectares. 1991: 30 hectares. In April 1995 a UNEP document on "the presence of *Caulerpa taxifolia* in the Mediterranean" which was submitted to MAP's Scientific and Technical and the Socio-Economic Committees estimated the area covered at 1500 hectares on the basis of 1994 data. In 1996 the figure was 3000 hectares (30 km²): it had doubled in just one year! This exponential increase is not only the result of spreading over short distances through the dissemination of cuttings near the original patches (the coast between Marseille and Nice), but also of long-distance spreading through «colonisation» (Imperia, Livorno, Elba and Sicily in Italy; the Spanish Balearic islands; Split and Rijeka in Croatia) when pieces of algae attached to the anchors of pleasure craft and fishing nets are spread further afield. Ever-increasing areas of the Mediterranean are therefore now being affected. Scientific journals and meetings about the algae keep us abreast of latest developments on a question which could well be of crucial importance to the future of the Mediterranean ecosystem.

"An extraordinary invasive capacity"

The introduction of a new algae into the Mediterranean is, in itself, not a world-shaking event. Since the turn of the XXth century more than 60 species have been identified which found their way in through the Straits of Gibraltar or the Suez Canal (hence, in the latter case, the adjective «lessepsian» from the name of



A *caulerpa taxifolia* colony. «Superb, prolific, devastating»: a «vamp» which the Mediterranean could well have done without.

the initiator). They adapted without causing any major problems. However, according to the conclusions of the second international seminar on *Caulerpa taxifolia* (Barcelona, 1994), "never before has an introduced species demonstrated all the following characteristics en masse: dominance, toxicity, occupation of all the sublittoral biotopes, absence or scarcity of predators, longevity, absence of any season of total repose". The most recent international seminar (Paris, March 1997) goes further: "The extraordinary invasive capacity of this species is based on a broad auto-ecological amplitude, rapid and efficient growth and spread, and an "aggressive" strategy". It is these very characteristics which explain the alga's phenomenal spread and the fact that, in less than 10 years, it has prompted numerous studies, research efforts, seminars, publications, etc. (more than 300 references to date). The algae adapts to any milieu, be it a polluted port or a clean, isolated bay, can resist hard winters, and shows a vigour and density not present in the species found in tropical seas. This leads us to believe that we are dealing with an exceptional strain, accidentally created in artificial aquarium conditions (see box: "Where did it come from?"), a mutant, a specific clone, a hybrid, a polyploid, dozens of hypotheses

which genetic scientists are busily investigating. This vigorous, quasi-permanent and thick vegetable coverage colonises at a depth of 5-30 metres -but has been sighted by submarine at depths of 100 metres!- and takes over all substrates, wiping out other algae. Of even greater concern, it even destroys the *Posidonia* meadows which play an essential role around the Mediterranean (bolstering and protecting the coastline, and as a refuge, habitat, spawning ground and nursery for countless numbers of species, see MEDWAVES 1991). Can the intruder replace them? It seems highly unlikely. Firstly, it secretes various toxins- such as caulerpenyne- which, although apparently not toxic in humans thus far, are toxic for molluscs, sea urchins, herbivorous fish and submarine flora. This means that the algae is safe from predators. Within these populations there is a major decrease in specific diversity and fish biomass when compared with the *Posidonia* beds. The coastal ecosystem is clearly under threat, which could result in total "uniformisation" of populations and landscapes.

"The introduction of species probably represents the greatest environmental problem for the end of this century and the next. Unlike other assaults on the environment this phenomenon is nearly always irreversible.... There is a major risk of «McDonaldisation» i.e. worldwide uniformisation of populations and landscapes at a given latitude, going hand-in-hand with a sharp drop in biodiversity".

Professors Charles Boudouresque and Alexandre Meinesz, communication in the framework of a project under the European Union's LIFE programme (DGXI) coordinated by the GIS Posidonia, Marseille.

WHERE DID IT COME FROM?

Since the first sighting of *Caulerpa taxifolia* in the Mediterranean, an argument which has been widely reported by the media has been going on as to where the algae came from. For the vast majority of scientists the culprit is a tropical aquarium which was accidentally emptied into the sea because of its vigour and its magnificent fluorescent green colour, the algae is used as orna-

mental foliage in this type of aquarium, and at the time was freely available on the market throughout the Mediterranean region. This theory is backed up by the fact that the algae initially developed in a single patch close to an aquarium, and the particular characteristics of

Caulerpa in the Mediterranean (great size, high density, resistance to cold) which match those of the aquarium strain and clearly distinguish it from *Caulerpa taxifolia* found in the tropical seas. More significantly, some frag-



Caribbean ascoglossal mollusc of the *Oxynoe* species, which feeds on *Caulerpa taxifolia*. Time will tell whether or not it can be used as a biological weapon against the algae

Professor A. Meinesz

ments of coral were found in the middle of one of the first "patches" of algae on the French coast, which would seem to point to the aquarium origin. The scientists who are being blamed for this original accident (and unfairly so since, as a Marseille-based algologist states: "no-one could have foreseen the absence of thermal shock, and such an incredible degree of adaptation of a tropical algae to Mediterranean conditions" are putting forward a "lessepsian" counter-hypothesis. They claim that the algae arrived via the Suez Canal and is a morphological variant of

Caulerpa mexicana which has been present in the region since 1939. Initially, back in December 1995, the French Academy of Science put its name to the latter theory then, six months later, challenged it outright in a second report. This was a sensational turn-about, and the arguments began. Meanwhile, as early as December 1994, the 130 scientists meeting in Barcelona for the Second International Seminar on *Caulerpa taxifolia* agreed that it was "highly unlikely" that the algae had come in through the Suez Canal, the Straits of Gibraltar or on the hull of a ship, and concluded that it was "very probable" that it came from the accidental emptying of a tropical aquarium. As for the virtues sometimes attributed to the algae as a "pollution eliminator", these were broadly contested at the international seminar held at the Academy of Science in Paris on 13 and 14 March 1997- the major threat which *Caulerpa* poses to the French coast was confirmed and the French Ministry of the Environment took official note of the fact. The scientific squabble was therefore never really to be taken seriously.

CAULERPA AND THE LAW

The appearance and spread of *Caulerpa taxifolia* are covered at Mediterranean level by the two provisions of Article 13 of the Barcelona Convention's **Protocol on Specially Protected Areas** which was recently adopted (1996) but has not yet come into force, entitled «The introduction of non-indigenous or genetically-modified species»:

1. The Parties shall take all appropriate measures to regulate the intentional or accidental introduction of non-indigenous or genetically modified species to the wild and prohibit those that may have harmful impacts on the ecosystems, habitats or species in the area to which this Protocol applies.
2. The Parties shall endeavour to implement all possible measures to eradicate species that have already been introduced when, after scientific assessment, it appears that such spe-

cies cause or are likely to cause damage to ecosystems, habitats or species in the area to which this Protocol applies.

In a decree dated 4 March 1993, the French Minister for the Environment and the State Undersecretary for the Sea banned "the offering for sale, the selling, buying, use and dumping into the sea of all or parts of the specimens of the algae *Caulerpa taxifolia*. The collection and transport of the algae are also subject to a system of authorisation granted on presentation of a well-grounded request". Similar measures were adopted by the Catalan Government and the Balearic autonomous community. In December 1994 the "Barcelona Appeal", which was signed by six of the most eminent scientists on the question (Spain, France and Italy) and approved by the 130 scientists taking part in the second international seminar on *Caulerpa*, called upon governments in the countries concerned and on

international environmental organisations to "implement the precautionary principle referred to in the Rio Convention and to define a coherent international strategy". Let us add that, since 1995, the revised Barcelona Convention which binds Mediterranean countries has included the precautionary principle in its Article 4.3.a. in the following terms: "The Contracting Parties shall... apply the precautionary principle, by virtue of which where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation". In March 1995 the Standing Committee of the Bern Convention on the conservation of wildlife and the natural environment in Europe adopted a similar recommendation for the Contracting Parties around the Mediterranean and the Black Sea, and advocated eradication measures whenever possible.

... What is the future of *Caulerpa*?

At this stage no-one can foresee the future development of *Caulerpa*, which can only be the subject of speculation, aimed either at stoking up or allaying fears depending where it comes from. It is because of this very uncertainty that scientists virtually unanimously agree that the precautionary principle should be applied. According to some of them, the spread of *Caulerpa* should reach a plateau, or natural regulation, for example, in the form of a predator as yet unknown. But on the human scale the destruction of the Posidonia meadows which will have been caused in the meantime will, however, be irreversible, and this fact in itself is alarming. If the spread continues in the Mediterranean, moving as far as the eastern reaches, the thermal conditions there should accelerate it, although researchers believe that, on the contrary, the coastal ecosystem there will be less vulnerable than to the north and west. Finally, no-one can rule out the possibility of the algae travelling through the Straits of Gibraltar and spreading up or down the Atlantic coastline of Africa or Europe.

What can be done?

Nothing has emerged from the studies, reports and data provided at international meetings and seminars and in scientific publications to date which would indicate a natural slow-down in the spread of the algae or, more to the point, its disappearance. The scale of the areas already colonised, the threat which they pose to biodiversity, resources and certain activities (scuba diving, fishing, tourism) demand immediate action. But what? For the time being the choice of available means of removal is unfortunately very limited. Manual uprooting by trained and motivated divers can be a solution for small algae patches measuring a few square metres- but even so it is not 100% effective. Sometimes there is regrowth and the operation has to be repeated. It was this approach which checked the spread of the algae in the Balearic

Islands and at Port-Cros as soon as the first patches were sighted. If there is vast coverage, however, as is more and more often the case, manual uprooting is no longer feasible, and tends to be a lost cause from the outset (in-depth growth, guaranteed regrowth and exorbitant cost). It could have been effective in 1991 when only a few hectares were colonised. Other physico-chemical elimination procedures were considered and tested either in an aquarium or at an experimental site: copper electrodes (copper is toxic to plants), cross-ionic dialysis, air suction, dry ice, ultrasound, hot water jets. These methods do not, however, meet one or more of the criteria (effectiveness, absence of regrowth after one month, non-dispersal of cuttings, absence of secondary effects on other systems). At this stage, therefore, the only feasible strategy is not one of total eradication, but rather one of slowing down the rate of spread by eradicating small, isolated patches through a combination of various techniques. So-called biological methods may well be a solution in the future, one example could be the introduction of identified *Caulerpa* predators such as ascoglossal molluscs. Any practical application of these methods, already being studied, must be accompanied by the necessary authorisation and precautions so that the remedy itself, should it prove effective, does not cause further unforeseen upsets to the ecosystem. Finally, genetic research which is advancing in leaps and bounds, could also provide solutions for elimination and prevention. In the meantime, and in the hope that these new methods will soon be available, certain practical and preventive measures already exist:

- fresh contamination from aquaria should be avoided. The legal provisions adopted in France and Catalonia should be adopted by all countries around the Mediterranean (ban on buying, selling, transporting and storing *Caulerpa taxifolia*);
- long-distance spread should be avoided by informing owners of pleasure craft of the need to check and clean their anchors after mooring in contaminated areas. Mooring should be prohibited in highly contaminated

areas. If we want to avoid being caught unawares by other phenomena similar to that of *Caulerpa*, all national and international regulations and legislation on the introduction of species will have to be adapted;

- finally, those "using" the sea such as boat-users, divers (scuba and others) and fishermen should be instructed to inform their local authorities and environmental services each time they sight a new patch or population. Such information is essential to the continued monitoring of the scale and spread of this phenomenon, and to the adoption of any necessary measures.



A creeping stolon of *Caulerpa* which produces downward-growing columns of rhizoids (roots by which the algae attaches itself to the substrate) and upward-growing fronds (or leaves which can grow to a length of 70cm, with a density which varies between 1000 and 14000 per m²). It should be reported wherever sighted.

P.Francour, GIS Posidonia

Acknowledgements-References

We would like to thank GIS Posidonia (Campus de Lumigny, case 901, 163 avenue de Lumigny, 1328 Marseille Cedex 09, France), which provided us with the main aspects of this dossier.

Second International Workshop on *Caulerpa Taxifolia*, 15-17 December 1994, Barcelona, Spain, Synthesis of results. (In English and French).

The Presence of the Tropical Algae *Caulerpa taxifolia* in the Mediterranean Sea (UNEP/MAP, Joint meeting of the Committees, Athens, March 1995 UNEP(OCA)/MED WG.89/Inf.9, in English and French).

Spread of the Green Algae *Caulerpa Taxifolia* in the Mediterranean: Possible Consequences of a Major Ecological Event (Boudouresque, Meinesz et al., Scientia Marina, 59 (supl.1): 21-39, 1995, in English).

Proceedings of the Paris International Seminar, 13-15 March 1997.

SERIES OF MAP TECHNICAL REPORTS

(This series brings together and circulates some of the scientific reports drawn up in the framework of MAP activities, particularly of MED POL and the Regional Activity Centres.)

UNEP/WHO: Survey of Pollutants from Land-based Sources in the Mediterranean (MED X bis). This edition includes the results of the first survey (MED X) carried out in 1976-77, and the provisional results of the second survey which began in 1989. This survey is still on-going and underwent comparative assessment during a UNEP/WHO consultation held in Athens in December 1995, with conclusions and recommendations (*No.109, Athens, 1996, 188 pages, in English and French*).

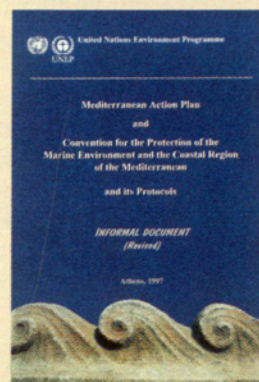
UNEP/WHO: Assessment of the State of Pollution of the Mediterranean Sea by Anionic Detergents. Publication of the text officially submitted to the Extraordinary Meeting of the Contracting Parties to the Barcelona Convention (Montpellier, July 1996), approved with antipollution measures (*No.110, Athens, 1996, 260 pages, in English and French*).

UNEP/WHO: Guidelines for Treatment of Effluents Prior to Discharge into the Mediterranean Sea. This document, drawn up by WHO on account of its activities under MED POL-Phase II, respects one of the obligations established by the L.B.S. Protocol. The initial version of the document was published by WHO in 1994. Following the amendment of the Barcelona Convention and the L.B.S. Protocol it was restructured to bring it into line with the revised texts, the main pollutants now being presented in the same order as they appear in the Protocol's new combined Annex 1 (*No.111, Athens, 1996, 247 pages, in English and French*).

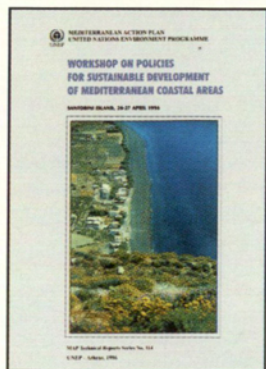
UNEP/WHO: Guidelines for Submarine Outfall Structures for Mediterranean Small and Medium-sized Coastal Communities. Following a MED POL pilot project led by WHO which was completed in June 1989, consultations held in Madrid resulted in the initial draft of these guidelines, which aim at providing local and municipal authorities in the Mediterranean region with basic information to be used in the planning of submarine outfall structures for communities of less than 100 000 inhabitants (*No.112, Athens, 1996, 98 pages, in English and French*).

UNEP/IOC: Final Reports of Research Projects on Transport and Dispersion (research area II). The first report is a case study on the Thermaikos Gulf (Thessaloniki) and deals with modelling eutrophication and plankton blooms. The second one concerns hydrodynamic effects on nutrient diffusion and algal blooms along the Emilia Romagna coast. Two important contributions to the problem of eutrophication to which these two regions of Greece and Italy are particularly exposed (*No.113, Athens, 1996, 118 pages, in English*).

MAP/UNEP: Mediterranean Action Plan and Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its Protocols



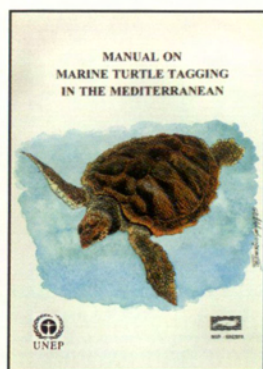
This volume which is essential until the Depositary State (Spain) publishes the official version, brings together all the legal documents of the Barcelona system, in other words the texts which were amended during the Conference of Plenipotentiaries in Barcelona, June 1995 (**Barcelona Convention**, **«Dumping» Protocol**), the Conference of Plenipotentiaries in Siracusa, March 1996 (**«L.B.S.» Protocol**), the non-amended texts (**«Emergency» Protocol**), and the completely new texts (**«Offshore» Protocol**, October 1994, **«Dangerous Waste» Protocol**, October 1996, **SPA Protocol**, June 1995 and November 1996 [for the annexes]). With the exception of the unamended «Emergency» Protocol, all these texts are in the process of being ratified, and will come into force according to paragraph 4 of the 1976 Barcelona Convention, i.e. «on the thirtieth day following the receipt by the Depositary of notification of their acceptance by at least three fourths of the Contracting Parties». Moreover, the volume begins with the basic texts for the new phase of the Mediterranean Action Plan, adopted by the Conference of Plenipotentiaries in Barcelona in June 1995: **«Action Plan for the Protection of the Marine Environment and the Sustainable Development of the Coastal Areas of the Mediterranean»**, with the **«Barcelona Resolution»** and the **«Priority Fields of Activities»** (MAP, Athens, 1997, 168p.).



UNEP: Workshop on Policies for Sustainable Development of Mediterranean Coastal Areas. The workshop in question was held on the island of Santorini, Greece, on 26 and 27 April 1996. It was divided into three sessions: 1) thematic presentation of crucial questions of sustainable development of the coastal areas; 2) recent political developments and national experiences in Mediterranean countries; 3) an exchange of views amongst participants. The volume consists of the thematic presentations from the first session given by

invited guests which were, in order: small islands, political questions, economic instruments, industry/energy, agriculture (all of these were in English), tourism, urban development (two subjects dealt with in French) and management of natural ecosystems (in English). The texts are reproduced in their original language and take the form of a retrospective since the Mediterranean Commission for Sustainable Development in its first meeting in December 1996 took «sustainable management of coastal areas» as one of its two main short-term themes (No.114, Athens, 1996, 184 pages, in English and French).

UNEP/BP-RAC: Methods and Tools for Systemic and Prospective Studies in the Mediterranean. Between 1980 and 1990, the Sophia Antipolis Centre carried out a global three-phase exercise («exploring, understanding, proposing»). This resulted in the publication of a volume considering different scenarios which caused a great stir «The Blue Plan - Futures of the Mediterranean Basin». The Centre has continued to apply its approach, but at a more local level, in the framework of the different Coastal Areas Management Programmes (CAMPs) which MAP has been undertaking in a series of Mediterranean countries since 1991. BP/RAC planned and drew up this document in order to share the experience and knowledge built up over twenty years with the Mediterranean community. It is composed of four parts: the point of prospective studies in the Mediterranean, some basic concepts, knowing the system and giving impetus to the system. It does not claim to provide definitive answers, but rather a mass of methods and tools which have been tried and tested in the Mediterranean context (No 115, Athens, 135 pages, in French).

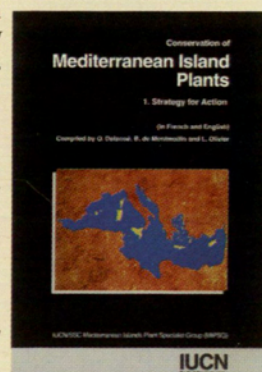


UNEP/SPA-RAC: Manual on Marine Turtle Tagging in the Mediterranean: This technical manual illustrated with diagrams and clear drawings will serve as a reference for everyone involved in the conservation of marine turtles and the monitoring of their numbers in the framework of the Action Plan adopted by MAP in 1989. It has been written and published by the Tunis Centre for Specially Protected Areas which is in particular responsible for implementation of this Action Plan.

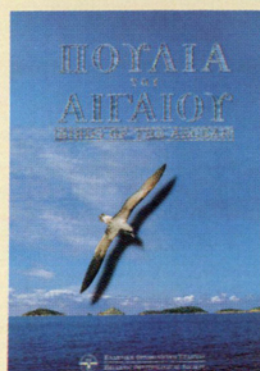
The purely technical part on marking is preceded by a reference to the main aspects of marine turtle biology and identification keys for the principal species to be found in the Mediterranean: *Caretta caretta*, *Chelonia mydas*, *Dermochelys coriacea* and, to a lesser degree, *Eretmochelys imbricata* and *Lepidochelys kempi* (RAC/SPA, bd de l'environnement, Tunis, BP 337- 1080 Tunis Cedex, 48 pages, in English).

BOOKS- REVIEWS

IUCN: Conservation of Mediterranean Island Plants, Strategy for Action. The wealth of plantlife in the 5000 or so islands of the Mediterranean make them a jewel of world biodiversity. The gaps in our knowledge and the absence of any regulation on protection demand the speedy implementation of an action programme to conserve the flora, habitats and landscapes of the Mediterranean. Such is the object of this volume, written by the Mediterranean Islands Plant Specialist Group (MIPSG) of the Species Survival Commission (SSC) of the IUCN (The World Conservation Union) (IUCN Publications Service Unit, 219c Hunting-ton Road, Cambridge CB2 0DL, United Kingdom, 1996, 106 pages, in English and French).



“Poulia tou Aigeou”/Birds of the Aegean. This wonderfully illustrated album, published in Greek and English by an NGO, does not claim to provide an exhaustive list of the 300-odd species of birds around the Aegean Sea. It rather intends to use the most significant ones such as the Audouin gull, the island partridge and the crested cormorant to show the distinct character of a region which, whilst being predominantly bare and rocky, is nonetheless rich in biodiversity, lying as it does at the crossroads of three continents. For the first time it also shows the work of several wildlife photographers who were careful to take all the necessary scientific precautions whilst



taking their pictures, particularly in order to avoid distressing the birds during nesting season. (Greek Ornithological Society, Athens, 63 pages, 1996).

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MEDITERRANEAN ACTION PLAN
UNITED NATIONS ENVIRONMENT PROGRAMME

**WORKSHOP ON POLICIES
FOR SUSTAINABLE DEVELOPMENT
OF MEDITERRANEAN COASTAL AREAS**

SANTORINI ISLAND, 26-27 APRIL 1996



MAP Technical Reports Series No. 114
UNEP - Athens, 1996



United Nations Environment Programme

**Mediterranean Action Plan
and**

**Convention for the Protection of the
Marine Environment and the Coastal Region
of the Mediterranean**

and its Protocols

*INFORMAL DOCUMENT
(Revised)*

Athens, 1997



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ISSN 1105 - 4034