

## Final Evaluation Report

---

Your Details	
Full Name	Vukašin Bjelica
Project Title	Snake Island – Treasured and Threatened: Managing the growth of ecotourism and illegal fishing in a strictly protected area
Application ID	30090-1
Date of this Report	01.06.2022

**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
Estimating the exact ramification of present threats and the way they impact the island				<p>We can confidently say that illegal fishing is the most potent factor that's damaging this fragile ecosystem. In spite of the fishing ban on both Macedonian and Albanian sides during the fish breeding season in Lake Prespa, our team spotted fishing nets. This only intensified in the later part of the year after the fishing ban was lifted. The unsanctioned poaching of fish with the dice snake drowning in the fishing nets puts the delicate food chain established on the island under severe pressure.</p> <p>Ecotourism is the second most important factor that has a negative effect on the island. Although there are attempts to sanction these activities (such as providing a checkpoint managed by the NP Galičica and organised tour guides) these efforts are rather insignificant and without any real impact, at least for now.</p> <p>The third most threatening activity is animal trade. We have found proof of animals, notably vipers, taken from the island and then sold online. Similarly, our team has intercepted people taking baby tortoises from the island as a souvenir.</p>
Evaluating the dice snake population state as a means to estimate the effects of illegal fishing				<p>The dice snake populations seem to have partly recovered and this was evident in body condition index (BCI) of dice snakes. BCI is a common ecological index used to objectively gauge the health state of an individual in a population. When comparing body condition back in 2009 the mean values was 22.61; in</p>

			<p>2011 (when there a dramatic drop in capture rates) the mean value was - 24.21. The mean value of BCI for 2021 is -5.44. We are still waiting for data from 2022 to have a clearer picture of this.</p> <p>The data collected during the 15-year study served as a definitive starting point for the estimating the effects on poaching. We are certain that the fishing bans along with stricter control due to COVID restrictions during 2020 let the fish and dice snake take a breath and slightly recover. During our last field trip (in May 2022) we still noticed positive effects of this, however we again found fishing nets placed in the lake despite the fishing ban. Additionally, we observed snakes that had fresh injuries from fishing nets and dead fish disposed off on shores. Finally, we organised and analysed our data into a paper outlining the use of dice snake as a reliable indicator of fish stock in Lake Prespa.</p>
Prompting a revaluation of current conservation measures and tourist protocols			<p>During the project activities we have observed and evaluated the possible measures to prevent the negative effects of ecotourism and a sure method of combating poaching. We concluded that a fishing exclusion zone approximately 100 m from the island shores, along with patrols comprised of local fishermen, would be the most effective way of reporting and eventually removing illegally placed fishing nets. On the other hand, a two-tourist checkpoint system (on the mainland and one on the island) managed by park officials and tour guides, along with a controlled daily number of tours, would ensure safe and regulated tourist activity on the island. These suggestions will be formed into a report that will then be submitted to the government officials. We have also seen some meagre efforts from the officials that were meant to control or put a stop to these</p>

			<p>activities. These efforts were stopped halfway without any obvious reason. Our reports and suggestions will be submitted to government officials by the end of this year. We still hope that in our continuing efforts with NGOs such as MES (Macedonian Ecological Society) and newly formed ties with PPNEA (Protection and Perservation of Natural Environment in Albania) we can get the attention of government officials and prompt a reaction and revision of current protocols.</p>
Engaging biology students during field efforts			<p>We are proud to say that we engaged students from Serbia, North Macedonia and Albania in our field activities and successfully trained them in the most basic techniques of monitoring snake and tortoise populations.</p>
Expanding educational efforts among the local populace			<p>Although we managed to spread our story further and engage some part of the local populace, our efforts were severely hindered by the COVID outbreak, limiting our interactions with locals. However, merely our presence in the vicinity of villages during this project sparked some interactions. We did manage to get outreach with our social media (especially <u>Instagram</u>) and organise some questionnaires that way. However, we are well aware that only the younger part of the local population had the opportunity to participate in our questionnaires. This remains an important fact to address in further conservation activities in this area.</p>
Developing conversations with park rangers and tourist organizations			<p>During our field work and educational activities, we had the opportunity to work with staff from NP Galičica and NP Ezerani. This is an important step toward implementing our research results in future conservation plans in the region. However, we had no such success with the tourist organisations. This mostly stemmed from the fact that</p>

			these organisations were entirely disbanded due to the COVID restrictions and were brought down to individual tour guides which we could not contact.
--	--	--	---

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

### a). The continuing and expanding of ecological studies of reptiles in the Prespa area

Continuing ecological studies on reptiles on Golem Grad is the most important outcome of this project. We processed around 400 dice snakes, 100 vipers and close to 600 tortoises during our project activities. Population studies are time consuming but yield precious data that can be put to great use. More data has been gathered and new research opportunities have arisen, both on and in the vicinity of Golem Grad. Using the educational activities in the Prespa area, we sporadically started capture-mark-recapture studies on two more populations of dice snakes, at localities: Konjsko village and Mal Grad Island. During the length of the project, we processed and marked over 100 snakes at each locality.

### b). Forming ties with PPNEA (Protection and Preservation of Natural Environment in Albania) and starting work on the island of Mal Grad

Having the support of an NGO such as MES provided us with immense logistical help. Most of our field and educational efforts would not be possible without their help. Similarly, to this and through our close work with MES, we formed ties with PPNEA which offered us help in both organising field trip and educational activities on the Albanian side of Lake Prespa. During these educational activities we started work on Mal Grad Island. Similarly, to Golem Grad, this island also harbours plenty of animal species that are endangered and characteristic for the Prespa lake. Unfortunately, similar threats are present: poaching, unsanctioned tourism and even music festivals are held on the island. We hope that with the immense amount of experience we have from working on Golem Grad and to implement it on this island and further develop our ties with PPNEA.

### c). Engaging students from Serbia, North Macedonia and Albania into field efforts

The most satisfying part of any educational activities is to work with students as we can see firsthand our knowledge shared and immediately implemented. Students were of immense help to us in our field activities and by sharing the content of our social media platforms further. We can proudly say that we've trained six students from Serbia, two from Macedonia and two from Albania. Training students and providing them with opportunities to participate in these kinds of activities is rare in the Balkans. Simultaneously, while benefiting from their help in the field, educating and training students provides our conservational efforts sustainability and allow these students to eventually take up conservational challenges of their own.

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

Most of the difficulties stemmed from COVID restrictions that were slowly being lifted during the length of our project. Although our project started after the heaviest bans

were lifted there was still some type of COVID restrictions in Macedonia, notably on social gatherings. This hindered our efforts in the local area as most of the people avoided contact with us and it was obvious that even small gatherings (with respect to proposed health measures) were impossible. However, we used social media platforms to share information about our project. Apart from that, social media platforms such as Instagram offer some type of basic options for questionnaires. This provided a great source of information about how our educational efforts are progressing but at the same time we only had the option of reaching only some part of the populace (the one that had access to internet). Still, we feel that most of our educational efforts were successful.

Additionally, because of the cascading effects of Russian aggression in Ukraine, there were strains on our budget, due to the rising prices of fuel and groceries, but this was somewhat avoided as we shifted some of the budget from the tablets for questionnaires (which would be redundant in our situation) and bus tickets (that were at the start of our project limited by COVID restrictions) to fuel prices.

#### **4. Describe the involvement of local communities and how they have benefitted from the project.**

The involvement of local communities was mainly based with providing us with logistical support, such as food, accommodation and boat rides to the island. During the first half of our project, most of the people shied away from us, and preferred only limited contact. However, that changed in the later stages of the project. Most of the people then recognised us and took interest into our efforts. This went as far along as talking with us about government plans in the area, noticing poaching activities and even tipping us off where they have seen snake, tortoises or illegal activities. Sporadic conversations formed and we were able to discuss our efforts with them and by the end of the project found approval and support for our further actions.

The local communities benefited in two distinctive ways from our project. First, our project garnered attention, mostly from tourist but even from film crews from Macedonia, Serbia and Germany. This led to an increase of boat rides, which enabled the locals to earn some extra profit, while at the same time enabling us to hand out informative leaflets. Secondly, the local communities in the vicinity of the island are directly dependent on the ecosystem around them as these are mostly fishing communities. The conservational efforts undertaken by us and the noted positive changes that are starting to occur benefit the animals (fish) which is, indirectly, a benefit for the fishermen as well.

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

We plan to continue and expand our work. First, the educational efforts that were our objective in this project were not entirely completed and there is still room for improvement. We are certain that education of local population is necessary and should be an objective in further efforts. This goes the same for starting cooperation with the tourist organisations, especially now that things are starting up again, after the COVID pandemic.

Our 15-year long research on Golem Grad provided us with ample experience and we plan to use that experience to continue our conservation efforts both on Golem Grad and on Mal Grad Island and in the mainland Prespa area (Konjsko village). This kind of basic study can provide large amounts of high-quality data that can be used in order to perceive the impact of some activities on animal communities in the larger Prespa area. Notably, there is a lot more work to be done, especially in regard to one burning question: interconnection of dice snake populations in Prespa Lake region.

Poaching activities happen in the entire transboundary region of Lake Prespa. Dice snakes, which we feel are reliable indicators of fish stock, are present on both the mainland and the islands of Golem Grad and Mal Grad, but they enjoy drastically different types of protection. The question is are dice snakes in the Macedonian and Albanian sides of Prespa lake one population (i.e., one metapopulation in the Prespa lake area) or three different populations. If this truly is one large metapopulation of dice snakes in Lake Prespa than it seems redundant that three localities at which parts of this population occur are under different degrees of legal protection. On the other hand, if these are three different populations, more effort must go into research and determining site specific measures of protection.

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

We plan to share our work in the form of paper submitted to peer reviewed journals. We have already submitted one paper titled "Preliminary overview of body condition variation among dice snake populations from transboundary Lake Prespa" which was accepted and is about to be published in Macedonian Journal of Ecology. The paper precisely deals with the means of using the of dice snakes as an indicator of fish stock in Lake Prespa. Two more papers are in preparation that will use the data collected during this project. Rufford Foundation will be acknowledged at each of these publications.

More so, results of this project will be presented in the forms of oral presentations at the 21<sup>st</sup> SEH Congress of European Herpetologist in Belgrade (September 2022) and 6th Congress of Ecologists of the Republic of North Macedonia (October 2022).

We will also continue using social media platforms, student meetings and public lectures to show snippets of the results that came about during the length of this project.

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

Again, we feel that completing the missed educational efforts and talks with tourist organisations are essential for generating and sustaining a change in conservation efforts in this area. The objectives that were only partially successful this time around should definitely be completed in the near future.

Conserving the Golem Grad ecosystem is a complex problem. It goes without saying, CMR studies are a must for any concrete conservational effect. So far, we



are optimistic that using data from CMR studies of dice snakes are beneficial for tracking the effects of poaching in the Prespa Lake. Continuing to monitor both the tortoise and viper populations would also prove beneficial into monitoring the status of unique populations of these species that occur on the island. Integrating other experts such as ornithologists and teriologists and making a synthesis of all the studies ongoing on Golem Grad would be the next best course of action. Simply put, having the information on all the endangered species and having full official support would enable as to act more effectively.

It is important to note, the problems such as poaching near Golem Grad, and indeed in the entire lake area, cannot be solved by singular efforts on one locality and must encompass a larger area. Furthermore, there must be some sort of collaboration from both Macedonian and Albanian sides in order to successfully protect the endangered species and habitats in this area.

Because of this, these kinds of studies should be expanded, especially on the island of Mal Grad and on the beaches of the village Konjsko. These areas face similar problems as Golem Grad and the bird, reptiles and mammal species that call these places home is also in dire need of our help.

**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?**

The Rufford Foundation logo was used in promotional materials such as t-shirts, posters, leaflets and notebooks as well as in posters and presentations used for educational efforts.

Additionally, the foundation was thanked in one accepted and one submitted scientific publication in peer reviewed journals and will be mentioned along the results of this project in the 21<sup>st</sup> SEH European Congress of Herpetology in Belgrade (September 2022) and 6th Congress of Ecologists of the Republic of North Macedonia (October 2022).

Finally, we used opportunities such as interviews with student organisations and our social media to guide willing participants into the project application process.

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

**Prof Dr Ljiljana Tomović** – her immense research experience along with the fact that she was present in 2008 on Golem Grad when this study started proved extremely valuable into guiding field work and project activities. She also helped with field activities such as collecting data for tortoises and viper along with manuscripts writing and submission.

**Dr Dragan Arsovski** – as the only researcher based in North Macedonia and a member of MES (Macedonian Ecological Society), his connections as well logistical help was invaluable. He was also involved with educational efforts in the Prespa



area. He also provided help with field activities such as collecting data for tortoises along with manuscripts writing and submission.

**Dr Ana Golubović** – her immense research on reptiles in Serbia and North Macedonia offered insights into most of the field activities conducted as well as data collection, analysis and writing of scientific publications

**Margareta Lakušić** – was involved in many field activities, especially in work with dice snakes and vipers as well as in the training of students.

**Marko Maričić** – was involved in many field activities, especially the work with dice snakes

## **10. Any other comments?**

We are immensely thankful to The Rufford Foundation for financing our project. The conservational effort on Golem Grad and the larger Prespa area can continue with renewed effort. The data gathered during the length of the project as well as the valuable connections formed will prove extremely beneficial for future conservation work in this area.

We are thankful to Uroš Blagojević, for designing our project logo.

We are also grateful to the officials of NP Galičica, NP Ezerani, members from PPNEA and MES who joined us during our field activities and provided us with logistical help.