

## The Rufford Foundation Final Report

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Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to [jane@rufford.org](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

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Grant Recipient Details	
Your name	Nedim Jukić
Project title	Research and Contribution to the Conservation of Pezizales (Fungi) in Bosnia and Herzegovina
RSG reference	13188-1
Reporting period	April 2016 – May 2017
Amount of grant	£4985
Your email address	nedim@mycobh.com
Date of this report	30.05.2017.

**1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.**

Objective	Not achieved	Partially achieved	Fully achieved	Comments
<p>1. Organise field research and data gathering in many different parts of Bosnia and Herzegovina</p>				<p>In total we have organised 23 field research all around Bosnia and Herzegovina in different periods of the year.</p> <p>We have registered at least few or solid number of findings from the following areas: Donji Vakuf (River Vrbas and Oboračka), Livanjsko karst field, mountain Igman (Javornik), mountain Visočica, NP Una (Bihać, Bosanska Krupa) and River Bliha (vicinity of Sanski Most), boreal forest at Nišići &amp; Čevljanovići plateau, river Trstionica, and villages Vukanovići &amp; Zagrađe nearby Kakanj, mediterranean rivers Bregava and Buna, area around pristine forest Janj (Šipovo), river Pliva, different localities around city of Olovo, coastal parts of Bosnia and Herzegovina (city of Neum, Vranjsko field, village Moševići and Klek peninsula), river Idbar near Konjic. In June 2017 we are planning to organise two more expeditions (one in the eastern territories of B&amp;H, and other one on mountain Lisina in the vicinity of Mrkonjić Grad).</p> <p>As previously planned, we have managed to organise field research in numerous parts of Bosnia and Herzegovina with different and unique type of vegetation and geological components.</p> <p>Due to the lack of time we didn't succeed to organise field trips in as many different parts of B&amp;H as we have first intended.</p> <p>Northern alluvial territories of Bosnia and Herzegovina (Posavina) are now least explored part. We will definitely</p>

			<p>work on this issue in the future and do our best to change this and to gather some valuable data.</p> <p>Samples from all mentioned localities are microscopical analysed and registered into Amateur Mycological Society Database - FAMU (habitat and ecology, date, leg. &amp; det., GPS coordinates and other important data).</p>
<p>2. Create preliminary checklist and publish comprehensive book about <i>pezizalean</i> Fungi in Bosnia and Herzegovina</p>			<p>Preliminary checklist of Pezizales in Bosnia and Herzegovina have been created. This list includes all findings recorded during implementation of this project, and aggregate data of all previous results/findings exported from Amateur Mycological Society Database (FAMU).</p> <p>In determination process all findings have been microscopical analysed and treated with appropriate chemical reagents. Vital taxonomy principles were utilised. The most important information (coordinates, elevation, botanical notes, etc.) were recorded for every single species/finding and all findings (exsiccates) have been registered into FAMU (Amateur Mycological Society Database).</p> <p>At the end of project activities comprehensive book about Pezizales in Bosnia and Herzegovina have been published. 128 species of Pezizales are presented (13 families) with short taxonomical notes, relevant ecology, habitat, distribution pattern, endangerment level and risk assessment, and plans and suggestions for appropriate conservation measures.</p> <p>At the end relevant IUCN categories have been suggested for every single evaluated species. Most of the species presented in this book are new for mycobiota of Bosnia and Herzegovina. Some of them are quite rare and very endangered globally,</p>

			<p>and some are very common and widespread.</p> <p>This book represents very solid platform for future project of making Red Lists supplements and quite decent base for Red Book of Fungi in Bosnia and Herzegovina. Local authorities will be advised to adopt some of IUCN categories and risk assessments for certain species through official documents in order to secure adequate level of protection. Book will be distributed free of charge mainly to all relevant stakeholders (local authorities, society members, professors, faculties, high schools, similar society, partners and experts from abroad, etc.). Small quantities of book copies will be given as a benefit for a registration fee when someone wants to become a member of our society. Total circulation of book is 200 copies.</p>
<p>3. Raise public awareness about important role Pezizales generally have</p>			<p>There is clearly noticeable progress and positive feedback on this goal. Before this project only few people in our country know what Pezizales actually are, not to mention facts about their important role in different kind of ecosystems.</p> <p>Thanks to Rufford Foundation support we have managed to raise awareness about pezizalean fungi significantly. On our official web page and Facebook page we publish numerous interesting facts and information about our field researches in Bosnia and Herzegovina and generally about Pezizales fungi (how to recognise them, what their morphology looks like, what kind of ecology do they prefer and what is their endangerment status). News and updates have been published sometimes almost on weekly basis.</p> <p>Public awareness was raised also through two educational lectures and all relevant stakeholders were</p>

			<p>included. Distribution of promo leaflets was part of this activity as well. We promote our project and introduce pezizalean fungi to local community at European Researchers' Night 2016 in Sarajevo too. Distribution of published book about Pezizales in Bosnia and Herzegovina will improve public awareness significantly.</p> <p>At the end of project we talked with representatives of Public Broadcasting Service of BiH and probably we will shoot some documentary about fungi and endangered habitats this summer. We will probably have TV promotion of our book too.</p>
<p>4. Define Important Fungal Areas (IFA) and promote protection of this areas over local Authorities</p>			<p>In the book "Gljive reda Pezizales u Bosni i Hercegovini" we proposed proclamation of seven larger IPA/IFA territories. Two of this five areas have already status of protected areas (NP Sutjeska &amp; PA Bijambare). It is very important to emphasize that these suggestions represents relevant starting point for one of the most important long-term upcoming process. Defining other Important Fungal Areas will be top priority in our future activity and projects. Four smaller territories are also considered as IPA/IFA areas in the book due to specific climate and vegetation zone as well as for findings of very rare and globally endangered species of fungi.</p> <p>We didn't manage to succeed influence over local authorities as we first intended. Some representatives from different public and environmental institutions take part in our educational lectures and book promotion where importance of defining IPA/IFA was emphasise.</p> <p>We will distribute books together with official letter to all relevant environmental institution and ministry in our country with intention to introduce them with our works, results, project outcomes and initiative for</p>

			<p>conservation of certain important areas. Results presented in the book should be also used for supplement of Red List in Federation of B&amp;H and in Republic of Srpska as well.</p> <p>Initiative for IPA/IFA areas will not be ended here. We will definitely continue to promote importance of proclamation of these areas in preservation and conservation of highly endangered fungi.</p>
5. Leaflet and promo T-shirt distribution			<p>In order to raise public awareness about endangered pezizalean fungi, we have printed 300 leaflets. These leaflets are distributed on four occasions. We have taken part at European Researchers' Night 2016 in Sarajevo and distribute promo leaflets to all visitors who came to visit our stand. Afterwards, two additional educational lectures were held and apart from presentation every participant had opportunity to introduce himself with project goals and outcomes throughout these leaflets, as well as with slightly delicate role pezizalean fungi do generally have. 20 promo t-shirts were also printed. We gave these t-shirts to project partners, participants and to local guides.</p>
6. Publish at least one scientific work			<p>Scientific work or original scientific article is not published yet, but is approved and accepted by editorial board in local scientific journal and will be published very soon. Two globally rare and endangered species of Pezizales are presented in this article (<i>Peziza montirivicola</i> and <i>Trichophaea flavobrunnea</i>), their morphology, ecology and distribution is briefly discussed.</p> <p>Adequate IUCN categorisation is proposed for both species.</p> <p>Article will be published in Journal of Faculty of Forestry from Banja Luka. Confirmation or approval note is delivered together with final report.</p>

**2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).**

Spring season 2017 was quite bad for fructification of many pezizalean species. In this period of year we didn't have successful field research as we have planned. Research of vernal families Discinaceae and Morchellaceae could not be conducted properly due to the lack of findings.

Main fructification season for most of pezizalean fungi could not be cover in 2017. In the same period in 2016 (July-Sep) most of the pezizalean fungi have been recorded.

In summer/autumn 2016, due to the numerous findings, one of the difficulties was also time needed for microscopical analysis of every recorded species. At the end we managed to deal with this and to provide relevant quantity of important taxonomical results and distributional patterns as well.

**3. Briefly describe the three most important outcomes of your project.**

Obtain relevant scientific data and representative results was one of the most important goals of this project. We have manage to succeed this by publishing comprehensive book about Pezizales in Bosnia and Herzegovina.

This way we provide some important mycological information about species risk assessment and its conservation status. Supplement of current version of Red List of Fungi in FBiH & Republic of Srpska is needed and all new information publish in our book could be used for updating these two strategic documents. We will introduce local Authorities with these facts and every relevant public institution will get publication copy.

Other important outcome of our project is fact that we have started initiative about defining Important Fungal Areas (IFA/IPA). Proclamation of seven larger and four smaller areas is recommended. Areas are define by using relevant criteria by Anderson, S. (2002). Most of these territories are under significant amount of pressure and negative anthropogenic influence. Deforestation and habitat fragmentation rates are increased. It is necessary to properly adopt conservation plans and to protect most important fungal areas in Bosnia and Herzegovina if we want to preserve some highly endangered species of Pezizales, their habitat, or fungi in general.

We will continue to promote our results and introduce all relevant local authorities with recommended IFAs. Our main goal is to have at least one protected areas, mainly based on facts that it represents habitat for locally or globally endangered species or specific type of habitat of enormous botanical/mycological importance, in not too distant future

Raising public awareness is the last but not the least outcome of our project.

As already stated, before this project a few people in Bosnia and Herzegovina barely knew some basic facts about pezizalean fungi. Through implementation of certain project activities we have managed to introduce some of the local community with ecological importance of these fungi.

Educational lectures, reports from our field research published on our web and facebook page, media campaign, promo leaflets, scientific poster, books, participation at European Researchers' Night 2016 and other project activities help us to present some of the interesting facts and level of endangerment of quite diverse pezizalean fungi in Bosnia and Herzegovina.

We are looking forward for the new young scientists interested in studying mycobiota in our country.

**4. Briefly describe the involvement of local communities and how they have benefited from the project (if relevant).**

During project activities we have organised two educational lectures and exposures for members of local community. One of the lectures have been organised for students of Faculty of Natural Science and Mathematics from Sarajevo accompanied with all other interested parties (local authorities, official representatives of public environmental sector, members of Amateur Mycological Society from Sarajevo, etc.). Other lecture and project presentation was held in one of the high schools in Sarajevo (First gymnasium).

Apart from this we have taken part in the European Researchers' Night 2016 (Sarajevo) and presented our project and its aims to local community. The number of visitors and their involvement exceed our expectation.

Additionally, book promotion will be held very soon and many representatives from local community will take part. All interested parties will be introduced into ecology, endangerment and conservation of presented species.

**5. Are there any plans to continue this work?**

Yes, definitely. We will continue with mycological field research in different parts of Bosnia and Herzegovina and with database update on everyday basis. Main preoccupation of our field research will be still pezizalean fungi and important ecological role they do generally have. Our aim is to continue with publishing relevant scientific data (articles) about this group of fungi and to raise awareness about their immense importance.

Discovering and protecting highly endangered and rare species of Pezizales will be one of top priority. Through these activities we will promote importance of adequate conservation measures and fact that is really necessary to define Important Fungal Areas (IFA).

We will try to start initiative for proclamation of certain suggested areas as IFA/IPA areas together with other relevant NGOs. Consolidation of valuable data from different biological sciences is needed.

We will also try to raise public awareness through documentary we are planning to shoot in the second half of this year. Documentary will be about pezizalean fungi and fungi in general, their ecological role, level of endangerment and conservation strategies. Cooperation with Public Broadcasting Service is quite possible.

**6. How do you plan to share the results of your work with others?**

Most of the project results together with conservation plans and suggestions is presented in the book about pezizalean fungi (circulation 200 copies).

The book will be free of charge and distributed to all relevant stakeholders, authorities, in schools and on faculties. Electronic version of this book can be downloaded on our web site [www.mycobh.com](http://www.mycobh.com) and from RSGF web page as well.

A few very important and highly endangered species of Pezizales will be presented in the original scientific work published in journal of Faculty of Forestry from Banja Luka. Guidelines for their adequate conservation will be given.

All other data and interesting facts are or will be presented and share to local community on our web site.

**7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?**

Grant was used over period of 13 month (from April 2016 to May 2017). When we first planned project it supposed to last for 18 months (we have intention to include two main fructification season of pezizalean fungi).

Later, we have reorganize our project activities and finished with its implementation on time (13 months). Still, we have book promotion in June and we will send confirmation note when we finished with this activity. Scientific article will be sent as soon as it being published too.

**8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.**

Item	Budgeted Amount	Actual Amount	Difference	Comments

DSLR Photo Camera with macro lens	1270	1195,30	74,70	We get better prices for DSLR Photo Camera and macro lens.
Laptop	475	599,68	-124,68	Differences were compensated from other items.
Project T-shirts	100	218,19	-118,19*	We have printed better quality project T-Shirts. Differences is secured by Amateur Mycological Society.
Fuel costs	545	516,56	28,44	
Accommodation (field trips and guests)	505	475,61	29,39	
Chemical reagents and supplies	70		70	We didn't buy any additional chemicals. Available quantities of all necessary chemical reagents in private collections were sufficient.
PVC bags for exsiccates	40		40,00	We didn't buy any additional PVC bags for exsiccates. Available quantities of PVC bags in private collections were sufficient.
Roll-up banner for lectures	70	64,04	5,96	
Leaflets, posters and promo materials	160	161,29	-1,29	Differences were compensated from other items.
Presentation rentals	120	84,55	35,45	We manage to get extra discount for renting equipment and lecture room as a type of support from Faculty of Mechanical Engineering.
Costs for final presentation (snacks and beverages)	100	100		This amount will be spent on snack and beverages for book promotion as soon as book have been printed and promoted (In mid-June).
Website - Pezizales of Bosnia and Herzegovina	200	202,73	-2,73	Differences were compensated from other items.
Honorarium for local guides	130	89,20	40,80	We didn't engage as many local guides as we first thought. On certain occasions, in areas with minefields, we used help from our friends and acquaintances all over the country.
Printing book	1400	1200,16	199,84	We manage to get better offer from other company (200 pcs of book, 215 pp in colour).
Honorarium for reviewing		202,73	-202,73	Differences were compensated from other

				items.
Proofreading		60,82	-60,82	Differences were compensated from other items.
ISBN book fees		32,44	-32,44	Differences were compensated from other items.
<b>Total</b>	5185	<b>5203,30</b>	<b>-18,30</b>	Basically we have spent extra 118, 19 GBP funded by Amateur Mycological Society (T-Shirts). In total 99, 89* GBP from RSGF approved amount is unspent.

\* Additional 118,19 GBP for project t-shirts is funded by Amateur Mycological Society.

\* If you agree, 99, 82 GBP will be spent for conducting more field research (fuel costs). This additional field research will be organised in June and July as previously planned by project activities.

### 9. Looking ahead, what do you feel are the important next steps?

One of the most important goal is to make strong influence over the local authorities to include all relevant data about endangered species in the upcoming Red Book of Fungi in Bosnia and Herzegovina. In order to properly conserve most threatened species, all threatened species of fungi must find place in this kind of strategic document. Our data should be used also for the revision of Red List of Fungi in Federation of Bosnia and Herzegovina and in Republika Srpska as well.

It is very important to continue with publishing all relevant data and study about fungi ecology, distribution and their endangerment in Bosnia and Herzegovina. Together with conservation of fungi, protection of most sensitive type of habitats should be provided. Bosnia and Herzegovina has a future task to protect many more biodiversity hotspots and valuable natural areas in order to fulfil specific European Union requests. Our recommendation of IFA/IPA areas in both entity should be discussed and considered.

### 10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?

Yes. We have use Rufford Foundation logo on leaflets, scientific poster, our web page [www.mycobh.com](http://www.mycobh.com) and facebook, on promotional T-shirt and on the cover page of the published book about pezizalean fungi (please see documents from previously sent reports).

Circulation of printed book is 200 copies. It will be distributed to local authorities, students, pupils, proffesors and others, so additional publicity for Rufford, apart from web page and social media campaign, will be obtain.

## 11. Any other comments?

I would like to thank Rufford Foundation for encouraging our idea and for recognising potential scientific and conservation value of our project. Without your support we wouldn't be able to realise this very important project and we wouldn't be able to create preliminary list of endangered pezizalean fungi as well as to recognize most threatened type of their habitats.

We are looking forward for something similar in the future and we would appreciate greatly if Rufford Small Grant Foundation continue to support our activities.



Book cover: "Gljive reda Pezizales u Bosni i Hercegovini"