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COASTAL ZONES - VULNERABLE BIODIVERSITY
REPOSITORIES: TOPICS AND CONTRIBUTIONS OF
THE FIRST EUROPEAN SYMPOSIUM *RESEARCH,
CONSERVATION AND MANAGEMENT OF THE
BIODIVERSITY OF EUROPEAN SEASHORES/RCMBES*

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Abstract. This paper aims to summarize the work, topics and contributions of the First European Symposium *Research, conservation and management of biodiversity of European seashores/RCMBES*, 8-12 May 2017, Primorsko, Bulgaria. The symposium was organized by OPIMOS and ECOPAN in cooperation with the Bulgarian Academy of Sciences, Faculty of Biology of Sofia University “St. Kliment Ohridski” and Primorsko Club Ltd. The symposium aimed to: 1) Present the status of scientific approaches within the European coastal areas; 2) Discuss the role of biodiversity research in trans-border issues; 3) Bring together scientists, academics, practitioners with a view to strengthening and promoting the trans-border cooperation and this with municipalities; 4) Define the priorities concerning various aspects of conservation research and good practices. In accordance, thirteen more detailed symposium topics were announced and later on discussed at the scientific sessions, during the field trip along the southern Bulgarian Black Sea coast and Strandzha Mt, and at the Symposium Round Table. In total, 65 scientific reports (5 plenary lectures, 26 oral presentations and 34 posters), prepared by 146 contributors from 11 countries were presented. The main topics of the contributions and studied

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regions, described briefly in the paper, helped to outline different problems related to the studies and conservation of the coastal areas, to share some good practices and new methodological approaches, as well as to define priorities and discuss the future design of studies and activities in these exceptionally rich in biodiversity, but also severely threatened areas.

Key words: ecotone, fauna, flora, natural habitats, protected areas, threatened species, vegetation, wetlands, zoocoenoses

INTRODUCTION

This paper aims to summarize the work, topics and contributions of the First European Symposium *Research, conservation and management of biodiversity of European seashores RCMBS*, held from 8 to 12th May 2017 in Primorsko town, Bulgaria. The symposium was organized by OPIMOS and ECOPAN in cooperation with the Bulgarian Academy of Sciences, Faculty of Biology of Sofia University "St. Kliment Ohridski" and Primorsko Club Ltd.

The Organizing Committee of the symposium consisted of six members: Academic Nikola Sabotinov, long-standing Chairman of the Bulgarian Academy of Sciences, Prof. DrSc Dimitar Peev - IBER - Bulgarian Academy of Sciences, Mag. Elena Georgieva, chair of the NGO OPIMOS, Dr Stefan Peykov from ECOPAN, Prof. DrSc Maya Stoyneva-Gärtner - Faculty of Biology, Sofia University „St. Kliment Ohridski" and tit. Univ.-Prof. DrSc, Dr h. c. Georg Gärtner from the Institute of Botany of Innsbruck University. Their work was supported by the help of 16 members of the Symposium Advisory Board: Prof. Dr Francesko Maria Raimondo - University of Palermo, Italy, Prof. Dr Neriman Ozhatay - Istanbul University, Turkey, Prof. Dr Emilio Laguna - Administrative region of Valencia, Spain, Assoc. Prof. Dr Anna Ganeva - IBER - Bulgarian Academy of Sciences, Prof. Dr Valko Biserkov - IBER - Bulgarian Academy of Sciences, Prof. Dr Rumiana Mecheva - IBER - Bulgarian Academy of Sciences, Assoc. Prof. Tanyo Michev - IBER - Bulgarian Academy of Sciences, Prof. DrSc Boyko Georgiev - IBER - Bulgarian Academy of Sciences, Prof. Dr Svetlana Banceva - IBER - Bulgarian Academy of Sciences, Prof. Dr Mincho Anchev - IBER - Bulgarian Academy of Sciences, Prof. Dr Ekaterina Pavlova - University of Forestry - Sofia, Bulgaria, Prof. Dr Dimitar Pavlov - University of Forestry - Sofia, Bulgaria, Prof. Dr Aleksandar Tashev - University of Forestry - Sofia, Bulgaria, Prof. DrSc Vesela Bankova - Institute of Organic Chemistry - Bulgarian Academy of Sciences and Assoc. Prof. Dr Simeon Simeonov - Bioinform Consult LTD, Bulgaria. Acad. N. Sabotinov delivered the first speech at the official opening of the Symposium, outlined its aims and expected results, and cordially greeted all the participants.

RESULTS AND DISCUSSION

The main idea which served as a prelude to RCMBES, was to provide an opportunity to exchange important information in the field of the nature conservation of species and habitats from the coastal regions, which represent broad ecotones between land and water. In fact, the initial idea related the Symposium to the threatened dune habitats only. However, during the discussions among the members of the Organizing Committee, it became clear that such an approach will be quite one-sided, although theoretically these habitats could be discussed separately. In this way the idea was *bom* for a wide-spectrum scientific event, which would allow to create a more complex view of the biological systems. This idea found the full support from the members of the Advisory Board and it was decided that the Symposium should aim to: 1) Present the status of scientific approaches within the European coastal areas; 2) Discuss the role of biodiversity research in trans-border issues; 3) Bring together scientists, academics, practitioners with a view to strengthening and promoting the trans-border cooperation and this with municipalities; 4) Define the priorities concerning various aspects of conservation research and good practices. Logically, the following Symposium topics were announced: 1) Coastal area monitoring and assessment; 2) Coastal biodiversity impact and risk assessment; 3) GIS and remote sensing; 4) Flora and vegetation diversity; 5) Fauna and zoocoenoses diversity; 6) Natural habitats diversity; 7) Coastal area management; 8) Coastal natural resources; 9) Coastal biodiversity conservation; 10) Good practices (legislative, managerial, application, *etc.*); 11) Environmentally friendly municipalities practices; 12) Coastal environment; 13) Oceanology.

Almost all of these topics were discussed at the scientific sessions, during the field trip along the southern Bulgarian Black Sea coast and Strandzha Mt, and at the Symposium Round Table. The *Book of Abstracts*, supervised by N. Sabotinov as Editor-in-Chief with E. Georgieva and D. Peev as Editors, contained the main information presented in 65 scientific reports (5 plenary lectures, 26 oral presentations and 34 posters) prepared by 146 contributors from 11 countries (enlisted in the alphabetical order of their family names):

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The fundamental importance of the coastal regions for the research, conservation and management of the biodiversity has been world-wide recognized. Therefore, it was not surprising that the symposium was attended also by scholars who worked far away from the European borders, and far away from seashores as well (on reservoir banks, in mountains or fields and arable regions), and by researchers who went deep in the history of coastal structure and biodiversity through palynological-palynostratigraphical or paleontological studies (e.g. Boev 2017; Filipova-Marinova 2017).

A brief summary of the topics and regions discussed in the presentations could be traced in the text below. In accordance to the studied regions, starting from Europe in eastern direction, the contributions can be ordered in the following way: from the European Russian Arctic at White and Barents Seas (Kolesnikova 2017; Kolesnikova et al. 2017; Konakova & Kolesnikova 2017; Markovskaya et al. 2017; Sergienko et al. 2017), Northern Sea (Gulyaeva & Starodubtseva 2017) and Baltic Sea region (Andreev et al. 2017) to the Mediterranean European coasts (Asenov 2017; Domina et al. 2017; Laguna et al. 2017), then through the Black Sea coastal region (Abramova et al. 2017; Agafonova 2017; Bancheva 2017; Bancheva & Delcheva 2017; Boev 2017; Bogdan 2017; Broshtilova et al. 2017; Bryantseva 2017; Descy et al. 2017; Dimitrov & Vutov 2017; Doycheva et al. 2017a, b; Filipova-Marinova 2017; Gärtner et al. 2017; Kozhuharova 2017; Maximilian et al. 2017; Michev et al. 2017; Nikolova et al. 2017; Pavlova et al. 2017; Petrova & Vladimirov 2017; Petrova et al. 2017; Sadogurska 2017;

Stoyneva-Gärtner et al. 2017; Strat & Holobiuc 2017; Strat et al. 2017; Tashev et al. 2017a, b; Vinogradova & Bryantseva 2017; Vitkova et al. 2017; Yankova-Tsvetkova 2017; Zhelev & Aneva 2017), Caspian Sea coast (Dimeeva et al. 2017), Aral Sea (Bekniyaz et al. 2017), Persian Gulf and Gulf of Oman of the Indian Ocean (Alhaj 2017) to the Pacific Ocean shores of the Russian Far East (KuzMiNa 2017), and studies in more distant from the shores regions (Angelov et al. 2017; Aneva et al. 2017; Dogu et al. 2017a, b; Gagarina 2017; Holobiuc et al. 2017; Inelova et al. 2017a, b; Kostadinova et al. 2017; Nashar et al. 2017; Optasyuk & Lutska 2017; Pasheva et al. 2017; Vassilev et al. 2017).

Modern geomorphological terminology related to coastal regions and their development was presented by Zhelezov (2017), the necessity to assess the ecosystems and ecosystems services was outlined by Chihev (2017) and the concept of block organization of a water-terrestrial ecotone system, created to study the influence of the sea on the shore, was discussed by Novikova & Volkova (2017).

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Mapping of ecosystems using this concept and its role in assessment of the structure and dynamics of the ecosystems was exemplified on the basis of littoral ecotones of the Ural River delta and the Caspian Sea by Dimeeva et al. (2017). The peculiarity of the nature conservation through organization of micro-reserves was presented by Laguna et al. (2017) and exemplified by the positive pioneer experience of the Valencian Community in proposing and setting-up a network of Plant Micro Reserves (PMR) to protect small sites holding relevant rare, endemic or threatened wild plants. The environmental legislation as an example of *best practice* protected areas was discussed by Bogdan (2017) with the aim to protect the area where the Danube River flows into the Black Sea. The validation of multidisciplinary approach based on the common studies of flora, vegetation and fauna and updated with the help of advanced GIS technologies in assessment of coastal regions was presented by Domina et al. (2017) on the example of the Sicilian coast. The results of over 50 years of experience and practice offered differentiated forestry practices (the most appropriate types and technologies) to improve sustainability, adaptation capabilities and field protection forests efficiency, shown in the contribution by Broshtilova et al. (2017). The complex environmental monitoring related to the global climate change, natural hazards and technological risks was exemplified by Angelov et al. (2017). The state of excellence management systems in the United Arab Emirates, providing insights into the quality management systems in the Arab world, was presented by Alhaj (2017).

Flora and vegetation comprised an important focus in the coastal investigations and were presented from different points of view - starting from historical reviews (e.g. Bancheva 2017; Descy et al. 2017; Gärtner et al. 2017; Stoyneva Gärtner et al. 2017; Zhelev & Aneva 2017), running through descriptions of recent biodiversity of given regions and protected areas of both shores and seas (Bancheva & Delcheva 2017; Bryantseva 2017; Dimitrov & Vutov 2017; Gulyaeva & Starodubtseva 2017; Kozhuharova 2017; Kuzmina 2017; Markovskaya et al. 2017; Petrova & Vladimirov 2017; Sadogurska 2017; Sergienko et al. 2017; Tashev et al. 2017a, b; Vinogradova & Bryantseva 2017; Vitkova et al. 2017), to studies and conservation

of certain species (Asenov 2017; Doycheva et al. 2017a, b; Maximilian et al. 2017; Nikolova et al. 2017; Petrova et al. 2017; Strat & Holobiuc 2017; Yankova-Tsvetkova 2017) and description of natural habitats in protected areas (Dimitrov & Vutov 2017; Pavlova et al. 2017; Tashev et al. 2017a, b).

Flora and habitat diversity in riverwatersheds, mountain areas and other inland parts of Europe and Asia were in the focus of the studies presented by Aneva et al. (2017), Dogu et al. (2017a, b), Gagarina (2017), Inelova et al. (2017a, b), Kostadinova et al. (2017), Optasyuk & Lutska (2017), Vassilev et al. (2017), in some of which ethnobotanical and medical aspects (Nashar et al. 2017; Pasheva et al. 2017) or conservation of threatened plant species (Holobiuc et al. 2017) were outlined.

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From taxonomic point of view the abovementioned studies concerned algae (Bryantseva 2017; Descy et al. 2017; Gärtner et al. 2017; Sadogurska 2017; Stoyneva-Gärtner et al. 2017; Vinogradova & Bryantseva 2017), mosses (Kuzmina 2017), vascular plants (Abramova et al. 2017; Asenov 2017; Bancheva 2017; Bancheva & Delcheva 2017; Dimitrov & Vutov 2017; Dogu et al. 2017a, b; Gagarina 2017; Gulyaeva & Starodubtseva 2017; Holobiuc et al. 2017; Inelova et al. 2017a, b; Markovskaya et al. 2017; Nashar et al. 2017; Optasyuk & Lutska 2017; Pasheva et al. 2017; Pavlova et al. 2017; Petrova & Vladimirov 2017; Petrova et al. 2017; Sadogurska 2017; Sergienko et al. 2017; Strat & Holobiuc 2017; Tashev et al. 2017a, b; Yankova-Tsvetkova 2017; Zhelev & Aneva 2017) with special attention to medicinal plants (Doycheva et al. 2017a, b; Kozuharova 2017; Nikolova et al. 2017; Vitkova et al. 2017). Rare and threatened species were subjects in the contributions by Descy et al. 2017; Dogu et al. 2017a, b; Gärtner et al. 2017; Holobiuc et al. 2017; Maximilian et al. 2017; Petrova et al. 2017; Sadogurska 2017; Stoyneva-Gärtner et al. 2017; Strat & Holobiuc 2017; Tashev et al. 2017a, b; Vinogradova & Bryantseva 2017; Vitkova et al. 2017). Alien, invasive, harmful and toxic species were discussed in the reports by Abramova et al. (2017), Descy et al. (2017), Petrova & Vladimirov (2017), Stoyneva-Gärtner et al. (2017) and Vinogradova & Bryantseva (2017).

The biodiversity of lichens in coastal regions was reflected in the contributions of Andreev et al. (2017) and Markovskaya et al. (2017).

Fauna and zoocoenoses of coastal areas were topics in the contributions by Boev (2017), Kolesnikova (2017), Kolesnikova et al. (2017), Konakova & Kolesnikova (2017), Strat et al. (2017). From taxonomic point of view these studies concerned both invertebrates (Kolesnikova 2017; Kolesnikova et al. 2017; Konakova & Kolesnikova 2017) and different vertebrates (Boev 2017; Strat et al. 2017). The conservation of species and habitats of community importance, including flagship species was presented in particular by Strat et al. (2017). " J *

Assessment of general biodiversity (of plants, fungi and animals) and monitoring of wetlands were described in the contributions by Bekniyaz et al. (2017) and Michev et al. (2017), and the contribution of Agafonova (2017) provided important for monitoring data on hydro-chemical studies on a coastal lake and its main inflowing rivers.

The presented broadness of views, opinions and topics logically led to the recognition of the importance of the RCMBES symposium by different Bulgarian

media, who reflected its work in more than 70 issues and by local people and non-governmental organizations, who visited the scientific sessions and actively participated in the discussions. This joint work of local people and scientists was among the main peculiarities of the Symposium, since it has never been a common practice of big scientific events organized in Bulgaria. Most likely, this high public

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awareness was recognized early enough by the Symposium sponsors (enlisted in the Acknowledgments below), who, from the beginning, supported the idea of its organization in addition to the financing provided by OPIMOS.

It is not common to write scientific reports in an emotional style, but it is not possible to avoid mentioning of the friendly, non-formal collegial atmosphere during the whole event, starting with the welcome cocktail and the social dinner at the closure party. Frank discussions, sometimes with strong contradictive opinions, ran after the sessions in the hotel lobby or restaurant. The field trip provoked many spontaneous *wow* reactions by the symposium guests regarding the natural beauty of southern Bulgarian Black Sea coast and of Strandzha Mt, where many interesting plant species (incl. endemics) and habitats were seen. Most probably, the wonderful combination of scientific events and collegial exchange of experiences and ideas, provoked the participants to ask for *speeding-up* the work and time for the next meeting. In this regard, the delivery of the symbolical scientific relay from the Doyen of the Symposium - Assoc. Prof. Tanyo Michev to the youngest participant - the Ukrainian PhD student Sofia Sadogurska, should be taken as a symbol of the temporal scientific sustainability of RCMBES.

CONCLUSION

The main topics of the contributions and studied regions, described briefly in the paper, proved the rich biodiversity of the coastal areas, when regarded as broad ecotones between land and water. They helped to outline different problems related with their research and conservation, but also to share some good practices and new methodological approaches, as well as to define priorities and discuss the future design of studies and activities in these exceptionally rich in biodiversity, but severely threatened areas.

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