

Final Evaluation Report

Your Details	
Full Name	Tijana Trbojevic
Project Title	Searching for the Balkan Lynx in southeast Bosnia and Herzegovina and western Montenegro
Application ID	34623-B
Date of this Report	01. June 2022

1. 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
Gathering hard evidence of the presence of lynx in the study area (photo, footprints in the snow)				Several important indicators of lynx presence in the research area were collected: <ol style="list-style-type: none"> 1. Footprint in mud (C2 category*) in the area of Zelengora mountain, July 30, 2021 (picture from the first report). 2. Footprint in the snow (C2 category*) on Mount Zelengora, March 27, 2022 (picture attached to this report). 3. Lynx hairs were found on a wire fence (C1 category*) on Zelengora Mountain, May 3, 2022.
Determine the size of the lynx territory				The total area inhabited by lynx is about 93 km ² .
Discovering of its abundance in the study area				The presence of two individuals, young and adult, is certain. This conclusion was reached by cytological analysis of the hairs. The analysis showed that the hair found belonged to a young individual. It is not possible to determine the exact age and sex (we expect this information from DNA analysis). Considering the constant monitoring and recorded findings of the presence of lynx in the research area, from 2014 until today, an adult has been present.
Collection of lynx hair samples for genetic analysis;				Found lynx hair (guard hair) was processed and studied microscopically and cytological (text above). To determine the origin of the found hairs, i.e., to which species they belong, the hairs were microscopically compared with already confirmed lynx hair samples. Reliable lynx hair samples were obtained from Ankara/Nallihan (Turkey), the Museum of Natural History in Berlin (Museum für Naturkunde, Berlin, Germany), and Una National Park (Bosnia and Herzegovina). Microscopic and cytological analyses of the found

			<p>hairs (guard hairs) were performed in the laboratory of the Faculty of Science in Banja Luka, Bosnia and Herzegovina. Findings, opinion and photographs taken by laboratory cytologist prof. Dr. Smiljana Paraš shared with experts of the Large Carnivore Initiative for Europe (LCIE) and Cat Specialist Group (CSG) which are IUCN specialist groups (picture attached to this report). It was agreed with the Genetic Laboratory of the Department of Biology, Biotechnical Faculty from Ljubljana (Slovenia) that the sample be sent for DNA analysis.</p>
<p>Establish monitoring of lynx in Montenegro (MNG) and start negotiations with the competent institutions in MNG on declaring the area a protected area.</p>			<p>Monitoring has been established with the NGO Center for Protection and Research of Birds in Montenegro - the responsible person is Aleksandar Perovic.</p> <p>We have received positive information that the two governments (Bosnia and Herzegovina and Montenegro) have already had talks on this proposal. Our findings and evidence of the presence of lynx only reinforce the view that the area needs to be protected.</p>

* - Classification according to SCALP criteria - field records according to their reliability as inferred from whether they were validated or not (Molinari-Jobin, A. et al., 2012. Monitoring in the presence of species misidentification: the case of the Eurasian lynx in the Alps. *Animal Cons.* 15, 266–273. <https://doi.org/10.1111/j.1469-1795.2011.00511.x>)

2. Describe the three most important outcomes of your project.

a). Collection of lynx hair samples for genetic analysis. We have hopes for the successful DNA analysis of the collected hairs, and that we will obtain data on the sex and subspecies of the individual. It should be kept in mind that only 36% successfully extract DNA material from hair. Also, talks were held with the CITES office in Bosnia and Herzegovina and there will be no problems in obtaining any necessary documentation.

b). Finding a footprint in the snow. Another very important finding that confirms the presence of lynx in the study area. The first time the team found footprints in the snow. So far, we have had this information only through interviews. By the way, lynx footprints in the snow are more scientifically acceptable than mud footprints (there are opinions that lynx footprints in mud can be replaced with dog footprints).

c). Establishment of a monitoring team in Montenegro. It is very important that this team under the leadership of Aleksandar Perovic becomes operational. In the continuation of the project, Aleksandar Perovic will be more engaged and thus he will gain more experience (primarily in the field). This way, he will be able to transfer his experience to the rest of his team in Montenegro.

Without any doubt, we determined the presence of lynx in the study area (footprint in snow and mud, and the finding of hair), although the individuals were not photographed. Cytological analysis of lynx guard hair showed that it is a healthy lynx individual. This is concluded by the presence of air bubbles in the core (medulla) of the hair shaft, which is a typical characteristic of healthy mammalian hair. Different but intense pigmentation of young keratinocytes in the medulla of the hair stalk was also observed, which is a characteristic of young individuals. The thickness of the analysed hairs ranged from 0.12 to 0.08 mm, which was measured using microscope software. Hair was observed at 200x magnification.

So, microscopic and cytological analyses of the hair showed that it was a healthy, young lynx. This suggests that the female lynx is present in the area and has had contact with the male.

We hope that the DNA analysis will be successful and will confirm these conclusions.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

The beginning of the war in Ukraine caused an increase in prices, not only of petroleum products (fuels), but also the prices of food and accommodation in Bosnia and Herzegovina. We could not perform fuel compensation; we could only reduce the number of days spent in the field. However, this reduction was not significant given that the price increase started towards the end of the project activities (lasted the last two or three months of the project).

The increase in food prices was compensated by the fact that we had a well-established practice that the team prepared food for itself, and that it was almost never spent in restaurants.

We rented accommodation from the beginning to a private apartment, so there were no significant fluctuations in finances.

4. Describe the involvement of local communities and how they have benefited from the project.

The 2-year presence of our team in the research area has created a positive and good relationship with the local population. This is reflected in their voluntary and active participation in individual project activities (sharing information on the presence of lynx, joint and independent engagement in searching for signs of lynx presence). It should be noted that the members of the local Mountaineering Association "Volujak" (B&H) selflessly with our team and independently participated in the winter search of the terrain. The group of mountaineers was led by Mr. Rados

Milosevic. It is also important that we have excellent relations with the management of the Sutjeska National Park. This can be seen from the fact that their ranger (Mr. Zeljko Sekulic) photographed lynx tracks in the snow, and he gave the photos to this project.

5. Are there any plans to continue this work?

Given that in addition to the grant, we received financial support from the Independent University of Banja Luka, and the promise that the next research will help, we plan to apply for the fourth Rufford Small Grant and thus continue with this very important research.

Finding the presence (very certainly) of a young individual in the field requires even greater engagement, effort and general monitoring of lynx in the area.

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

The results so far have been shared with the expert scientific community - IUCN specialist groups: Large Carnivore Initiative for Europe (LCIE) and Cat Specialist Group (CSG). Upon receipt of DNA analysis of hair, if successful, we plan to publish the data in the journal *Oryx* and/or *CatNews*.

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

Although we were unable to obtain a photograph of the lynx, the winter tracking of the presence of the lynx was very successful. However, given the results obtained (high probability of the presence of two individuals, and one of which is young), it is necessary to intensify efforts to obtain photographs. This is especially important for the territory of Montenegro, given that from May 2021 to June 2022, traces of the presence of lynx were found only in part of Bosnia and Herzegovina, unlike the previous season. On the other hand, during these 2 years of work in this area (National Park Sutjeska and surroundings) we gained a very realistic picture of the spatial movement of lynx. We plan to make the most of this and intensify our efforts with the next project and get photos of individual lynx and, of course, get as many hair samples as possible for more successful DNA extraction.

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

We have not had the opportunity to use the Rufford Foundation logo, but the name Rufford Foundation will be used in a paper we will try to publish in *Oryx* or *Cat News* (published by CSG-Cat Specialist Group (IUCN SSC)). These IUCN specialist groups (LCIE and CSG), i.e., eminent scientists in these groups, are aware that this project is funded by The Rufford Foundation.

9. Provide a full list of all the members of your team and their role in the project.

Igor Trbojevi - assistant prof. - knowledge of the ecology of large carnivores had a great influence on finding traces of lynx.

Ivan Napotnik - great help in the field as a project assistant, especially in setting and checking traps (photo and hair traps).

Local associates:

Zeljko Sekulic - leader of the hunting guard service (rangers) in the Sutjeska National Park (Bosnia and Herzegovina). He worked on finding signs of lynx presence throughout the area. He also found traces in the snow.

Rados Milosevic - team leader of the mountaineering association "Volujak" (Bosnia and Herzegovina). Assisted in winter monitoring and in establishing contacts with the local population in the field.

Aleksandar Perovic - graduate biologist, Center for Protection and Research of Birds in Montenegro. Actively participated in the search for signs of the presence of lynx in Montenegro. He will lead a team from Montenegro for future lynx monitoring.

10. Any other comments?

There was no final presentation of the results of the project to Dr. Radoslav Dekic, Associate Professor (referee), for his illness and treatment (which is still ongoing).

One of the referees, Slaven Reljic, Assistant Professor, visited us on the field in the Sutjeska National Park. On that occasion, he visited several places on the spot where signs of the presence of a lynx were sought.