



WASWAC



Belgrade University
Faculty of Forestry

3rd Conference of the World Association of Soil and Water Conservation

Belgrade, August 22 - 26, 2016.



Ministry of Education,
Science and Technological
Development of the
Republic of Serbia



State Enterprise for
Forest Management
"Srbijasume" Belgrade



Serbian Chamber of
Engineers



Water Management
Institute "Jaroslav Cerni"



Forestry Institute of
Serbia



International Research and
Training Centre of Erosion and
Sediment, Beijing/China



Institute of Soil and
Water Conservation,
CAS/MWR,
Yangling/China



Soil and Water
Conservation Society



Chinese Society of
Soil and Water
Conservation

3rd Conference of the World Association of Soil and Water Conservation WASWAC

August 22 – 26, 2016
Belgrade, Republic of Serbia

Conference Abstracts

Publisher: University of Belgrade, Faculty of Forestry

Editor: Miodrag Zlatić

Editorial Board: Miodrag ZLATIĆ – University of Belgrade, Faculty of Forestry, Belgrade, Serbia

Stanimir KOSTADINOV – University of Belgrade, Faculty of Forestry, Belgrade, Serbia

Nada DRAGOVIĆ – University of Belgrade, Faculty of Forestry, Belgrade, Serbia

Editorial Office: Faculty of Forestry
Kneza Višeslava 1
11030 Belgrade
Serbia

Phone: +381 11 3053 990
Fax: +381 11 2545 485
e-mail: biblioteka@sfb.bg.ac.rs
www.sfb.bg.ac.rs

Organiser: University of Belgrade, Faculty of Forestry, Belgrade

Co-organiser: World Association of Soil and Water Conservation (WASWAC)

Technical Editor: Ivan Malušević, Siniša Polovina

Circulation: 300

Printing: Planeta print, Belgrade

ISBN: 978-86-7299-249-6

<i>Ludmila L. Frolova, Artur M. Husainov, Ivan S. Aponasevich</i> USING MARKER GENES AND PROTEINS FOR IDENTIFICATION OF FRESHWATER BIOINDICATORS.....	62
<i>Nenad Marić, Zoran Nikić</i> POTENTIAL OF NATURAL ATTENUATION PROCESSES IN ENVIRONMENTAL CONTAMINATION BY PETROLEUM HYDROCARBONS	63
<i>Sanja Manojlović, Tanja Dobrosavljević, Milena Gocić, Predrag Manojlović, Marko Milošević</i> TREND ANALYSIS OF ANNUAL WATER DISCHARGE AND SUSPENDED SEDIMENT LOAD IN THE JUŽNA MORAVA RIVER (SERBIA) 1958-2007.....	64
<i>Milislav Tomić, Miško Milanović, Veljko Perović, Tomislav Rikanović</i> THE ANALYSIS OF CHANGES LAND USE IN THE IMPACT ZONE OF THE SURFACE MINING OF LIGNITE USING METHODS OF REMOTE SENSING AND GIS (SETTLEMENT VELIKI CRLJENI, SERBIA)	65
<i>Grozdana Gajić, Nikola Živanović, Luka Vukić</i> INDICATORS AND DEGRADATION MECHANISAM OF LOESS SOIL	66
<i>Nissaf Karbout, Abdallah Shankiti</i> TOWARD SUSTAINABLE OASIS SYSTEM FARMING: CONVERTING DATE PALM WASTE INTO BIOCHAR TO IMPROVE SANDY SOIL QUALITY.....	66
<i>Ivan Novković, Slavoljub Dragičević, Nenad Živković, Radislav Tošić</i> VULNERABILITY ASSESSMENT OF THE JOŠANIČKA RIVER BASIN BY TORRENTIAL FLOODS AND FOREST FIRES.....	68
<i>Hua-li Pan, Ming-jian Hu, Guo-qiang Ou</i> ANALYSIS OF RAINFALL CHARACTERISTICS AND ITS RELATED DISASTERS OF SLAG DISPOSAL PIT OF A CERTAIN GOLD-COPPER DEPOSIT IN FUJIAN PROVINCE	69
<i>Shadananan Nair</i> SOIL AND WATER DEGRADATION IN THE DRIER ZONES: CHALLENGE TO FOOD SECURITY IN INDIA	70
<i>Zhiqi Wang, Shengli Guo</i> EFFECT OF RUNOFF AND SEDIMENT ON CO ₂ FLUX UNDER DIFFERENT SLOPE GRADIENTS AND POSITIONS IN SEMIARID LOESS PLATEAU OF CHINA	71

bioinformatics such as the Multiple alignments and Phylogenetic trees, and 3D modelling for proteins.

We analyzed 193 indicators Diatomae algae organisms from the V.Sladechek's list (1973). Here we perform the results of Multiple alignments and 3D models of 56 **rbcl** amino acid sequences available in GenPept (NCBI). A short unique (5-35) amino acid sequences were identified for 24 proteins with 49 unique variable sites of indicators Diatomae algae organisms which normally used as bioindicators of water saprobity.

Therefore, it allows us to use the antibodies for direct qualification and quantification of the indicator Diatomae algae species in the samples of water using the **rbcl** proteins and together with **CO1** proteins of water indicator invertebrate species make the conclusion of ecological state of the water resources.

Key words: water resources, marker genes, marker proteins, bioindicators, 3D models.

POTENTIAL OF NATURAL ATTENUATION PROCESSES IN ENVIRONMENTAL CONTAMINATION BY PETROLEUM HYDROCARBONS

Nenad Marić^{1*}, Zoran Nikić¹

¹ Department of Ecological Engineering for Soil and Water Resources Protection,
Faculty of Forestry, University of Belgrade, Serbia
nenad.maric@sfb.bg.ac.rs*

Once released in the environment, petroleum hydrocarbons can be long-term sources of contamination. The main advantage of bioremediation compared to conventional remediation treatments is its reduced cost. Natural attenuation is the passive bioremediation approach that relies on natural processes in the reduction of contamination. This study provides insight into the natural attenuation processes in groundwater in the alluvial deposits of the Zapadna Morava River (the site of historical contamination by kerosene in Vitanovac, Kraljevo, Serbia). Monitoring was performed in the direction of groundwater flow movement, downgradient from the source of contamination. Groundwater samples were analyzed for the following parameters: total petroleum hydrocarbons (TPH), O₂, NO₃⁻, Mn, Fe and SO₄²⁻. TPH concentrations declined in groundwater across the site, and were accompanied by increasing concentrations of electron acceptors (O₂, NO₃⁻, SO₄²⁻) and decreasing concentrations of metabolic products of biodegradation (Mn, Fe). The observed trends provide strong evidence of the activity of different biodegradation

mechanisms at this site (aerobic respiration, nitrate reduction, reduction of manganese (IV), reduction of iron (III) and sulfate reduction). The results obtained confirm the natural occurrence of aerobic and anaerobic biodegradation mechanisms in this phreatic aquifer contaminated by petroleum hydrocarbons 20 years ago. However, use of natural attenuation as a cost-effective remediation alternative depends on its capacity to ensure protection of public health, safety and the environment.

Key words: petroleum hydrocarbons, groundwater, natural attenuation, biodegradation

TREND ANALYSIS OF ANNUAL WATER DISCHARGE AND SUSPENDED SEDIMENT LOAD IN THE JUŽNA MORAVA RIVER (SERBIA) 1958-2007

Sanja Manojlović^{1*}, Tanja Dobrosavljević¹, Milena Gocić², Predrag Manojlović¹,
Marko Milošević³

¹University of Belgrade – Faculty of Geography, Belgrade, Serbia

²University of Niš – Faculty of Science and Mathematics, Department of
Geography

³Geographical Institute „Jovan Cvijić“

*sanjam@gef.bg.ac.rs

Global climate change and changes caused by human activity have greatly changed river systems. Many studies have looked at the causes of variability in suspended sediment load on world's largest rivers where different trends in discharge and sediment transport were noted. This paper analyses the trend of suspended sediment load transport (Qs) on the hydrological profile Mojsinje. The data on daily values of discharge (Q) and suspended sediment concentration (SSC) for the period 1958-2007 were measured by Republic Hydrometeorological Service of Serbia. The trend of suspended sediment load transport was determined using the nonparametric Mann-Kendall test and Pettit test. The results showed that the mean annual suspended sediment load was 2.47×10^6 t (160.5 t/km²/year) and ranged from 0.04×10^6 t (2.6 t/km²/year) to 9.85×10^6 t (640.3 t/km²/year) for the period 1958-2007. The average decrease of suspended sediment was 5.15 t/km²/year which show statistical significance at the level of 0.001. The Pettit test detected 1985 as a change point in suspended sediment load, which has since dropped by about 71%.