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MINUTE OF THE INTERNATIONAL SYMPOSIUM “PROTECTION AND SUSTAINABLE MANAGEMENT OF THE BLACK SEA ECOSYSTEM, IMPERATIVE OF THE THIRD MILLENNIUM - VTH EDITION” - SEPTEMBER 29-30, 2011

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Between September 29-30, 2011, in Constanța, at the headquarters of the National Institute for Marine Research and Development “Grigore Antipa“, the proceedings of the International Symposium “PROTECTION AND SUSTAINABLE MANAGEMENT OF THE BLACK SEA ECOSYSTEM, THIRD MILLENNIUM IMPERATIVE“, Vth edition, were carried out.

The event was organized by the National Institute for Marine Research and Development “Grigore Antipa“, together with the Balkan Environmental Association, under the aegis of the Romanian National Oceanographic Committee (RNOC - UNESCO), financed by the National Authority for Scientific Research and sponsored by SC Petrom SA and SC Sterling Ltd.

The Black Sea is the world’s most isolated sea, connected to the Oceans via the Mediterranean Sea through the Bosphorus, Dardanelle and Gibraltar straits. Rich in wildlife and biodiversity, our sea is, sadly, on the way to becoming just that - a sea blackened by pollution, oil spills, overexploitation of fish stocks and other environmental threats. The unique ecosystem of the north-western shelf of the Black Sea is burdened by excessive loads of nutrients and hazardous substances from the coastal countries and the rivers that enter it - the most important of which is the Danube. The region is also vulnerable to climate change, which could add to the stress the region’s natural systems are already under. Today, the Black Sea region is at an environmental crossroads. It can continue on the path of neglect or it can move towards a more sustainable future. Thus, the main goal of the Symposium was to identify all these threats and to find solutions for the protection and sustainable development of the entire Black Sea region.

The two-day event was divided as follows: on September 29, the presentation of the “Report of the Current State of the Marine and Coastal Environment“ was followed by an outline of the multiple uses of marine algae and a description of marine aquaculture in China, country which became the second largest supplier of aquatic products worldwide.

The Plenary Lectures were held the second half of the day, comprising presentations from researchers covering three sections: Oceanography and Coastal Engineering, Marine Ecology and Environmental Protection and Marine Living Resources.

On September 30, the conclusions of the Symposium were discussed and the final declaration was adopted. In addition, the workshops Project Black Sea “Strengthening the Regional Capacity to Support the Sustainable Management of the Black Sea Fisheries“ and “Intelligent Methods Based on the Wireless Sensor Network Technology for Quality Management in Aquaculture“ were organized.

Last, but not least, the Activity Report of the Black Sea Regional Activity Center for Environmental Aspects of Fisheries and Other Marine Living Resources Management (RAC FOMLRM) was presented and a debate of the ACCOBAMS resolution was set.

Parallel with the development of the Symposium activities, there was a poster session concerning all three scientific sections. The posters were displayed throughout the two days of the event.

The Plenary Lectures revealed the following aspects:

- The state and evolution trends of the Romanian Black Sea coastal environment continued to be monitored in 2010 from the physical, chemical and biological point of view, compared to the reference periods dating back in the early 1960s or in more recent years, depending on parameters. The slight improvement of the state of the marine ecosystem signaled at the end of the 1990s, beginning of 2000, continued to be proved by the decrease of phytoplankton densities/biomasses and related blooms; the resettling of *Cystoseira barbata* belts off Vama Veche; the increase of macrozoobenthic specific diversity (more than 50 species, compared to only 28 in the 1990s). In 2010, there was a slight tendency towards qualitative balancing.
- The state of the marine and coastal environment in 2010 confirmed the general trend of slight improvement of the parameters, as well as the persistence of the
- recovery/convalescence state of the ecosystem.
- The discussions carried out revealed the possibility and need to capitalize marine bioresources, by direct exploitation or applying aquaculture techniques, practiced in ecological, environmentally friendly systems. The excessive development of macrophyte algae, reported during summer at the Romanian and Bulgarian coast, was also debated. The conclusion was that this is an indicator of the recovery of the marine ecosystem, pointing out the need to seek and find solutions for the use of the algae surplus, as well as to provide appropriate funding for research projects meant to solve these issues.

Within the **Oceanography, Marine and Coastal Engineering Section**, 19 papers (5 oral presentations and 14 posters) were delivered, belonging to authors from Bulgaria and Romania. The research areas concerned were the following:

- Ocean-Air-Land Interactions/Remote Sensing Applications
- Maritime Spatial Planning
- Coastal Area Morphodynamics
- Physical-Chemical Characterization of Marine Waters/ Influence of Physical Factors on Navigation Safety
- Marine Technology
- Oceanographic Data Management
- International projects outlines

The scientific papers in the field of Oceanography, Marine and Coastal Engineering mainly dealt with the knowledge of the marine environment, the chemical and physical characterization of Romanian and Bulgarian marine waters, the eutrophication phenomena, the monitoring of hazardous substances, of the land-ocean-air interactions, remote sensing and GIS applications for the knowledge and characterization of the coastal system. In addition, outlines of participations in international projects were also delivered.

The presentations pointed out the importance of developing/applying new technologies and tools (AUV, remote sensing, GIS, modeling, risk assessment methods etc.) in the research of the aquatic environment, in understanding the ocean-land interaction, in Maritime Spatial Planning, in monitoring the geo-hydro-climatic changes of the coastal area and, last but not least, in the safety of maritime transportation.

The results of the coastal waters monitoring were given and the trends of marine water chemistry were pointed out, as well as the influence of anthropogenic pressures.

The national actions carried out by NIMRD (National Oceanographic Data Center) were also outlined, as activities of implementing the best international and European practices for using data and metadata standards within the Oceanographic and Environmental Data Management in Romania.

The following research objectives were identified by the research papers:

- Understanding the processes and consequences of the ocean-air-land interactions;

- Strengthening the connections between the physical/chemical oceanography and the other areas of oceanography: marine ecology, marine living resources, marine engineering;
- Continuing the monitoring of the coastal waters quality/expanding the monitoring network.

The above mentioned objectives shall all contribute to using new state of the art monitoring technologies, experimental techniques, investigation techniques of prognosis model for hypothesis development, testing and extrapolation, as well as to using the historical data for the investigation of processes and their consequences on the Romanian coastal system. Under these circumstances, there is the opportunity to participate in the program “European Economic Area Mechanisms for the Period 2009-2014” (grants jointly funded by Norway, Iceland and Liechtenstein). The program aims at developing an operational oceanographic and environmental system, able to provide real time weather and oceanographic data for the Romanian territorial waters. One of the aims to be fulfilled is modernizing the National Institute for Marine Research and Development “Grigore Antipa” by means of modern technology input, in order to maintain an active participation in Euro GOOS/ GOOS Black Sea, WISE and INSPIRE and, implicitly, in the European Maritime policy.

Under the **Marine Ecology and Environmental Protection Section**, 5 oral presentations and 10 posters were delivered.

The main issue covered by the paper were the following:

- Assessment of the current state of the phytoplanktonic component of the Romanian coastal area;
- Occurrence of new species in the Black Sea plankton;
- Diversity of benthic organisms in the sulphur seeps area in the southern part of the Romanian coast;
- Current state of land habitats in the Romanian and Bulgarian coastal area;
- Future activities to be carried out within the project “Background Radiation of the Coastal Marine Environment of the Black Sea”, financed by the program BS-ERA.NET.

Under the current conditions, of decrease of the nutrient and pollutant input of the Danube, indicators of a slight rehabilitation of the state of the main biotic components emerge, especially of the phytoplankton, which recorded a more reduced number of blooms and a high diversity.

The first occurrence of the species *Oithona brevicornis* at the Romanian coast was reported, species which appeared in the Black Sea basin 10 years ago, but which has only been identified in the bays and harbors in the northern and north-eastern part of the Black Sea, with intense ship traffic that may be the cause of introducing this new species.

The poor conditions of the terrestrial habitats in the Romanian coastal area were recorded, as these habitats are mainly affected by human activities in the area (buildings in the littoral zone and increasing tourist activity).

Thus, an extremely important role in protecting the marine and coastal environment is represented by educating the younger generation, achieved by various non-governmental institutions and organizations, within special programs elaborated for such purposes.

Considering the few aspects of ecology and marine environment protection outlined during the proceedings of the Symposium, indicators of improvement of the main marine ecosystem biotic components were reported. However, the evolution trends of aquatic ecosystems are strongly influenced by global climate changes and human pressures.

Consequently, the following result:

- The need to continue and diversify the research areas, with the view to understanding more clearly the operation mechanisms of marine ecosystems and not only;
- The continuous monitoring of marine biodiversity, identifying and promoting solutions for protecting endangered species and their habitats, the sustainable management of the coastal ecosystem;
- Developing cooperation at a regional level, achieving common projects for a better knowledge of the marine ecosystem, in order to elaborate valid solutions for the sustainable management of the marine ecosystem;
- Continuing to educate the younger generation, the “beneficiary” of the natural heritage represented here by the marine environment and its resources.

Within the **Marine Living Resources and Ecological Reconstruction Section**, 16 papers were delivered (5 oral presentations and 11 posters), by authors from Turkey, Ukraine, Bulgaria and Romania. The research areas covered were the following:

- Fishery resources;
- Dolphin protection;
- Marine aquaculture;
- Capitalization of marine living resources.

The scientific papers in the field of fishery resources dealt mainly with the knowledge of the population state of the main commercial interest fish species in the Black Sea basin, their evolution trends and stock assessment, under the influence of the current biotic and abiotic environmental conditions changes. In addition, the results of research concerning marine aquaculture and capitalization of marine living resources were also outlined.

The discussions held pointed out the importance of marine living resources, which provide humans with countless economic, environmental, aesthetic and cultural benefits. During the past decades, the fishery sector has contributed significantly to satisfying the continuously increasing demand of food, mainly by the rearing of marine species, which offer important opportunities to increase the global food production and food safety.

Throughout the proceedings, research objectives for a better understanding of marine living resources were identified, as follows:

- Understanding the processes and consequences of changes in marine biodiversity, by emphasizing environmental components and their effects on biodiversity;
- Strengthening the connections between marine ecology, oceanography and marine living resources;
- Fathoming marine taxonomy;
- Carrying out fish fauna and biodiversity research in marine sites, with the aim of elaborating the management plans pursuant to the Natura 2000 requirements.
- The ecosystem approach in the study of marine living resources.

All the above mentioned objectives can be reached by using state of the art technologies for sampling, experimental techniques, investigation techniques of prognosis model for hypothesis development, testing and extrapolation, as well as using the historical data for the investigation of processes and their consequences on marine living resources.

Particular stress was put on the continuous collaboration between the Romanian and Bulgarian experts, joined, by means of the data presented, by Ukrainian and Turkish experts, in the field of marine fisheries data collection, as well as assessing the stocks of the main commercial marine fish species (sprat and turbot), requirement of the European Commission as a follow-up of applying the common fishery policy.

The proceedings of the two workshops carried out within the projects “Strengthening the Regional Capacity to Support the Sustainable Management of the Black Sea Fisheries” (funded by the Joint Operation Program for the Black Sea Basin 2007-2013) and “Intelligent Methods Based on the Wireless Sensor Network Technology for Quality Management in Aquaculture” (funded by the Romania-China Bilateral Cooperation Program), followed by the outline of the Activity Brief of the Regional Activity Center for Environmental Aspects of Fisheries and Other Marine Living Resources Management (RAC FOMLRM) and the debate and discussion of the Resolutions of the Agreement for the Conservation of Cetaceans in the Black Sea, Mediterranean and Contiguous Atlantic Areas (ACCOBAMS) were a good opportunity for discussions among the participants in the Symposium.

The urgent need for cooperation among various institutions was pointed out, as well as for developing common research programs for the Black Sea. The discussions were closed by establishing partnerships within open project calls (FP 7 - KBBE.2012.1.2-09: Integrating the Role of Marine Benthic Ecosystems in Fisheries Management, EC Directorate-General for Maritime Affairs and Fisheries and the Partnership Program - Call 2011).

The general conclusion of the Symposium was that many of the papers delivered within the proceedings are time and space sequences of research, but which must be integrated in the development milestones of the above mentioned areas. As such, it is recommended and required to continue, fathom, diversify and apply investigation methods within integrated complex research projects, joined by the interested scientific community in the Black Sea and European Union areas, aiming at knowledge transfer and creating scientific partnerships. For such purposes, the participation of institutes of the Black Sea area in partnerships for preparing the research/development projects within the Framework Research Program, the Joint Operational Program or the bilateral programs (Romania-Norway, Bulgaria-Norway) are opportunities that must be capitalized without any delay.