



## MSW 2006 –Executive Summary

### Background

The Mediterranean Seagrass Workshop 2006 was convened in response to the need to promote a periodic event that would host scientists interested in Mediterranean seagrasses, and international scientists who are involved in projects that are focused on the Mediterranean marine environment, to discuss current knowledge and present the findings of their latest research.

The concept of holding an international meeting originated during the International Seagrass Biology Workshop held in 2004 in Queensland, Australia (ISBW6). One of the goals of ISBW6 was to identify key ecological issues and environmental trends within a number of geographical regions. This stimulated the idea of taking this topic to a higher level of organization, and in this case, to the scale of the entire Mediterranean. Discussions on the organizational aspects of MSW 2006 were initiated during the first meeting of the Organization Committee, held in Palermo (Sicily) in June 2005. A main goal, identified during the Committee meeting, was the need to establish closer links with seagrass scientists from Northern African and the Eastern Mediterranean Sea, given that information on seagrasses from these countries was largely lacking.

Previously, there had been two Workshops which addressed aspects of the biology of *Posidonia oceanica* meadows – the International Workshops of *Posidonia oceanica* beds in both 1983 and 1985 – however, these were focused on a single seagrass species. Thus, the Committee strongly believed that another main goal for MSW 2006 was to give emphasis to all species present in the Mediterranean Sea.

With these emerging goals in mind, the Committee worked towards the identification of main themes for the Workshop that would embrace all aspects of seagrass-related science.

As a result, the following three themes were proposed:

- Seagrass Biology & Ecology;
- Ecosystem Services of Seagrass beds;
- Monitoring, Management & Restoration of Seagrass Habitats.

In addition, these themes were to be integrated with relevant, but more specific discussion topics via Round Table sessions, held as part of the Workshop. These topics were:

- Use of seagrasses as bioindicators of the ecological status of coastal waters, in relation to implementation of the Water Framework Directive (<http://www.wfdireland.ie/>)
- New methodologies of ecosystem approach to seagrass;
- Conservation of Mediterranean aquatic vegetation.

Once the goals, themes and Round Tables for the Workshop were outlined, the next challenge was to identify sources of sponsors for the organization of the Workshop. In addition, to achieve the goal of enhancing attendance of scientists hailing from Northern African and East Mediterranean countries, the Committee acknowledged the need to provide them with financial assistance. Several Mediterranean and European organizations – Malta Environment and Planning Authority (MEPA), Società Italiana di Biologia Marina (SIBM), Agency for Environmental Protection and Technical Services (APAT), Regione Siciliana, Assessorato Territorio e Ambiente (ARPA) – agreed to contribute to the sponsorship of MSW 2006 and promoted advertisement of the MSW 2006 amongst the international scientific community.

Although the Workshop did not have a single main sponsor, several sponsors – University of Malta, Air Malta, Malta Tourism Authority, Mediterranean Action Plan, United Nations Environment Programme, Seagrassnet, Institute for Environment and Sustainability JRC European Commission, Stazione Zoologica 'Anton Dohrn' – contributed funds, in particular to assist participants coming from historically under-represented countries.

The dates of MSW 2006 were set to 29<sup>th</sup> May to 3<sup>rd</sup> June 2006. To ensure easy access to participants from Mediterranean countries and neighbouring regions, it was decided to hold the MSW 2006 in Malta, located at the centre of the Mediterranean basin. Having joined the European Union in 2004, Malta is now the southernmost EU member state and is considered by many as a stepping stone between Europe and North Africa. Marine research has always been a priority for the Maltese scientific community, but there has been particular interest in seagrass biology over the past 15 years or so. The Department of Biology at the University of Malta kindly agreed to host the meeting, and the necessary organizational procedures were activated, including the setting up of a web site (<http://events.um.edu.mt/msw2006/>). The Corinthia Jerma Palace Hotel, located in Marsascala, on the southeastern coast of mainland Malta, was chosen as the Workshop venue.

### Workshop Agenda

A total of 105 scientists, comprising 47 students (including post-graduates at MSc and PhD levels) and 58 non-student participants from 17 countries (see table of participants below) attended the Workshop. Attendance was very heterogeneous, in terms of topics presented, age classes and countries represented. This, as well as the high number of students, made the Workshop particularly successful, with strong integration among age classes and across participating countries.

Country	Total Number of Participants
Algeria	1
Belgium	3
Croatia	2
Egypt	2
France	9
Greece	1
Israel	1
Italy	45
Malta	8
Netherlands	2
Portugal	4
Slovenia	1
Spain	15
Tunisia	4
Turkey	1
United Kingdom	4
United States of America	2

To summarize the Workshop, a brief outline for each of the three sessions follows:

### ***Session I: Seagrass Biology & Ecology***

The scientific presentations and posters within this session covered an extremely diverse set of topics. The oral session on seagrass biology and ecology was first with no less than 20 presentations being delivered on the first and second days of the workshop. Overall, the topics presented during the seagrass biology and ecology session varied widely and covered various aspects that ranged from the molecular level to the ecosystem level. The Plenary presentation for this session emphasized the potential use of molecular genetics to understand ecological processes at the seagrass ecosystem level. Other research topics within biochemistry and molecular biology/genetics included: carbohydrate, lipid, protein and chlorophyll a content of seagrasses; the relation between DNA methylation in *P. oceanica* and stress from anthropogenic activities; expression pattern of CHL P Gene as a putative marker of light stress conditions in *P. oceanica*; vicariance patterns, east-west divergence and low dispersal of *P. oceanica*; genetic discontinuities in *Z. marina* and *Z. noltii* across the Mediterranean; and memorization of mercury levels in *P. oceanica*.

Several presentations addressed research on physiological aspects; these included comparative studies of primary production between insular and continental *P. oceanica* meadows; reconstruction of net production in seagrass during the last 1200 years from *P. oceanica* matte; comparative *in situ* photosynthetic activity (RLC and maximum quantum yields) of *P. oceanica*; chemical defense mechanisms against predation; comparison of productivity between submerged and air-exposed seagrass; influence of canopy structure on light attenuation and resulting effects on carbon gain by *P. oceanica* and cytophysiological aspects of *P. oceanica* seeds.

Presentations on aspects of seagrass ecology included: the influence of leaf length and refuges in a seagrass meadow in effecting predation on sea urchins; structural features of *P. oceanica* meadows along the eastern coast of Tunisia; distribution of *H. stipulacea* along the Aegean coast of Turkey; and distribution of epiphytic phytoplankton in a *P. oceanica* meadow. Another two presentations dealt with aspects of hydrodynamics of *P. oceanica* meadows. These were: hydrodynamics and dispersion of suspended particles in fragmented *P. oceanica* meadows; and hydrographic changes that could account for absence of seagrass in the Levant Sea.

### ***Session II: Ecosystem Services of Seagrass beds***

The scientific presentations and posters within this session ranged from comparative analyses among ecosystems to human influence on fauna in seagrass beds. This session opened with a plenary presentation which highlighted the importance of *P. oceanica* meadows, and included a comparison between marine (seagrass) and terrestrial (forest) ecosystems. It also provided an overview of the functions of *P. oceanica* in the marine environment, starting from plant biomass and productivity, to nutrient storage abilities and trophic interactions in the food web. Seasonal trends and differences for various seagrass bed attributes were highlighted. The talk concluded with presentation of a summary of the differences and similarities between marine and terrestrial plant ecosystems.

The remainder of this session was largely dedicated to seagrass ecosystem function and ecology of fauna associated with seagrass beds. Innovative work was presented on the interaction between marine borers, a unique group of specialized detritivorous organisms, and the seagrass they are associated with. Work was also presented on the distribution of seagrass-associated fauna (epiphytes, vagile fauna, fish): along a depth gradient, and at different location/geographic scales including that at the Mediterranean basin scale. Other topics dealt with trophic diversity and the potential role of detritivorous organisms in

*Posidonia oceanica* litter. These latter presentations addressed the importance of detritivorous organisms for the transfer of primary production to higher trophic level and to adjacent habitats.

Several presentations related to the effects of ecological disturbance – with special emphasis on the effects of fish farming and landscape fragmentation on macrofaunal communities in seagrass meadows, both inside and outside the Mediterranean Sea. These presentations emphasized the need to sample several attributes at different spatial scales to enable appropriate assessment of disturbance effects on macrofaunal communities. A presentation on the demographic structure of *Paracentrotus lividus* populations in *Posidonia oceanica* beds, and the relationship between herbivory and plant primary production, addressed attributes (i.e. shelter, predation, depth, etc.) that can influence the demographic structure of the urchins.

Finally, two presentations were made by northern African participants (Algeria and Tunisia). The first talk (winner of the student prize) discussed the relationship between amphipod diversity and seagrass meadow quality in Tunisia, and provided an in-depth account of how amphipod species richness, diversity index, taxonomic distinctness and of the seagrass meadows they are associated with, can be categorized in relation to different human pressures. This work provided valuable information on the species richness and diversity of amphipods associated with Tunisian seagrass meadows. The other presentation focused on the population dynamics of *Holothuria* sp. Associated with *P. oceanica* meadows in Algeria and the possibility to use the status of *H. tubulosa* and *H. polii* populations as indicators of pollution levels. This study provided a valuable account of the biology and reproduction of the two species as well as their population structure.

### ***Session III: Monitoring, Management & Restoration of Seagrass Habitats***

The scientific presentations and posters within this session covered a broad scope of experimental research and monitoring programs, mainly focusing on the seagrass *Posidonia oceanica*. The session included a large number of presentations that were delivered during the last two days of the Workshop. Two opening presentations were given; the first presented a review of the modes of bicarbonate utilisation in seagrasses and their possible roles in adaptations to specific habitats. This work also included a review on the use and application of PAM (pulse amplitude modulated) fluorometry to assess plant response to environmental stressors. The opening talk, delivered on the fifth and last day of the MSW 2006, provided a review on the environmental impacts of dredging on seagrasses, and presented results of a meta-analysis showing the adverse impacts of main dredging techniques and their potential threat to seagrass ecosystems. In addition, this work addressed the importance of critical sediment deposition thresholds for seagrasses. Using a number of Mediterranean case studies, this presentation reported the link between small-scale and large-scale impacts and the time for recovery for *P. oceanica*, and concluded by addressing the importance of mitigating measures and monitoring of seagrass response after physical disturbance.

Studies from France, Malta and Italy dealing with the role of *P. oceanica* as a bio-indicator, were presented emphasizing the need to establish and test a procedure for assessing and classifying the ecological status of coastal waters using *P. oceanica* (see Round Table I). Several additional presentations addressed the importance of adopting *P. oceanica* as a proxy to monitor coastal water quality and metal pollution.

Moreover, other presentations and posters within this session presented work aimed at mapping and monitoring seagrass beds. Seagrass mapping surveys are widely held in the Mediterranean Region, as there is lack of information on the distribution of seagrasses in some regions, particularly the eastern Mediterranean and the northern coast of Africa. It is worth noting that pioneering work dealing with a seagrass survey in Egypt was presented, which provided valuable data for this country. Other work addressed the response of seagrasses to different types of disturbance and transplantation experiments.

Case studies from Malta, France and Italy were reported assessing the response of *P. oceanica* to fish farm activities, and physical disturbance (including anchoring). This topic is particularly relevant due to the increasing pressure of human activities on the marine environment, as well as changes resulting from global climate change (e.g. sea level rise); therefore, it is very important to understand how seagrass will respond to the new environmental scenarios. Linked to this issue, one study concerned the use of seeds to restore seagrass beds. Specifically, seeds can germinate and develop in the laboratory and eventually transferred into the field. Although such an approach is still challenging and presents low percent of restoration success (i.e. low seed survival in the long term), an increased number of studies are investigating this subject.

Three presentations described work that has strong management implications, as they detailed work on data mining and warehousing, and highlighted techniques that can be applied to manage large datasets for application on a larger scale to monitor seagrass changes over time. One study emphasized the importance of *P. oceanica* "banquettes" (seagrass wracks) for ecological functions and shoreline protection. The last presentation dealing with studies undertaken within the Mediterranean concerned the interaction between the invasive algae *Caulerpa taxifolia* and the seagrass *P. oceanica*. This work reported a limited effect of *C. taxifolia* on well-established *Posidonia* meadows. Such results are particularly relevant to develop appropriate management strategies that are otherwise based on the current dogma of a strong invasive effect of the introduced algae on Mediterranean seagrass beds.

Finally, two presentations given within this session concerned work undertaken outside the Mediterranean Sea. This allowed enhancement of the discussion on differences and similarities amongst Mediterranean and non-Mediterranean seagrass habitats, as well as emphasizing the need to increase collaborative work and comparative efforts worldwide. The first non-Mediterranean work addressed the response of the seagrass *Zostera noltii* to physical (clam digging and burial) and nutrient disturbances (urban wastewater discharge) in the nearby Ria Formosa lagoon (Portugal). The study concluded how low modular integration of this seagrass and high production allows rapid recovery of *Zostera noltii* plants from physical damage. In addition, *Z. noltii* responds to mechanical disturbance by increasing its reproductive effort and extending its reproduction period.

The second presentation regarded a worldwide monitoring program, *SeagrassNet*. This is a global monitoring program aiming at investigating the status of seagrass ecosystems. The program, implemented in 2001, now includes 28 sites in 15 countries. Data were presented on monitoring being carried out in the Americas, while the importance of *SeagrassNet* in protecting seagrass environments and the increasing public awareness towards this valuable resource were also highlighted.

### **Round Tables**

The Mediterranean is a rare and vulnerable ecoregion, one of the planet's biodiversity hot spots, where many of the species present are endemic. The Mediterranean Sea has a millenarian history of human use of the coasts. However, the present exponential increase of human pressure on the coastal zone for living space, transportation, recreation and food production is expected to have unusually dramatic long-term impacts on the Mediterranean marine environment, and in particular on seagrass ecosystems. Thus, there is concern that the functions seagrasses have performed in the Mediterranean marine ecosystem will be reduced or, in some places, lost altogether. Topics for the Round Tables were created bearing this scenario in mind, so that discussion on large scale research issues concerning the current status of seagrass ecosystems in the Mediterranean Sea could be initiated.

*Round Table I* focused on the potential application of the seagrass *P. oceanica* as a bio-indicator for EU Water Framework Directive (WFD)-compliant assessment of the ecological status of Mediterranean

coastal waters. The WFD requires long-term sustainable management of water bodies and a high level of protection for the aquatic environment. The main objective of the WFD is to achieve good ecological status for all surface water bodies by 2015, thereby ensuring the conservation and proper functioning of aquatic ecosystems. To achieve its goals, the WFD requires monitoring and assessment of the ecological status using biological quality elements (BQEs). The discussion addressed the issues of using *P. oceanica* metrics for classification of coastal waters, by taking into account current scientific knowledge on the functioning and role of *P. oceanica* meadows, and the main pressures threatening this vulnerable ecosystem in the Mediterranean ecoregion.

The main concluding points were:

- Classification systems across Mediterranean Member States differ in their choice of metrics and/or classification methods. Cross-calibration or standardization of methodologies, based on common agreement on the comparability of the different methods, is required.
- Currently, only two common metrics are used by 5 countries/regions: shoot density and shoot size (as shoot area or shoot biomass). Standardization of data collection methods is needed for these variables, especially for use by non-EU Mediterranean countries.
- Other potential attributes/methods that could be useful for classification should be investigated.
- Reference conditions: discussion on their existence in the Mediterranean, and where these do not exist, how reference values can be applied.
- Importance/need of applied research, both within the EU and in association with non-EU countries and goals for foreseeing, together with the EC, any specific direction for obtaining support and funding.

**Round Table II** aimed at attracting discussion on gaps in research on Mediterranean seagrass meadow in context of the new BEF (biodiversity ecosystem function), identification of priority questions, identification of specific methodologies and those researchers who know how to use them, and to identify groups of researchers who can/could function as a team to address integrated questions. The goal for this Round Table was to address the importance of the new 'ecosystem' or BEF approach, adopted to integrate three research domains: species-species interactions (the classic domain of community ecology), species interactions with the physical environment (the classic domain of ecosystem ecology) and evolutionary-ecological processes (the classic domain of population genetics combined with the emerging field of ecological genomics).

It was thought that an understanding of BEF will require scaling up through several spatial scales, i.e., leaving the quadrat and transect behind to some extent. In the case of Mediterranean seagrass habitat, information is lacking at both lower (micro) and upper (landscape) scales. For example, little is known on the ecology of a variety of small life forms (e.g. microbial and meiofauna) associated with Mediterranean seagrass meadows, while knowledge of seagrass landscape ecology for the region is lacking almost altogether.

Additional points of discussion for this round table were the following: importance of genomics for ecology, application of modeling/simulations and Bayesian statistics, use of reconstruction techniques *sensu* dating/isotopes, importance of physiological approach *sensu* PAM, O<sub>2</sub> microelectrodes, light, temp, data logger and utilization of field techniques *sensu* isotope tracking, fertilization, tagging and tracking, tethering to gather large scale data and compile databases at regional level.

### **Round Table III**

The Action Plan for the Conservation of Marine Vegetation in the Mediterranean, drawn up within the framework of the SPA Protocol of the 1995 Barcelona Convention, calls for the highest conservation efforts at national and international levels to ensure prevention of loss and degradation of seagrass meadows and other key plant assemblages. The Action Plan includes the following recommendations:

- inventories of species and mapping surveys of their distribution
- detailed mapping of seagrass meadows
- identification of threats
- control of impacts resulting from watershed infrastructures on the marine environment
- elaboration and implementation of appropriate legislation
- establishment of marine vegetation monitoring networks
- establishment of protected areas, and
- promotion of (regional) cooperation (UNEP-RAC/SPA, 2000).

As an introduction to this round-table session, an overview of available knowledge concerning mapping and monitoring of *Posidonia oceanica* meadows in the Mediterranean was given. The overview indicated large gaps in our present knowledge on the distribution, status and trends of this species and emphasized the need for greater regional information sharing. In addition, some of the management, research, and education & awareness priorities that need to be addressed to improve the conservation of Mediterranean seagrasses were discussed. A short video-documentary was presented, showing the impact of dredging on a seagrass meadow in Ischia (Italy), as an example of the threats faced by seagrass meadows in the Mediterranean Sea.

The discussion was given impetus by the subsequent presentation of the following statements and questions:

- education/awareness has greater potential than regulation (what role for scientists?)
- increased research efforts do not lead to better conservation (how to bridge the gap between science and management?)
- giving recommendations has no real impact (what initiatives can we take ourselves?)
- EU legislation will overtake national policies & plans (how can we harmonize?).

The Round Table was concluded recognizing that:

- there are a number of approaches to seagrass management, ranging from a reliance on strong and prescriptive (top-down) legislation and enforcement to a softer bottom-up approach, that relies more on participation from stakeholders and local communities with a strong focus on education and awareness building. While the emphasis may differ between countries and cultures, it is probably more than likely that a mix of approaches will be the most effective in achieving conservation goals and objectives.
- there is a particularly low awareness on the values of seagrass resources among decision-makers and the general public in some of the less developed countries around the Mediterranean (e.g. Tunisia, Algeria), where marine conservation is given a low priority and the production of education & awareness materials is hampered by financial constraints.
- there is an urgent need for collaborative, interdisciplinary research into the issue of cumulative impacts of multiple developments and threats on meadows of *Posidonia oceanica* and other seagrass species.
- there is also a need to carry out more research into the issue of economic valuation of seagrass resources, addressing the monetary value of the goods and services derived from seagrass meadows, and taking into account the high costs and limited success of efforts to restore seagrass

beds. Studies into the effectiveness of (past) management measures (including protected areas) in achieving conservation goals and objectives at various temporal and spatial scales is also considered a priority for future seagrass research in the Mediterranean region.

### **Mediterranean Seagrass Association**

The MSW 2006 provided the platform for launching the Mediterranean Seagrass Association. This will be achieved by modifying the existing Association "Corsica 2000", implemented for the organization of ISBW4, held in Corsica in 2000. The idea of promoting the Association was raised during the MSW 2006 and it was proposed to the audience and acclaimed. The Association will be in place by the first quarter of 2007. The Association has set a series of priority activities: (i) increase awareness of seagrass issues by promoting and activating a number of initiative, including the provision of support for the organization of future MSW and local meetings; (ii) to set up and maintain a web page for literature, data & information exchange; and (iii) to support conservation, monitoring, educational issues linked to Mediterranean seagrass ecosystems.

The Association will liaise with the WSA (World Seagrass Association, [www.worldseagrass.org](http://www.worldseagrass.org)), but serve as an independent regional Association. Liaison with the WSA will lead to production of joint newsletters and web site, and store data and literature for exchange amongst the scientific community. Moreover, the WSA and the MSA will put an effort in organizing joint meetings (ISBW and MSW) to reach a larger audience inside and outside the field. The current MSA Board of Committee includes the following members: Teresa Alcoverro, Joseph Anthony Borg, Maria Cristina Buia, Giuseppe Di Carlo, Maria Cristina Gambi, Gerard Pergent, Christine Pergent-Martini (President) and Gabriele Procaccini. The Committee will remain in place until next elections, scheduled to occur during the MSW 2009.

Overall, the MSW 2006 was a very successful event, since: (i) the target number of participants (100) was reached (and exceeded); (ii) the event brought together seagrass scientists from several European and non-European countries (including several North African countries and the USA) to share knowledge of their research on seagrasses – the last time that a similar meeting was held ('The Second Workshop on *Posidonia oceanica* Beds') was over 20 years ago; (iii) through funding kindly received from the Mediterranean Action Plan (MAP) of the United Nations Environment Programme (UNEP), the Joint Research Centre (JRC) of the European Commission (EC), and the Institute for Environment and Sustainability (IES) of the EC and SeagrassNet, 4 scientists from four North African and East Mediterranean countries (Algeria, Tunisia, Egypt and Turkey) were able to attend the workshop and present papers on their work; last but not least (iv) discussions on important topics concerning seagrasses were held and a set of recommendations made.

### **Conclusions & Recommendations**

The last Workshop on Mediterranean seagrasses was held in 1985. Thus, it is important to highlight the scientific achievements and improvements that have been made over the past two decades. Much work was still focused on seagrass ecology & biology, aimed at evaluating plant response to the environment. Specifically, the increasing human pressure on the marine system has inspired scientists to address plant response to various sources of disturbance, with particular emphasis on human driven stressors. At the same time, large mapping programs have been carried out, mostly in France, Spain, Italy and Greece with the application of modern techniques, such as remote sensing. However, this information was still largely missing for the eastern basin and North Africa. An increased understanding of seagrass systems, from the ecological and biological perspective, has allowed scientists to open up new fields and conduct science at the ecosystem level, both of which offer a more interdisciplinary approach. The MSW 2006 has provided

the opportunity to present work that integrates seagrass ecology and the associated fauna, drawing attention to seagrass ecosystem function and service, which is now widely recognized. A few studies have started examining landscape ecology and fragmentation of seagrass beds following physical disturbance, although literature for the Mediterranean Sea is still scarce. However, this is a very important aspect of seagrass research, widely developed for terrestrial systems, which is strictly related to seagrass management and conservation.

The MSW 2006 recognized the importance and progress made in the field of molecular ecology. In the last decade, molecular techniques have been rapidly developed, allowing research to expand and embrace new fields for seagrass research, such as landscape evolutionary biology and phylogenetics. Several studies on *P. oceanica* and *C. nodosa* are now available through peer-review literature (and for many other species outside the Mediterranean Sea). Discussion throughout the Workshop emphasized the application of molecular work in ecology, management and conservation of *P. oceanica*. Molecular ecology and seagrass management and conservation have certainly proven to be the most discussed and represented topics during the Workshop, and concern about the future of seagrasses, now challenged with rapid environmental changes in the Mediterranean, has been expressed.

Discussion throughout the MSW 2006 oral sessions, poster sessions and the round table has provided the following final recommendations:

- Although remote sensing tools are becoming largely available, they need to be accessible to countries in the Eastern Mediterranean basin and North Africa. This will allow mapping surveys of existing beds and record-keeping of changes in seagrass ecosystems.
- Although the Workshop aimed to address research on all Mediterranean seagrass species, most of the research presented related to the key species *Posidonia oceanica*. It was recognized that there is an increasing need to identify and understand the ecosystem services of other seagrasses. Once the importance of other species for the Mediterranean marine environment is shown, research efforts directed at these species should increase, resulting in a more balanced and complete evaluation of the Mediterranean marine environment.
- The importance of seagrass monitoring programs for management and conservation, and to increase public awareness, was highlighted. The importance of extending such programs, as well as the need to link Mediterranean seagrass monitoring to global monitoring programs, was emphasized. However, common protocols that may allow inter-calibration of sampling methods for all seagrasses are still not available.
- Linked to the importance of seagrass mapping and monitoring, there was the need for continuous data collection, which can be used to build time series to allow monitoring and assessment of seagrass ecosystem changes over the short- and long-term. Such data collections are critical first steps in creating powerful forecasting tool. Techniques are now available to handle large scale data sets and time series, however the scales of sampling are still inadequate and data is missing for several areas.
- The success of this Workshop mainly rested on the participation of a large number of Mediterranean and non-Mediterranean countries. This event should be considered as a launching platform to improve science communication inside and outside the Mediterranean Region. Specific attention should be given to enhance collaboration with North Africa and Eastern Mediterranean countries, which represent a very importance resource for the basin. To achieve this, priority should be given to facilitate the participation of scientists from these regions at international meetings. Data from these countries is largely lacking and effort should be put into identifying ecological issues for these regions.

- Finally, there was general agreement to establish periodic workshops, such as the MSW 2006, to provide a venue for scientists from the Mediterranean basin to discuss research topics, methodological advances and improved knowledge on the state of the art of Mediterranean seagrasses. Such meetings should be aimed at facilitating discussion and integration amongst scientists with the goal of establishing a network of collaborations and information exchange inside and outside the Mediterranean Sea. The MSW 2006 and the MSA will pursue and contribute to these goals.

### *The Organising Committee*