

## 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	
<b>Your name</b>	Anna Moldovan
<b>Project title</b>	Beetle communities and their conservation in steppe areas of Republic of Moldova
<b>RSG reference</b>	17692-1
<b>Reporting period</b>	August 2015 – August 2016
<b>Amount of grant</b>	5000
<b>Your email address</b>	<a href="mailto:anna.moldovan@yahoo.com">anna.moldovan@yahoo.com</a>
<b>Date of this report</b>	11.21.2016

**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
Creating an updated inventory of beetle species in steppe areas of the Republic of Moldova			✓	During project implementation, beetle species from five localities from steppe areas of the Republic of Moldova were collected. As result of provided inventory, the list of beetle species occurring in steppe areas was created.
Estimation of beetles' diversity (abundance, dominance, species richness, occurrence) using ecological indices (alpha, beta and gamma)			✓	Collected specimens were identified and the most abundant species were highlighted, also for each locality the constancy, dominance and ecological significance of beetle assemblages were assessed. Applying the ecological indices, the species richness was revealed and ecosystems' status and degree of human impact were evaluated.
Revealing of rare and endangered species of beetles			✓	Using IUCN criteria, the list of rare and endangered coleopteran species occurring in steppe areas of the Republic of Moldova was established.
Training for the local population including administration staff and counselor of nature protection areas and students		✓	✓	Meetings with local communities, authorities and officers of all investigated localities were conducted to rise the attention to the biodiversity conservation issues of Balti and Bugeac steppe areas. Workshops in schools were performed. Informative and

			educational materials were disseminated among students of Moldova State University.
Preparation of publicity and advisory materials (booklet and research papers)		✓	<p>Obtained results were presented at the International Scientific Conference of PhD students "Trends in contemporary science development: visions of young researchers", V<sup>th</sup> edition, May 25, 2016, Chisinau, Republic of Moldova, oral presentation, plenary session and <i>The Eighth International Zoological Congress of "Grigore Antipa" Museum (CZGA 2016)</i>, November 16<sup>th</sup>-19<sup>th</sup> 2016 Bucharest, Romania.</p> <p>Publicity and advisory materials (booklets) were prepared and distributed among local community and authorities.</p> <p>Scientific papers containing detailed analyses are in progress.</p>

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

The team of the project didn't expect to meet such difficulties in purchasing reagents needed for DNA analysis. The price for the reagents was two times higher than budgeted amount. On the other hand, DNA techniques allow us to analyse poorly studied groups of coleopterans as flea beetles and other taxonomic groups. To overtake this obstacle team decided to save money from other positions as for example car rental or driver remuneration and use this amount for purchasing the reagents. The changes in budget didn't affected the number of collections days, localities sampled or collecting effort undertaken by the team. Moreover, we managed to conduct two supplementary trips reducing the amount of days spent for a trip, thus improving our sampling.

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

- ✓ The fauna of beetle species in steppe areas of the Republic of Moldova was revealed and a database with geographical coordinates was created. Also, a list of threatened species occurring in steppe areas was created aligning to the main provisions of the National Programme on the Establishment of the National Ecological Network for 2011-2018.
- ✓ The status of ecosystems and degree of human impact were assessed based on species diversity, their assemblages and trophic preferences; also, based on species richness and unicity the most important steppe sites for biodiversity conservation were highlighted for assigning them a status of protection, also in correspondence with Chapter III, section 14, paragraph 2 and 3 of the National Programme on the Establishment of the National Ecological Network for 2011-2018.
- ✓ Public awareness and understanding regarding environmental impacts and risks resulting from the soil use that threatens the environmental quality and the biodiversity was risen in correspondence with Specific Objective E of the Strategy on Biological Diversity of the Republic of Moldova for the years 2015-2020.

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

During the project period were organised meetings with local authorities of all sampled localities. Representatives of administration actively involved in discussions related to biodiversity conservation issues of Balti and Bugeac steppe areas. They also supported the project team in organizing and conducting workshops with local population including young generation aimed to support public awareness and understanding regarding environmental impacts and risks resulting from exploitation of the resources provided by steppe ecosystems. The topic was also discussed with bachelor and master students. Materials shared during project period will serve continuously for educational purposes. Population got acknowledged with the unicity of steppe ecosystems, the invaluable services offered to sustain the agricultural activities and importance of conservation measures to protect remaining patches of untouched steppes.

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

The present research is a first attempt to uncover the insect diversity in the steppe regions of the Republic of Moldova. Obtained results confirmed our expectation that there are important biodiversity "hotspots" within steppe biome in the boundaries of our country. We will continue our work towards rising attention of the administration, officers and local population on the priority of the biodiversity conservation

measures in steppe region through providing educational materials, organizing meetings and seminars.

We intend to continue work on revealing the insect assemblages of the steppe ecosystems of the Republic of Moldova through extending the number of sampling localities for a better coverage of the steppe region. Also, we plan to use additional collecting methods to extend the range of insect groups. Thus, we will improve database and highlight the most important areas to be conserved as natural reserves within the National Ecological Network connected to European Ecological Network.

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

1. The project results (final detailed report, recommendations regarding steppe regions that should be subject to conservation measures) will be submitted to the Ministry of Environment, universities and relevant research institutions within Republic of Moldova for further discussions. The data will serve for achieving the goals of the Strategy and the Action Plan on Biological Diversity of the Republic Moldova for the years 2015-2020 which aims expanding the surface of conserved habitats paying special attention to steppe ecosystems which are insufficiently protected within the country.
2. Data revealed due to project implementation will be used in educational purposes.
3. Information regarding steppe conservation issues will be further disseminated through network of NGOs.
4. The obtained results will be published in scientific journals and in magazines and newspapers for general public.
5. The outcomes of the project will be made available to large public through social media.

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

The Rufford Foundation Small Grant was used during August 2015 – November 2016 period. The timescale was shifted and extended in comparison with the project approved (with activities planned to be held during May 2015 - April 2016) due to getting funds from RSG Foundation in August 2015. Because of this sampling period was shifted over winter season to next collecting season (spring-beginning of summer 2016) with approximately 7 months. Sampling of insects was conducted during August – September 2015 and May-June 2016 comparative to what was planned (May-July and September 2015). This caused the delay in obtaining, analyzing data and submitting the final report.

**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
Purchase GPS	200	183	17	The price for GPS was at a special price offer.
Purchase PureLink® Genomic DNA Kits 1x50 un.	168	153.7	14.3	Due to the differences in exchange rates and lack of distributors for requested reagents, the price for kits was too high, so team decided to decrease the quantity of reagents purchased to have the full list needed for DNA analyses.
Primers 4 pairs	100	215.9	-115.9	Due to the factors mentioned above, the price for the reagents was double to the budgeted amount. We needed the whole list of the primers, so the team decided to save money from car rental and driver remuneration and use them for acquiring reagents for molecular analyses.
AmpliTaq® 360 DNA Polymerase 100 un.	65	116.9	-51.9	Team used money saved from car rental and driver remuneration for acquiring reagents.
QIAprep Spin Miniprep Columns (100 spin columns)	60	0	60	Team decided to refuse buying QIAprep Spin Columns to save money for other reagents. DNA purification was conducted using the reagents available from other projects.
BigDye® Direct Cycle Sequencing Kit, 2x24 un.	267	911.7	-644.7	The reagent is not widely used in Republic of Moldova, that's why the price was so high. Requested amount of money was covered from other positions.
BigDye XTerminator®	165	280.9	-115.9	Money saved from other positions were used.

Purification Kit, 100 un.				
Rent of vehicle	518	256.5	261.5	To buy needed reagents we saved money from car rental. Half of the period, especially during autumn collections we used personal vehicles of the team members.
Fuel (approximately £0.55/L x 7.5L/100 km x 750 km/trip x 11 trips)	493	335.5	157.5	The difference is due to the change of the exchange rate, use of fuel efficient car and decrease of the price for fuel comparative to budgeted price.
Change of technical oil	160	0	160	The price for change of technical oil was already included in car rental taxes.
Per diem costs (£4.5/person/day x 4 persons x 28 days)	500	500	0	-
Driver remuneration	400	190.2	209.8	We hired driver only for summer season, to save money for the reagents.
Preparation publication	600	590.2	9.8	The price for preparation of publication was slightly lower than the budgeted amount.
Design, make-up, proof-reading text	500	469.8	30.2	The price for design, proof-reading text was slightly lower than the budgeted amount.
Booklet publishing	500	495.7	4.3	-
Organize two workshops	300	300	0	-
<b>Total</b>	5000	<b>5000</b>	5000	-

\*The rate of £ sterling (GBP)/ Moldovan Leu (MDL) was from 29.61 to 26.32 MDL/GBP within August 6, 2015 and August 6, 2016 period.

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

- To disseminate among authorities obtained result on fauna and diversity of investigated beetles and discuss future actions regarding protection status of Ciulai and Vranesti localities based on values of biodiversity richness indices.

- To monitor populations of threatened species, to assign them a status of protection and include rare and endangered species in the Red Book of the Republic of Moldova.
- Evaluate the vulnerability of identified habitats and propose measures that need to be undertaken to protect remaining steppe areas upon continuous degradation.
- To organise regional workshops bringing together local population, representatives of local administration, officers and other actors and discuss a draft action plan towards protection and sustainable use of steppe biodiversity.
- Conduct large scale informative and educational activities to promote the importance of protective measures in steppe areas.

**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?**

The Rufford Foundation logo was used in all the materials developed during the project implementation (posters, presentations, booklets). During all the meetings and workshops the project team has underlined the contribution of The Rufford Foundation to sustaining biodiversity conservation all over the world. During discussions with students were presented the opportunities for applying to The Rufford Foundation grants. Special presentation of the project was made during the meeting of the Department of the Biology and Ecology, Faculty of Biology and Soils Science, Moldova State University and meeting of the Scientific Council of the Institute of Zoology, Academy of Sciences of Moldova. The intermediary results of the conducted research were presented at the scientific conferences and the contribution of RSGF was highlighted. All the materials developed using the data obtained during project implementation that will be published and disseminated will underline the contribution of The Rufford Foundation in sustaining the effort to conserve steppe habitats in the Republic of Moldova.

**11. Any other comments?**

We want to sincerely express our gratitude towards The Rufford Foundation for sustaining biodiversity conservation activities. This kind of assistance offered the possibility to obtain data on beetles as indicators of biodiversity and rise attention towards the importance of conservation measures in steppe regions. Through uncovering insect communities, highlighting rare and endangered species we could identify ecosystems that should be conserved firstly, encouraging officials and local population to join efforts for saving the steppe biodiversity. Thus, we can achieve not only the protection of the biodiversity but also maintain these habitats as models for future investigations regarding environmental reconstruction.



*Vranesti, investigated steppe area*



*Pelinia, investigated steppe area*



*Bugeac, investigated steppe area*



*Stefanesti, investigated steppe area*



*Steppe vegetation*





Project team



Field work



Spring-summer field work





*View of steppe areas affected by human activity*



*Small patches of steppe vegetation surrounded by agricultural lands in Balti steppe area, near Pelinia*



*View of degraded ecosystem, near Ciumai*



*Meadows affected by overgrazing*





*Fam. Curculionidae*



*Fam. Curculionidae*



*Fam. Curculionidae*



*Fam. Cerambycidae*



*Fam. Cerambycidae*



*Fam. Tenebrionidae*



*Fam. Tenebrionidae*



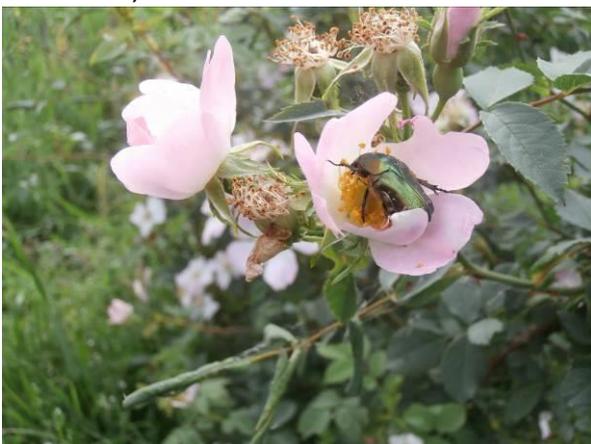
*Fam. Tenebrionidae*



*Fam. Chrysomelidae*



*Fam. Chrysomelidae*



*Fam. Scarabaeidae*



*Fam. Scarabaeidae*





*Dissemination activities*