

AKADEMSKI SPELEOLOŠKO – ALPINISTIČKI KLUB
STUDENT SPELEOLOGICAL AND ALPINISTIC CLUB

KNJIGA APSTRAKATA

9. SIMPOZIJUM O ZAŠTITI KARSTA

9TH SYMPOSIUM ON KARST PROTECTION

ABSTRACT VOLUME

Beograd, 2019.

Knjiga apstrakata 9. Simpozijuma o zaštiti karsta

Abstract volume of the 9th Symposium on karst protection

IZDAVAČ / PUBLISHED BY

Akademski speleološko – alpinistički klub (ASAK)
Studentski trg 16, Beograd

UREDNIK / EDITOR

Jelena Čalić, Ana Mladenović, Ivana Budinski

TEHNIČKA PRIPREMA / PRE-PRESS

Ana Mladenović

DIGITALNO IZDANJE

ISBN 978-86-907923-4-4



Akademski speleološko – alpinistički klub (ASAK) iz Beograda po deveti put organizuje Simpozijum o zaštiti karsta, 1 – 3. novembra 2019. godine u Beogradu. Suorganizatori Simpozijuma su Društvo geomorfologa Srbije, Geografski institut "Jovan Cvijić" SANU, Komisija za karst Srpskog geološkog društva i Savez speleoloških organizacija Srbije.

Student Speleological and Alpinistic club (ASAK) from Belgrade organizes the Symposium on karst protection for the ninth time, from November 1st to 3rd 2019 in Belgrade. Co-organizers of the Symposium are Serbian Society of Geomorphologists, Geographical Institute "Jovan Cvijić" SASA, Karst Commission of the Serbian Geological Society and Federation of Speleological Organizations of Serbia (SSOS).

Organizacioni odbor / Organizing Committee:

Ana Mladenović (ASAK i Rudarsko-geološki fakultet Univerziteta u Beogradu)
Predrag Stošić (ASAK)
Gojko Paskota (ASAK)
Nikola Zbiljić (ASAK)
Mihajlo Mandić (ASAK)
Selena Blagojević (ASAK)
Vojkan Gajović (ASAK)

Dragana Đurić (Rudarsko-geološki fakultet Univerziteta u Beogradu i Društvo geomorfologa Srbije)

Marina Čokorilo Ilić (Rudarsko-geološki fakultet Univerziteta u Beogradu)

Branka Pejić (Institut za biološka istraživanja "Siniša Stanković" Univerziteta u Beogradu)

Naučni odbor / Scientific Committee:

dr Jelena Čalić (ASAK i Geografski institut "Jovan Cvijić" SANU)

dr Ana Mladenović (ASAK i Rudarsko-geološki fakultet Univerziteta u Beogradu)

Ivana Budinski (ASAK i Institut za biološka istraživanja "Siniša Stanković" Univerziteta u Beogradu)

prof. dr Veselin Dragišić (Rudarsko-geološki fakultet Univerziteta u Beogradu)

prof. dr Igor Jemcov (Rudarsko-geološki fakultet Univerziteta u Beogradu)

prof. dr Zoran Stevanović (Rudarsko-geološki fakultet Univerziteta u Beogradu)

prof. dr Vesna Ristić Vakanjac (Rudarsko-geološki fakultet Univerziteta u Beogradu)

dr Aleksandar Petrović (Geografski fakultet Univerziteta u Beogradu)

prof. dr Zoran Nikić (Šumarski fakultet Univerziteta u Beogradu)

dr Dragan Antić (Biološki fakultet Univerziteta u Beogradu)

dr Dragan Nešić (Zavod za zaštitu prirode Srbije)

mr Milovan Milivojević (Geografski institut "Jovan Cvijić" SANU)

Cave phototrophs and their relation to the rock substratum

Sladana Popović¹, Kristina Šarić², Jelena Krizmanić³, Danijela Vidaković⁴, Violeta Gajić², Milka Vidović¹, Gordana Subakov Simić³

¹ – University of Belgrade, Scientific Institution, Institute of Chemistry, Technology and Metallurgy, National Institute, Center of Ecology and Technoeconomics, ² – University of Belgrade – Faculty of Mining and Geology, ³ – University of Belgrade – Faculty of Biology, Institute of Botany and Botanical Garden 'Jevremovac', ⁴ – University of Belgrade, Scientific Institution, Institute of Chemistry, Technology and Metallurgy, National Institute, Department of Chemistry; e-mail: spopovic.bio@gmail.com

Aerophytic phototrophs (cyanobacteria and algae) represent special group of microorganisms capable to inhabit various substrates exposed to air, as long as the conditions for their settlement (substrate properties) and development (ecological parameters) are favourable. Rock surfaces are often susceptible to colonization of microorganisms, whether they are manmade or natural (exposed or hypogean – caves). Phototrophic biofilms that develop on rock substrates in caves (walls, ceilings, stalactites, stalagmites and other cave formations) are very common at naturally or artificially illuminated sites. Even though their proliferation is triggered by light and ecological/microclimatic parameters, interactions with the substratum still remain largely unknown. It is evident that substrate properties play an important role in settlement of these microorganisms and initiation of biofilm development, but further, it is uncertain to what extent contributes to their growth. Generally, rocks are composed of many minerals that can be directly absorbed by cyanobacteria and algae when dissolved in water. For the purpose of this study, phototrophic microorganisms (cyanobacteria and algae) from biofilms developed on rock substrates were explored and petrographic analysis was performed in 15 Serbian caves. Considering phototrophs, 4 divisions (Cyanobacteria, Bacillariophyta, Chlorophyta and Xanthophyta) were recorded, and considering petrographic analysis, examined samples showed the domination of limestone with 5 different varieties recognized. The relationship between phototrophs and limestone varieties (divided due to different petrographical characteristics) was represented using PCA. Recrystallized, organogenic, microsparitic, micritic and clastic limestone were all separated along first PCA axis. This trend may be the consequence of different physical characteristics of these limestone types, such as porosity. However, certain phototrophic groups were connected to certain varieties, i.e. Bacillariophyta showed positive correlation with clastic limestone, less with microsparitic and micritic limestone, while Cyanobacteria were correlated to the other two limestone types. Chlorophyta and Xanthophyta did not have clear separation according to the substrate.



ISBN 978-86-907923-4-4