



Marine Biodiversity
Conservation Center
AQUARIUM BOKA

AdriBioPro2019 | 7-10 April
International Conference: | Kotor
Adriatic Biodiversity Protection | Montenegro

Book of Abstracts



INSTITUT ZA
BIOLOGIJU
MORA



ISBN 978-9940-9613-2-9

COBISS.CG-ID 3330896

DOI 10.5281/zenodo.2614428

International Conference
Adriatic Biodiversity Protection
AdriBioPro2019

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Institute of Marine Biology,
University of Montenegro

Kotor, Montenegro
2019

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THE CONFERENCE

The 2019 International Conference: Adriatic Biodiversity Protection – AdriBioPro2019 provided updated scientific, decision-making and policy-relevant information across a broad array of different Adriatic issues, marine biology and related scientific disciplines. Emphasis will be on how state-of-the-art research on Adriatic biodiversity protection, conservation of coastal and marine areas and sustainable use of marine resources can contribute to policy- and decision-making. Particular focus was put on the development opportunities which marine biotechnology can offer in the Adriatic. Organized to include plenary and breakout sessions covering both disciplinary and interdisciplinary perspectives, Conference results will be used in shaping future marine science priorities and policy in Montenegro and other Adriatic countries.

Background

The Institute of Marine Biology of the University of Montenegro is granted by the Norwegian Ministry of Foreign Affairs to implement a project “Marine Biodiversity Conservation Center “Boka Aquarium” (MonteAqua)” in cooperation with the Center for Fisheries and Biodiversity Conservation of Inland Waters, Institute of Biology and Ecology, Faculty of Science, University of Kragujevac. The International conference “Adriatic Biodiversity Protection” is final project event, dedicated to gather all relevant national and regional stakeholders and to secure closer regional cooperation in the Adriatic Sea region.

According to the UNEP, the Mediterranean Sea is subject to tremendous pressure from multiple human uses and climate change. Recent research results indicate the cumulative impacts of human activities in the Mediterranean, ranking it as a hotspot of marine biodiversity, and one of the most heavily impacted marine regions worldwide. One of the most intensely used and severely degraded regions of the Mediterranean is the Adriatic Sea. It implies a necessity of developing appropriate and effective policy-responses including adaptation actions, enhancement of resilience and implementation of mitigation activities. The Conference will address alterations of Mediterranean ecosystems, with particular focus on the Adriatic Sea and its biodiversity and analyse widespread conflict among marine users. By presenting the latest science, the Conference will facilitate, synthesize and summarize the science-policy dialogue.

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Presentation title

Significance of genotoxicity and toxicity evaluation of freshwater bodies

Abstract

Fish communities are excellent indicators of biological and ecological integrity due to their continuous exposure to water conditions. Freshwater biodiversity constitute a valuable natural resource but extensive pollution of freshwater can result in biodiversity decline. For that reason it is important to employ bioassays for purpose of detecting these conditions. In this work we monitored chub and bream species in 2 reservoirs, Uvac and Garasi, and 4 rivers: Dunav, Sava, Pestan and Beljanica. For assessment of metal and metalloids in fish tissues (liver, gills, gonads and muscle) we have used ICP-OES. The comet assay or single cell gel electrophoresis (SCGE) was selected as an *in vivo* genotoxicity assay, for measuring DNA damage in blood, liver and gills. Histopathological alterations were monitored in liver and gills. The high quality of Uvac water was confirmed by low values of DNA damage in all tissues compared to other sites. An analysis metals in tissues showed a high degree of their differentiation, as well as significant differences in the distribution of tissue elements between the sites tested. The highest concentrations of most of the analyzed metals were found in gills, liver and gonads, and the lowest in muscles at all sites. In chub, blood showed the lowest DNA damage compared to liver and gills, while in all breams DNA damage was the highest in blood cells, following gills and liver. Histopathological analysis performed on bream specimens on the Sava and Danube River revealed a higher degree of alterations in liver compared to the gills.

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Presentation title

Bioassays in assessment of environmental pollution

Abstract

Water pollution represents one of the main threats of global freshwater diversity. Untreated urban wastewaters are the source of both microbiological and chemical pollution. In exposed organisms, pollution affects different levels of biological organisation, from molecular to community level. Due to their role in aquatic ecosystems and vulnerability to pollution fish represent one of the key elements of ecosystem monitoring programs. Microbiological indicators of faecal pollution such as total coliforms, *E. coli* and enterococci are reliable indicators of the untreated urban wastewaters. They may be detected and quantified by fast and reliable enzymatic methods and most probable number (MPN) approach. Analysis of metals and metalloids concentrations in fish tissues indicate the exposure of fish to specific elements and can be used as a biomarker of accumulation. The single cell gel electrophoresis or comet assay is widely used in ecogenotoxicological studies for the assessment of the DNA damage as a biomarker of exposure to pollution. Histopathological alterations in fish tissues reveal changes at the middle level of biological organisation and are used as a biomarker of effect. Since each fish tissue responds differently to pollution it is recommended to perform these bioassays on multiple types of tissues, i.e.: blood, gills, liver, gonads, skin and muscle.

Analysis of different biomarkers response can give information about the early response of biota to pollution, before the changes in population structure and a decrease of individuals occur.