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	Marija Spasić
Project title	Tracking of movement of a brown bear (*Ursus arctos*) at the edge of its Dinaric distribution in Serbia
RSG reference	21923-1
Reporting period	March 2017-May 2018.
Amount of grant	4780
Your email address	maya-the-bee@live.com
Date of this report	30.05.2018.

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
Safely capturing and equipping the bear with a collar				On September 27th 2017 at 8:30 PM, after the fourth night of trapping (efforts 24 trap/night), a young 3-year-old male bear in good condition and weighing 75 kg was caught in an Aldrich trap on Jadovnik Mountain at Kašani feeding site. The bear was safely anesthetised with an anaesthetic rifle 20 minutes after trapping. During anaesthesia, body parameters (36) and body weight were measured, blood (for blood chemistry and genetic analyses), hairs (also for genetic analyses) and tooth (first premolar for estimating the exact age of the bear) were collected for future analyses according to the standardised procedure used for collared bears in Serbia. Finally the collar was attached around the neck and the bear was woken up from anaesthesia. The bear was named Miloš.
Tracking movement of bear				From the time when the young bear Miloš acquired a collar until the preparation of this final report (May 20th2018) we received 4852 fixations (coordinates) which is 85% of the technical possibilities (GPS schedule) of the collar. The high rate of effectiveness is the best evidence of excellent project realisation. These data were used as the baseline data for home range estimation, movement tracking and locating the hibernation den. The data also represent the first scientific information about bear ecology at the edge of Dinaric-Pindos population in Serbia.

Searching for the hibernation den				We used data from the collar to identify the time when Miloš left the den. At the beginning of April he spent only a few hours outside of the den. On April18th he definitely left his winter shelter. Miloš made his den in a crack at the bottom of a big tree. In order to make the shelter warmer and more comfortable, he dug into the ground inside the tree crack. Branches broken off the surrounding spruce trees were set up at the bottom of the den. Dimensions of den are: length 150 cm, width 80 cm, depth 40 cm, height 120 cm. Several resting places for spring sunny days were visible in vicinity of the den.
Estimating the home range of the bear				The home range was estimated according to the received fixation. Before hibernation (autumn/early winter) the home range was 86.64 km^2. After hibernation (late winter/spring) the home range was slightly bigger – 96.33 km^2. The total home range (for the whole monitored period September 27th 2017 –May 20th 2018) was 105.24 km^2. Miloš's home range and movement included the forested areas of Jadovnik and Ozren Mountains within the altitudes from 600 to 1500 m asl.
Identify corridors between suitable habitats at both side of borders (countries Serbia and Montenegro)				Due to vicinity of Montenegrin border, we hypothesised that bears will have trans-border home range, however during the monitored period Miloš did not leave the territory of Serbia. Therefore bear corridors between Serbia and Montenegro were not identified.

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

In general, we did not have any difficulties during the project, except for the accidentally trapped wild boar, but it was routinely managed and wild boar was successfully released from the Aldrich trap.

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

1. **Collared bear**
   Young (3-year old) bear named Miloš was collared on Jadovnik Mountain. This is the first captured and collared bear in the region of south-western Serbia, at the edge of Dinaric-Pindos population. All previous activities related with bear trapping and collaring placement took place in National Park Tara. Efforts to establish research activities of bear movement outside of National Park Tara are a significant contribution to the knowledge about bear ecology and conservation in Serbia. With this project we basically established the bear movement research at the edge of bear distribution in Serbia.

2. **Point database**
   Almost 5000 data entries were received from Miloš's collar from the time of collar placement to writing of this report (May 20th 2018). However, the collar will continue emitting data for the next 20 months. We are expecting 10000-13000 new point data in the future period. In total we are expecting to receive between 15000 and 18000 fixations (coordinates) which will represent a significant database on bear movement in Serbia and the whole Dinaric-Pindos population.

3. **Contribution to bear conservation and recovery**
   Combination of already collected data and data which will be collected in the next 20 months will form an important database for further conservation actions and research efforts in Serbia as well as the research on the whole Dinaric-Pindos population. These data will contribute to national recovery and conservation efforts.

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

Local NGO "Jadovnik – Oaza netaknute prirode" was a partner in this project, with an important part in project realisation. The first activity was feeding (baiting) the bears as a preparation stage for trapping. They also monitored presence and activities of bears at the feeding site (using camera traps and video surveillance). During these activities they were dedicated to supporting and assisting in all project objectives. All above-mentioned activities were conducted under our full control and management.

Trapping of Miloš the bear and collaring had considerable public attention. Numerous broadcasted reports (TV, radio) and published news (in printed and internet form) in national and local media lead to increased interest of public in project activities. In their contacts with journalists, the local NGO"Jadovnik – Oaza netaknute prirode" promoted their activities and efforts to protect bears as well as other endangered and protected species in this area. Part of their promotion also included regular project updates at NGO official sites and Facebook. Numbers of likes, shares and positive comments are an indication of successful increase in public awareness (https://www.facebook.com/jadovnik/).

5. Are there any plans to continue this work?

In the next 20 months we will continue analysing the incoming data from Miloš's collar. These data will be analysed together with data from other bears which are collared in National Park Tara. In addition, after the collar drop-off is activated we will try to find the collar as it may be repaired by changing the batteries and drop off bacon. Then the same collar might be used for another bear with a significant reduction of cost. Next spring we will again search for den location and site.

In addition to activities directly related to Miloš the bear, our primary goal includes new recording applications in the next round of collar placement. With end of one round of collar placement we can not continue bear movement tracking and data collecting in this part of range. Our further focus includes efforts on monitoring the local bear population in this area (Jadovnik, Zlatar, Ozren mountains and Pešter plateau) based on camera trapping and noninvasive collecting of bear samples (feces and hairs). For these great ideas and plans we certainly need financial support from funds like Rufford Small Grants Programme.

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

Collected data will be combined with other data from previous and ongoing projects in Serbia. We would also like to share data with other countries within the range of Dinaric-Pindos population. Results from this project will contribute to the ongoing preparation of Bear Management Plan. Video material and photographs recorded during the realization of this project will be used in future education programmes, especially in cooperation with our local project partner NGO "Jadovnik – Oaza netaknute prirode".

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

	Received founds	Equipment ordering	Feeding	Monitoring	Looking for hibernation den	Writing final report
Mart 2017						
April 2017						
May 2017						
Jun 2017						
July 2017						
August 2017						
September 2017						
October 2017						
November 2017						

December 2017						
January 2018						
February 2018						
Mart 2018						
April 2018						
May 2018						

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
GPS/GSM Collar	3024	3150	-126	Exchange rate differences
Data transmission	940	940	0	
Field trip costs	1050	900	+150	Fuel prices were higher than we expected/planed
Anesthetic and promo material	330	330	0	

Budget is presented in Euro because the meanswere transferred in Euros.

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

Equipping new bears with collars, monitoring based on camera trapping, involving the local community in bear conservation through further projects and education programmes at local and regional level.

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

We made t-shirts and posters with The Rufford Foundation logo. Equipping Miloš the bear with the collar attracted attention of numerous local and national TV and radio stations, which made reports about the first bear trapping and collar installation at Jadovnik Mountain. A few NGOs also supported our project by sharing information about bear collar placement on their websites.

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

Marija Spasić- Project leader

Slobodan Spasojević (doctor of veterinary medicine) – anaesthesia and health surveillance

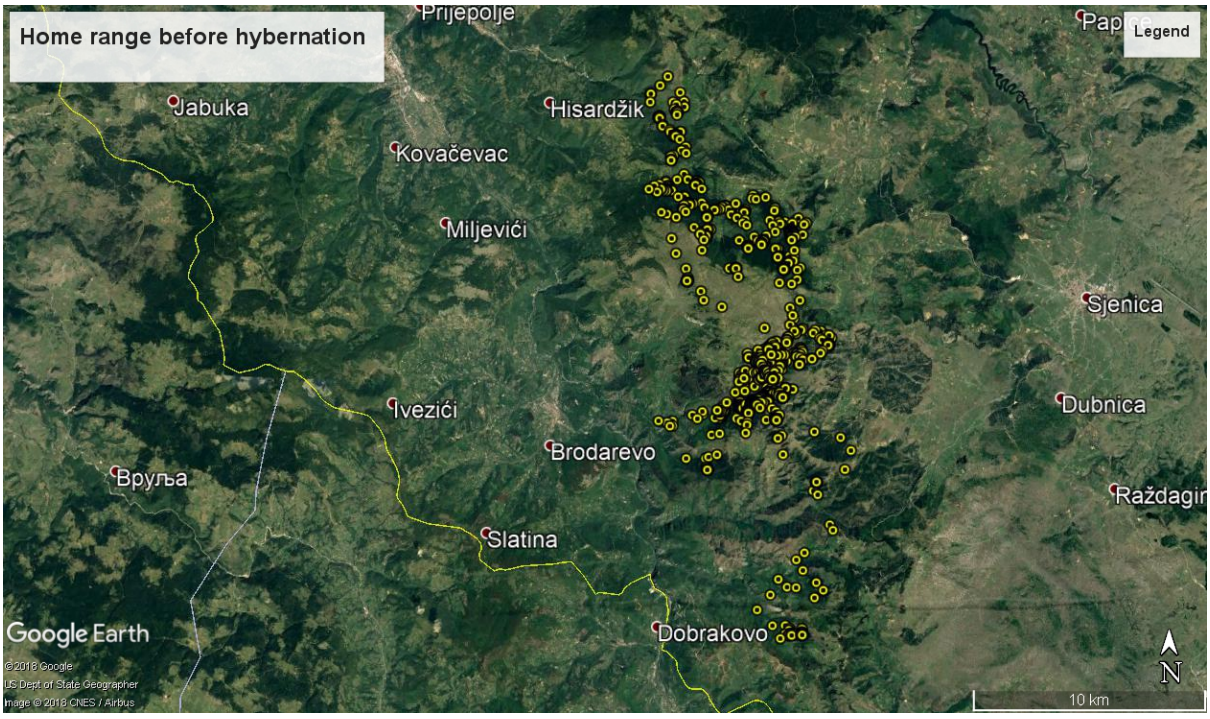
Vjekoslav Joksimović (local NGO) – local support (feeding, monitoring of bear presence, assistance during collar placement)

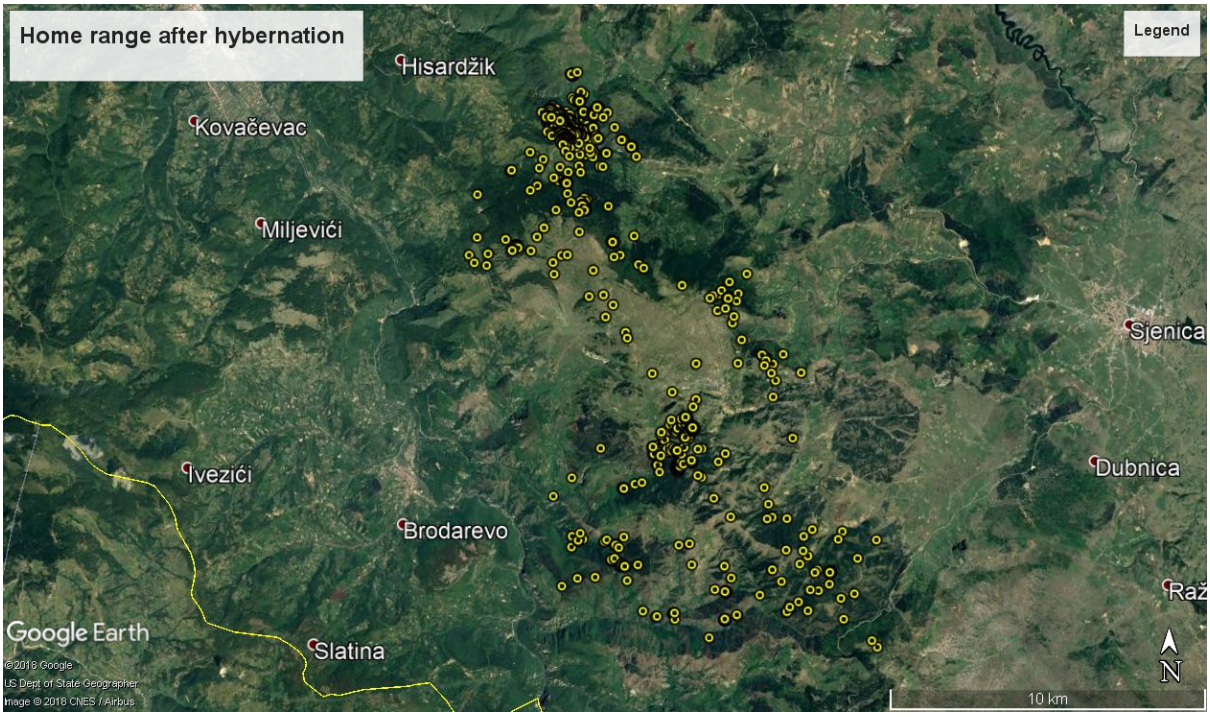
Milica Joksimović (local NGO) – local support (feeding, monitoring of bear presence, assistance during collar placement)

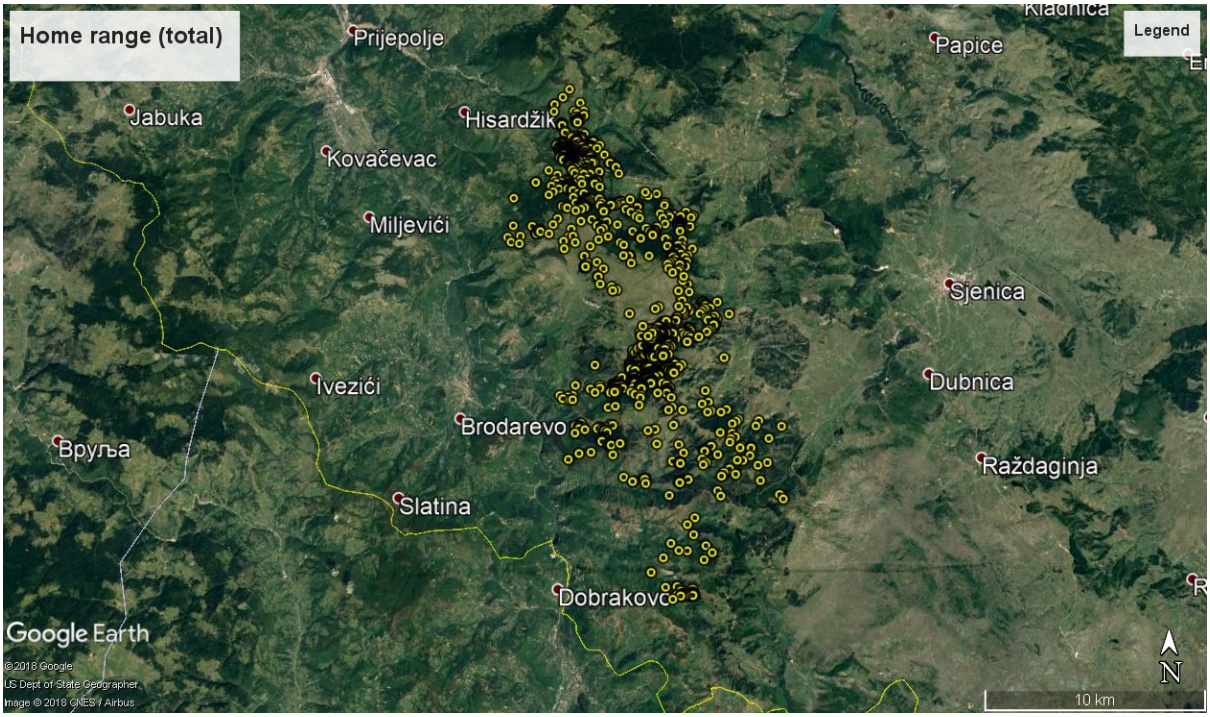
12. Any other comments?

I'm really grateful for financial support which enabled me to work on this project. This project was an extraordinary experience, an important part of my academic education and promotion,and it will be a strong motivation for further work in the field of conservation of protected animal species. For these reasons I really appreciate your will to support my small, but important project.

Appendix




Home range after hybernation
Legend
Hisardžik
Kovačevac
Miljevići
Sjenica
Ivezići
Dubnica
Brodarevo
Slatina
Google Earth
© 2018 Google
US Dept of State Geographer
Image © 2018 CNES / Airbus
N
10 km


Home range (total)
Legend
Prijepolje
Papice
Jabuka
Hisardžik
Kovačevac
Miljevići
Sjenica
Ivezići
Dubnica
Brodarevo
Врulja
Raždaginja
Slatina
Dobrakovo
Google Earth
© 2018 Google
US Dept of State Geographer
Image © 2018 CNES / Airbus
N
10 km

Hibernation den