The Rufford Foundation
Final Report

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.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Vernes Zagora
Project title	Distribution and conversation of highly endangered Karst Viper (*Vipera ursinii macrops*) in Montenegro
RSG reference	17171-1
Reporting period	January 2015 to November 2015
Amount of grant	£4990
Your email address	Vzagora92@gmail.com
Date of this report	13.12.2015

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
Determining of all potential habitats of karst viper, in south of Montenegro.			X	Using software and visiting all mountains in south region during our fieldwork, we listed potential habitats of karst viper.
Defining distribution of karst viper in south of Montenegro.		X		We planned 27 days of fieldwork, but because of the very dry summer (about 2 months without rain) and high temperatures (from middle July to end of August average daily temperature was 36ºC), we were able to do 23 fieldworks. Considering also the sensitivity of karst viper on high temperatures, wind, humidity and changeable weather.
Describing characteristics of habitat and defining all threats.			X	We described the topographic characteristics, type of the plant associations, type of present grasshoppers, crickets and all kinds of threats for each habitat. The main threats to this species at its habitats are: 1. Destruction of habitat by fire and inability of firefighters to extinguish it because of the poor condition of the roads. Also, Insufficient manpower and insufficient equipment because during the last 25 years in Montenegro due to increase in the length of the dry period increased number of fire and ,at the same time, because of the poor economic situation the fleet of fire-fighting reduced. 2. Organising picnics, barbecues on its habitats, by groups of tourists. 3. Developing of mountain tourism (different group activities, adventurist parks, etc.) 4. Being killed by locals and tourists. 5. Great reduction of livestock that maintains an open habitat, and due to the healing of grasslands and the absence of grasshoppers, (because there isn`t grass) is reduced their habitat and consequently the number.
Gathering tissue samples for DNA analysis.			X	From each adult individual the top of the tail was taken for DNA analysis. We collected DNA samples from two populations.

Population analysis.			X	We have started the capture–mark–recapture (CMR) procedure and collected standard morphometric and meristic data. Each individual was measured in detail, and pictured. During fieldwork, because of the heat and extreme temperature, we measured only 4 individuals, but we plan to continue with CMR with our further researches and fulfil our knowledge about the quality of these populations of *Vipera ursinii macrops*.
Informing and educating public by lectures, sharing leaflets, posters, T-shirts and survey.			X	We held lectures in three primary schools, and on faculty of natural sciences and mathematics. In all those places we shared leaflets, for even better informing, we had posters, and shared t-shirts. Also, we did online survey and survey in three primary schools, one high school and two college. With that we managed to see the opinion of our citizens about snakes in general, and to inform them about the harmlessness of snakes, about our project and most importantly about the importance of karst viper and its habitats for our country. Leaflet available at: (https://drive.google.com/open?id=0B7CpnBc9x2DwVUFCMklNNk1hdVk) (https://drive.google.com/open?id=0B7CpnBc9x2DwcmdMaUVNcWJSaEU) Poster is available at: (https://drive.google.com/open?id=0B7CpnBc9x2DwLUtIOGo1aXpGOVE)
Especially informing and educating locals.			X	We spent a lot of time talking with locals about their experience with snakes, and karst viper specifically. Ensuring them that karst viper is not threat to them or their families, that it is very important (endemic) and endangered species and leaving them our contacts in case they see it. Picture: (https://drive.google.com/open?id=0B7CpnBc9x2DwTVVmUkxlUjg4cG8)
Participating on several TV programs			X	We participated on two TV stations, where we talked about our project and efforts. In that way we made sure that most of the citizens heard about our work and progress in protecting karst viper and its habitats.
Participating on event “Days of science 2015”			X	Participating on “Days of science 2015”, organised by Ministry of Science, was maybe the biggest success in informing and educating people of

				Montenegro. During that day our workshop visited nine primary schools and three high schools. We also shared leaflets, and on entrance of workshop our poster was attached. Picture: https://drive.google.com/open?id=0B7CpnBc9x2DwVzM1NVM4NWNBUWc
Discuss with the authorities about improving the protection of karst viper in Montenegro.		X		All invited lecturers took part in the workshop, including regional experts. The workshop was opened by the director of the Environmental Protection Agency, but no one attended from the local authorities and they have the most important role in this issue.

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

- Longest part of the road from city Bar to potential habitats on Rumija was in extremely bad condition, because of the previous winter rains, so we had to rent a suitable car for that road.
- Part of the road to Orjen has been damaged due to landslides, so we had to use longest road, passing around 200 km in one way.
- The biggest difficult was extremely hot summer whit high temperatures, unpredictable weather and no rains. Because of that it was very difficult to coordinate the low number of days with good weather with other obligations of the project team, in the beginning and end of the research period. The longest part of the summer (July, August, part of September) the temperature was so high that there were now reptiles at all, and biggest part of the day it was impossible to do field research, and be exposed to the sun.

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

- Karst viper was found in two new localities with strong indications that also inhabit the third location.
- All threats to this species are listed for each habitat. We defined the problems and necessary actions for the future management plan on the conservation of karst viper. Threats are described under Objective 2.
- Raising the awareness of the local community. We held lecture in three primary schools, and on faculty of natural sciences and mathematics, where we mostly talked about importance of karst viper and its habitats and about influence of men on it. In all those places we shared leaflets, for even better informing, we had posters, and shared t-shirts. Also, we participated on “Days of science 2015” where we held workshop for primary and high schools from all of Montenegro. We distribute our survey online, and also in three primary schools, one high school and faculty of Natural sciences and mathematics. We inform and educated all locals on south of Montenegro near the habitats of karst viper, ensuring them that preservation of karst viper is essential for those habitats. Our work was also presented on two Montenegrin TV stations. Video is available on: (https://www.youtube.com/watch?v=ArJfTmBNHT4)

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

During the field research we talked with all the people we met. We introduced them with this species and its threats and how they can contribute to its preservation. We talked about the karst viper as an indicator species of healthy and virgin high mountain grassland habitat, which they found very interesting. Many citizens have helped us in finding new habitats, recommending us locations they know, according to our description of karst viper`s habitat. We explained them the importance of fighting against every kind of pollution on these habitats. We also suggested a contact address where can apply illegal activities, such as: throwing rubbish, illegally collecting snakes from the wild, involving invasive species into nature, making illegal camps, arson.

5. Are there any plans to continue this work?

There are several plans for continuing this work:

- Continue research of distribution of *Vipera ursinii macrops* in Montenegro, because that is the key for its protection, and protection of high-mountain habitats, considering upcoming application of Natura 2000 in Montenegro, during Montenegrin process of entering in EU.
- Defining of all threats to *V. ursinii* in Montenegro and making action plan for its protection.
- Establishment of more intense international cooperation, whit regional meetings on an annual basis.
- Having meetings with all the local and national administrations to make agreement on the implementation of the necessary measures. This is of great importance for management plan for this species and its habitat.
- Educational campaign in order to raise public awareness.
- DNA analysis of key populations of *V. ursinii*, to define the level of isolations of these populations, their genetic diversity, and their relationships with the other *V. ursinii* populations in Montenegro and region. Considering that there are two clades of *V. ursinii macrops* in the Balkans (Anne-Laure Ferchaud, 2012)

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

Information material (brochures and posters) are distributed to several primary and high schools, ministry of science, faculty of natural sciences and mathematics, biotechnical faculty, and ecological organisations from Croatia, Serbia and Slovenia, for dealing with this issue.

We have a webpage where everyone can inform on the project (http://www.drustvoekologa.me/en)

Currently preparing a scientific paper that contains some of the information obtained by the project. We write this paper with the colleges from Croatia. Some information will also be used for my graduation thesis.

We presented this project in Zagreb (Croatia) on international student conference on environmental sciences 2015 (ISCES 2015)

https://drive.google.com/open?id=0B7CpnBc9x2DwZHNfRU5nLXVsNmM

https://drive.google.com/open?id=0B7CpnBc9x2DwWjU3V2Yyd1Zjbmc

Project will be also presented in Banja Luka (Bosnia and Herzegovina) on Rufford Small Grant Conference in Bosnia and Herzegovina, during 2016.

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

Month	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Preparation of lectures, leaflets, poster.	X	X	X							
Presentation at several schools and faculty.				X				X	X	
Detail planning of fieldwork.		X	X							
Fieldwork					X	X	X		X	
Broadcasts on national TV.							X		X	
Presenting project results.										X
Regional workshop.										X

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
First travel	200	373	+73	Much bigger expenses because of the longer road. (Check question 2.)
Second travel	200	368	+68	Much bigger expenses because of the longer road. (Check question 2.)
Third travel	200	369	+69	Much bigger expenses because of the longer road. (Check question 2.)
Fourth travel	200	366	+66	Much bigger expenses because of the longer road. (Check question 2.)
Leaflets and poster (photos, design, material) + printing (2000 copies)	800	914	+14	Price of printing posters was higher than we expected.
Daily allowance (food, drink etc.)	1690	1472	-218	Because we done 4 days of fieldwork less than we expected, our expenses were lower. We redirected remaining amount on other expenses.
Balance	150	150	0	
Camera	300	120	-180	We bought much cheaper camera, and redirected remaining amount on costs fuel.
GPS	150	150	0	

Disposable equipment (150x tubes for DNA, 2x bottles of 96% alcohol, 1x clipper, 4x skin gloves for capture)	100	97	-3	Skin gloves for capturing snakes were cheaper than we expected.
Meeting	1000	992	-8	
Renting Car	0	100	+100	This was an unexpected expanse.
Printing survey for primary schools	0	30	+30	This was an unexpected expanse.
Total	4990	5501	500	500 pounds ware founded by Croatian Herpetological Society "Hyla"

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

- Continuing the research on Orjen and Rumija.
- Defining distribution of *V. ursinii macrops* on central and north part of Montenegro.
- Making arrangements with decision makers about creating management plan for karst viper and it`s habitats.
- Continuing education of general population and local communities about the importance of protecting karst viper and it`s habitats.
- Pointing on very possible effect of illegal snake dealers on these newly found populations of karst viper and taking action before that even happens.
- Creating a network with colleagues from Serbia, Croatia and Bosnia and Herzegovina for making regional, common action plan for karst viper.

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 during the whole duration of the project. Logo is printed on the leaflets, posters and t-shirts that were prepared during this project.

RSGF received publicity during this project, on the two TV stations, during our fieldwork, lectures on the Faculty of Mathematics and Natural Sciences – Department for Biology and several schools, on survey and meetings with the decision markers.

11. Any other comments?

I am very grateful to the RSGF because it has recognised the problem of this kind. Beside CHS "Hyla", RSGF is the first foundation that funded the work on this problem in Montenegro. The data and samples we collected are unique and important for the future protection of the karst viper and its high mountain grassland habitats.

I also hope that RSGF will continue the funding of these activities in order to determine detail distribution of this species in Montenegro and prevent it`s disappearance, because in Montenegro

decision makers and local population still have lack of awareness about the importance of endangered species and its habitats for man.