Prespa Project: Biodiversity Conservation in Transboundary Prespa

Preliminary results of camera-trapping surveys in selected brown bear corridors in Ohrid - Prespa region

– Final report –

Prepared by:

Aleksandar Stojanov - MES

January 2024

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Introduction

One of the greatest threats to large carnivore populations nowadays in Europe is the habitat fragmentation. Increasing human population, followed with intensified infrastructure developments, urbanisation and land-use changes, has led to habitat loss and degradation. Fragmentation also restricts the natural movement of animals foraging, breeding, migration and dispersal. Large carnivores are particularly vulnerable to fragmentation, as they have large home ranges, occur in law densities, have slow population growth rates and exhibit long dispersal distances, and thus, they may not be able to persist in landscapes dominated by humans, particularly those not connected by functional linkages.

Ecological corridors provide a balance between increasing human populations and the need to preserve and improve habitats. Corridors help increase survival for many species by increasing food sources, providing shelter, reconnecting fragmented and isolated populations etc.

In order to conserve the brown bear population and its habitats in Prespa region, a Brown Bear Conservation Action Plan for the Prespa Lake's watershed was prepared in 2012. Within the action plan, there were five corridors identified which connect the bears in Prespa Lake Basin with the neighbouring core areas in all three countries (Fig. 1).

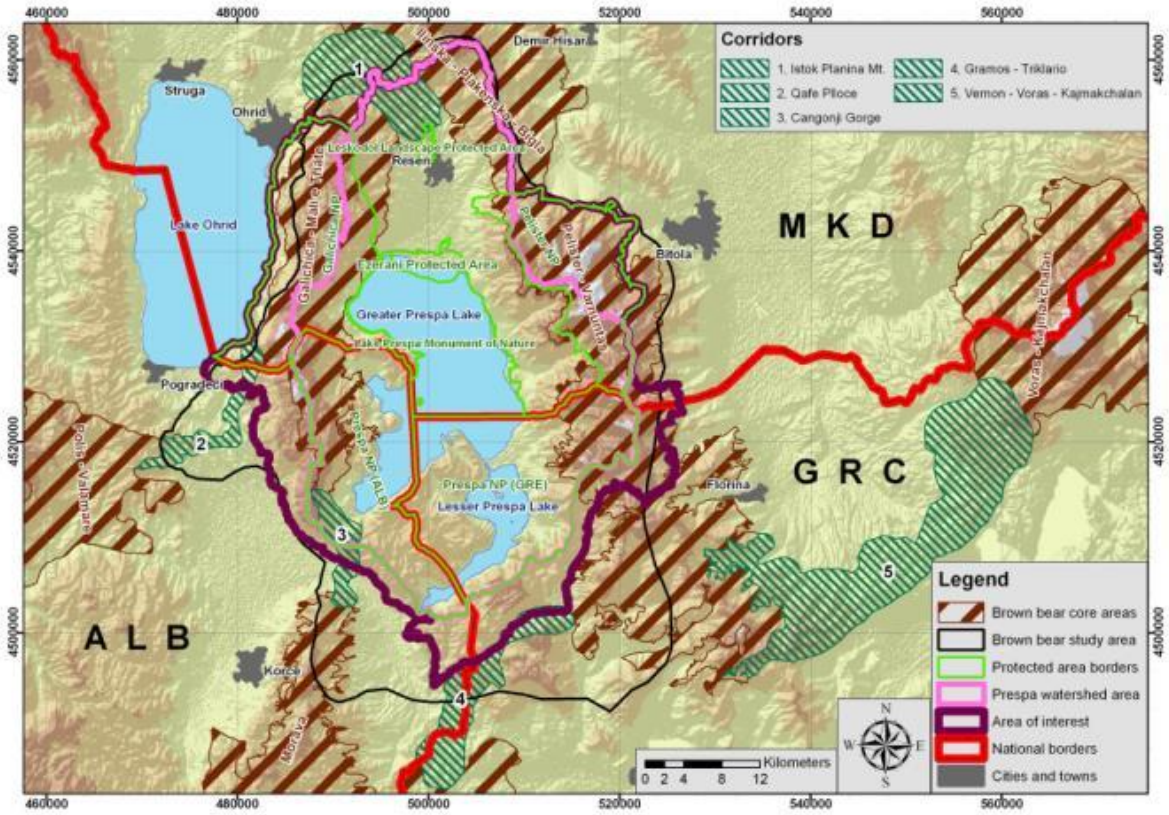

Figure 1. Identified corridors for Brown bear in Prespa region (Stojanov et al. 2012).

As part of the Prespa Project, we started activities with the aim to get preliminary data on the functionality of the identified brown bear ecological corridors on Macedonian side of Prespa through camera trapping surveys and proving the bear movement in the bottleneck areas as part of the ecological corridor network. Also, the data collected will contribute to ensuring long-term favourable conservation status of the brown bear population and the sustainable management, restoration and protection of the habitats and ecological corridors. Monitoring of the brown bear was a transboundary activity, which has been implemented for three years (2021-2023) together with PPNEA, in the ecological corridors that connect Prespa basin with other large areas in Albania and N. Macedonia.

Methodology

Study area

Based on the "Brown Bear Conservation Action Plan for the Prespa Lake's watershed", two important corridors for the brown bear were selected for the study in N. Macedonia, which connect Galichica and Pelister National Parks with other biogeographical large areas in Macedonia and Albania. These are the linear corridor Istok Planina (Fig. 2) and the transboundary linear corridor Qafë Plloçë (Fig. 3). We also focused on the identified bottleneck Gjavato, between Pelister NP and Bigla Mt (Fig. 2; Brajanoska et al. 2011).

The corridor Istok Planina connects the Galichica NP with the Ilinska-Plakenska-Bigla Mts on the north (Fig. 2). This corridor occupies northern slopes of the mountain Galichica and southern parts of Plakenska Planina. It is the most important corridor for the brown bear population in Galichica NP through which connection is established with other core areas in the western part of N. Macedonia. The area is well afforested with almost 66% forest. Asphalted road extends along the whole length of the corridor in parallel direction, connecting Ohrid and Resen.

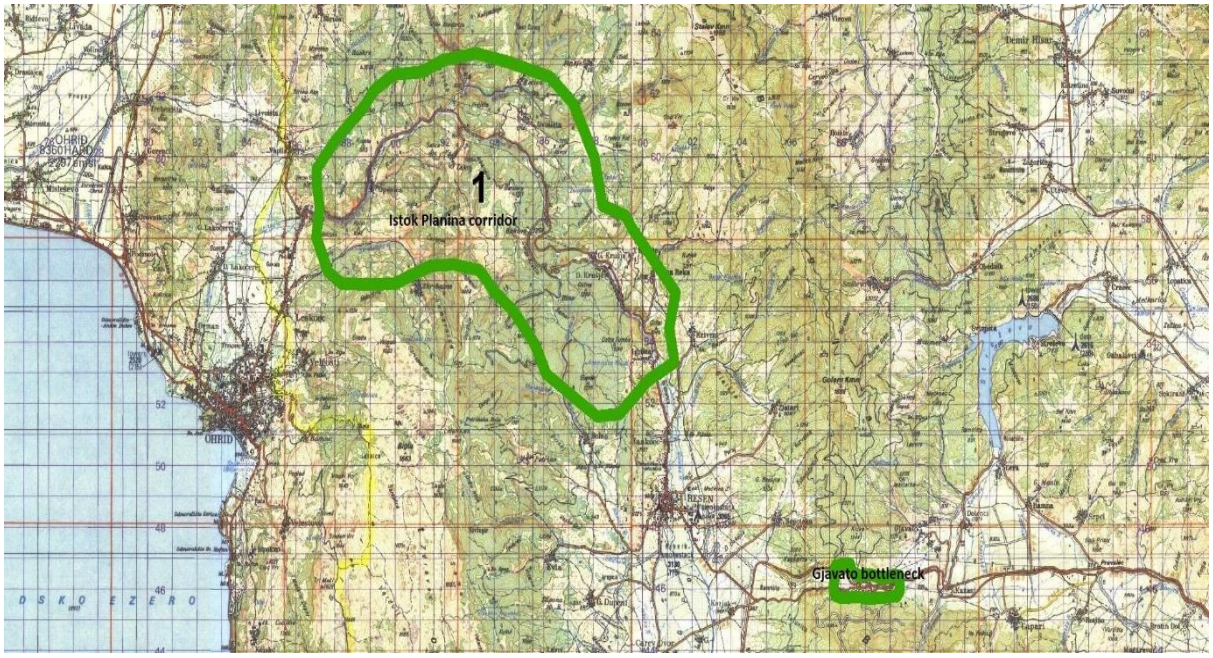

Figure 2. The area of Istok Planina corridor (the larger area with green line) and Gjavato bottleneck (the smaller area with green line)

The corridor Qafë Plloçë connects Galichica /Mali e Thate with Polis/Valamara Mts (Fig. 3). in Albania. It stretches from the Galichica/Mali i Thatë mountain chain in the east to the Valamara Mountain in the west. The area is intensively used by humans and the landscape is largely agricultural. Patches of degraded scrubland mainly represent the natural vegetation. The landscape structure and topography assessment imply that the area has high potential for bears to use the corridor, if appropriate measures of landscape management were to be implemented. Qafë Plloçë represents the highest probability corridor for the sub-populations of Galichica and Polis/Valamara to connect in the future, based on the area's landscape characteristics and topography.

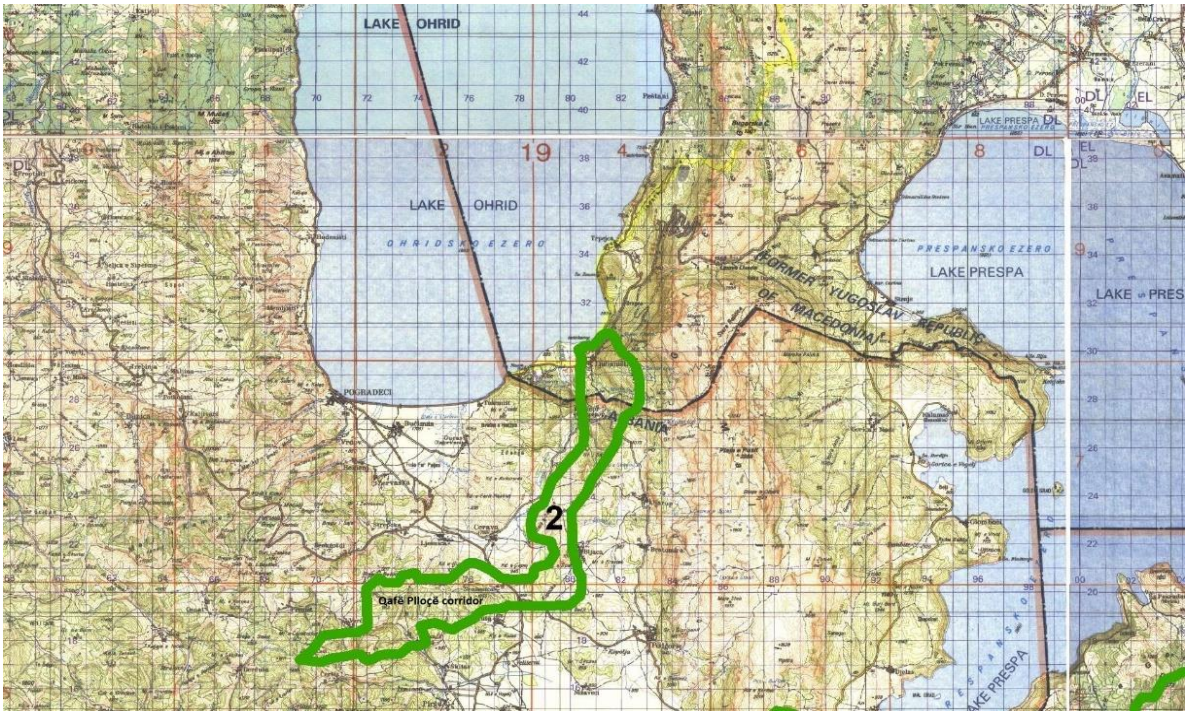

Figure 3. The area of Qafë Plloçë corridor

Study design and methods applied

For monitoring the identified bear corridors in the Prespa region, we used the method of camera traps. Camera-trapping is the most common method for monitoring of wild animals (Breitenmoser et al. 2006; O'connel et al. 2011; Rovero and Zimmermann 2016). Camera-trapping is the use of automatically triggered cameras that take photos/videos of animals passing in front of them. This non-invasive method is a good tool to confirm the presence of a given species in a given area, especially rare and elusive ones, and to make a quantitative assessment of the population of species where an individual is readily discernible, as with spotted cats. If conducted over a few consecutive years, this method may provide data on population trends, breeding, prey availability, information on occupancy, movement etc (Rovero and Zimmermann 2016). For the purpose of the survey, we used digital camera model Cuddeback Ambush.

A semi-deterministic approach was selected for the deployment of the cameras. Using ArcMap GIS software, we prepared a 1 x 1 km grid map of the Prespa region to select the

appropriate grid cells for setting camera traps. In total we selected 22 cells (Fig. 5) and each selected cell, we deployed only one camera trap at the most promising site along forest roads, hiking paths or game trails (Fig. 4). We used rangers' or hunter's knowledge and our experience for selection of the most suitable sites for setting the cameras. 10 of the selected cells were in the corridor Istok Planina, 7 in the corridor Qafë Plloçë and 5 in the area of Gjavato bottleneck. Sites selected for camera-traps deployment did not remain the same during the whole study period. We have changed the locations of some sites based on the results of the previous surveys and for security reasons.

Figure 4. Deploying camera trap in the area of Qafë Plloçë corridor

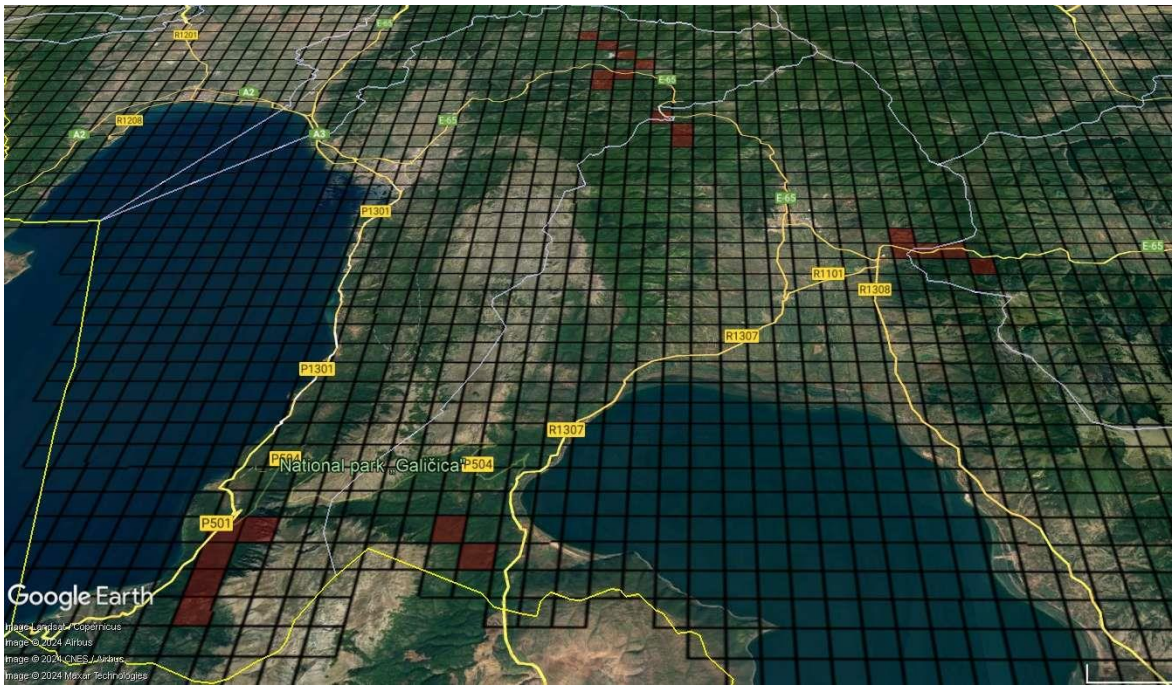

Figure 5. Selected grid cells (red colour) for camera trap instalment

Figure 6. Locations of the camera traps during autumn 2021

Figure 7. Locations of the camera traps during spring 2022

Figure 8. Locations of the camera traps during autumn 2022

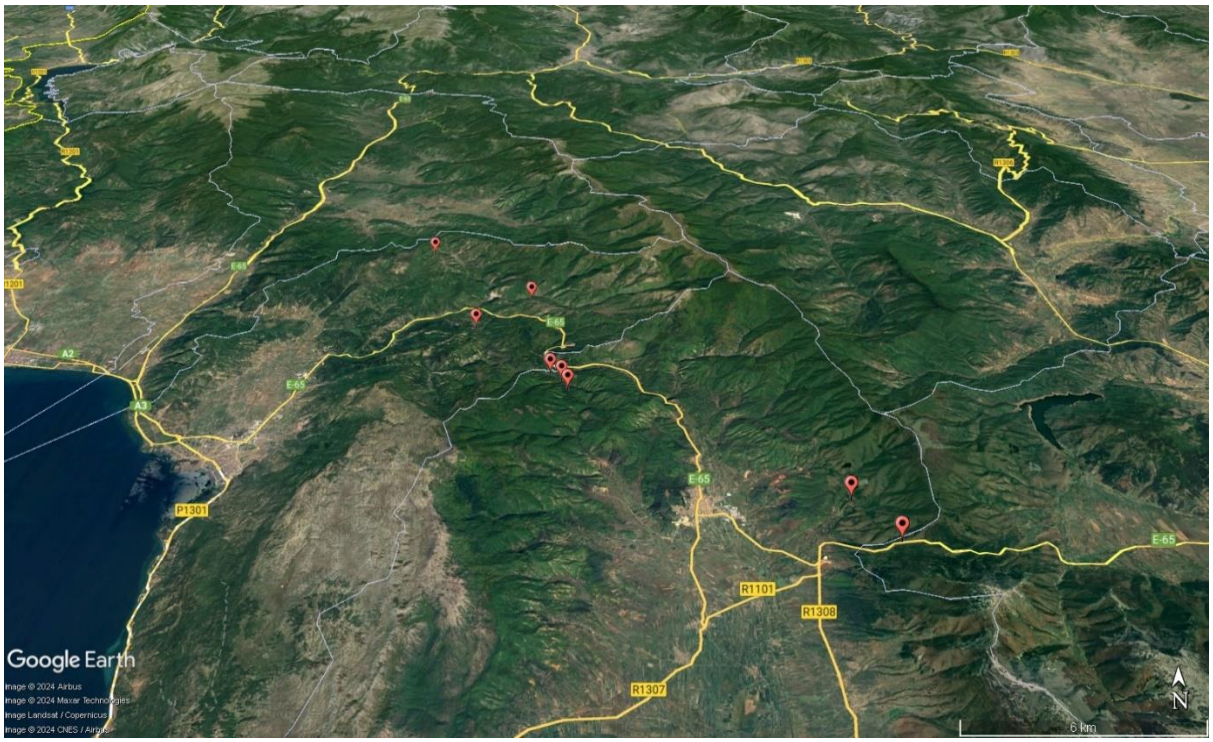

Figure 9. Locations of the camera traps during autumn 2023

We conducted four camera-trapping surveys during 2021-2023. First one was conducted on in the area of Qafë Plloçë corridor with 5 cameras deployed during November-December 2021 (Fig. 6), in cooperation with rangers from Galichica NP. The second one was conducted on in the area of Istok Planina corridor with 3 cameras deployed in the period May-July 2022 (Fig. 7), in cooperation with hunters from the Hunting Association Ohrid. The third one was conducted in the areas of Istok Planina and Qafë Plloçë corridors and Gjavato bottleneck with 8 cameras deployed in the period September – November 2022 (Fig. 8), in cooperation with hunters from Hunting Association Ohrid and rangers from Pelister NP. The fourth one was conducted in the areas of Istok Planina corridor and Gjavato bottleneck with 8 cameras deployed during September – October 2023 (Fig. 9), in cooperation with hunters from Hunting Association Prespa and locals from Prespa. The cameras stayed in the field for a minimum of 45 camera-trapping nights. The cameras were checked on every second week for their functionality, photo transfer and battery check/replacement. Camera trap deployment and regular checks were done together with rangers from the existing national parks in Prespa and hunters from Ohrid-Prespa region. In parallel with the camera trapping, we also searched the area of the corridors for and recorded any other sign of bear presence, such footprints, scat, bear markings on trees etc.

Results

Results autumn 2021

During the autumn survey in 2021, we did not picture any bear individual in the area of Qafë Plloçë corridor. However, we found bear scat near one of the deployed camera traps (Fig. 10). We also got 2 photos of lynx at 2 different locations (Fig. 11). These results proved that large carnivores roam the area and use the corridor on the Macedonian side. Besides bear and lynx, we took also 31 pictures of wild boar, 26 – roe deer, 17 – red fox and 4 brown hare pictures. One camera trap was stollen during the survey.

Fig. 10. Bear scat found in the area of Qafë Plloçë corridor

Fig. 11. Lynx pictured in the area of Qafë Plloçë corridor

Results spring 2022

In spring 2022, we got 5 bear pictures from 3 different location in the area of the corridor Istok Planina. In addition, we found bear footprints at one location close to the road to v. Kuratica. These proved that bears are present and roam in the area of Istok Planina corridor. Important to mention is that bears and other animals most probably use the part of the habitat that is above the existing tunnels on the road Ohrid – Resen for safe-crossing the road. Besides bear, we got 20 photos of red fox, 9 – wild boar, 7 – roe deer, 4 – badger, 3 – wild cat and 1 picture of stone marten. Poaching and habitat degradation seems to be threats to large carnivores in the area of the corridor.

Fig. 12 & 13. Brown bear pictured in the area of Istok Planina corridor

Results autumn 2022

The camera-trapping survey resulted with only 2 bear pictures at 2 different locations (one in the broader area of Qafë Plloçë corridor and one on Istok Planina corridor). We also found bear footprints at an underpass on the main road Resen – Bitola, on Prespa's side of the Gjavato bottleneck and on the, as well as near the bridge at the mountain pass Gjavato. This proved that bears, and probably other large mammals use these under and over passes to safely cross the road. Besides bear, we got 15 photos of brown hare, 13 – wild boar, 6 – badger, 5 – red fox and 3 roe deer pictures. Two camera traps were stolen.

Fig. 14 Brown bear pictured in the wider area of Qafë Plloçë corridor

Fig. 15. Bear footprints found at underpass in the area of Gjavato bottleneck

Results autumn 2023

In autumn 2023, we got 9 bear pictures from 2 different location in the area of the Gjavato bottleneck. Our local collaborator found bear footprints and scat, and managed to take a picture of a bear in wild in the area of the Istok Planina corridor, close to the mountain pass Bukovo. These again proved that at least bears and wolves are present and roam in these areas. One wolf individual was also pictured at the Istok Planina corridor. From the other large mammal species, we got 59 wild boar pictures, 46 – red fox, 2 – badger and 1 stone marten picture. One camera trap was stolen.

Fig. 16. Brown bear pictured in wild in the are of Istok Planina corridor

Fig, 17. Brown bear pictured in the area of Gjavato bottleneck

Conclusions and recommendations

This was a first attempt to assess the functionality of identified bear corridors on Macedonian side of Prespa through camera trapping surveys. In general, the results of the camera-trapping surveys showed that:

- Qafë Plloçë and Istok Planina corridor, as well as Gjavato bottleneck, seem to be used by large carnivores on the Macedonian side of Prespa, and thus are important for maintaining the connectivity with the neighbouring large carnivore populations.
- Brown bear is a common species in the area of the selected corridors;
- Lynx was only registered in the part of Galichica NP which is in the Qafë Plloçë corridor, whereas wolf was only pictured in the area of Istok Planina corridor;
- Bears and probably other large mammals use some of the suitable over and under passes to safe-cross the road barriers;
- Main threat to large carnivore population in Prespa seems to be poaching and habitat degradation, and to some extent, the existing motorway Ohrid – Resen.
- Safety of the cameras and camera thefts are the biggest problem for implementing successful study, especially during the hunting season (October-February). This limits the deployment of cameras at many suitable sites.

Based on the results of the preliminary surveys, we give the following recommendations:

- Continue the monitoring of bear and other large carnivore's presence and movement in the selected corridors and bottlenecks;
- Deploy cameras at the known under and overpasses to see their usage by large carnivores;
- Transboundary bear corridors should be monitored at same time in all target countries;
- Involve local collaborators in the monitoring (hunters, rangers etc.);
- Work on reducing the poaching in cooperation with local hunters;
- Promote sustainable forest management;
- Raise awareness for the importance of the identified corridors for the survival of the large carnivores in Prespa region.

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