Project Update: December 2022

Pelobates project – steps forward for habitat integrity and species diversity

Restored water habitat monitoring

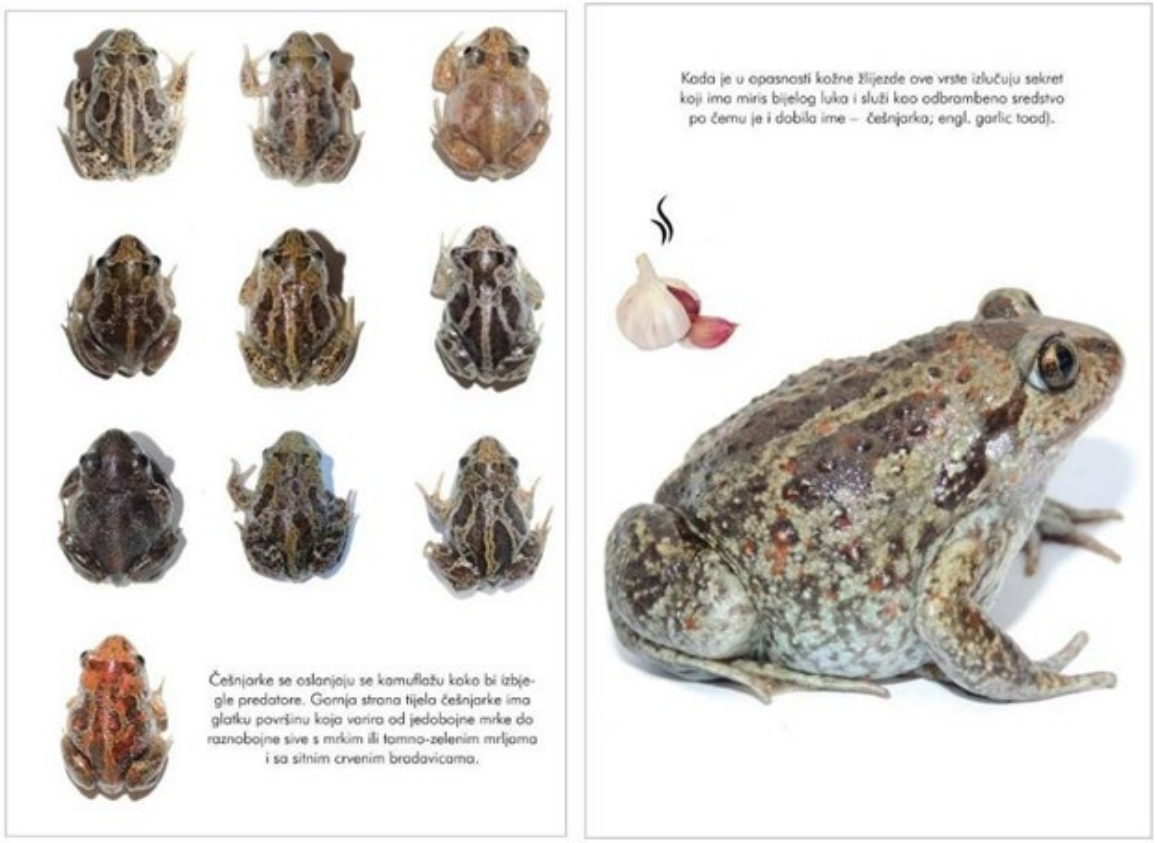
At the beginning of the project, in August 2022, students from Sarajevo University together with assigned project mentor visited the Čardak locality for purposes of monitoring restored ponds and their species (project team members and members of Herpetological Association in Bosnia and Herzegovina ATRA). The first collected data showed the increase of adult European pond turtle (*Emys orbicularis*), Natura2000 species, global IUCN NT species, strictly protected species on national level (Republic of Srpska) and categorised as VU in the Red Book of Federation of Bosnia and Herzegovina.

Picture 1. Habitat and biodiversity monitoring od restored pond in August 2022

Picture 2. Prussian carp introduced unplanned in the restored pond and "No fish

introduction" sign
Unfortunately, despite many years of education and drawing attention to the importance of these unique waterbodies, someone stocked the restored pond with fish Prussian carp (*Carassius gibelio*), which, in this habitat of specific biodiversity, represents the predator. Regarding the large number of European pond turtles, we did not want to actively relocate the fish from the pond now. In the spring regular monitoring will be carried out and the decision about the activities of removing and relocating fish from the restored pond will be made if needed. So far, we warned the president of the local community Čardak about the negative effects this introduction may cause. Also, the "No fish introduction" signs were made to be installed around restored water bodies.

Planning the museum exhibition and preparation progress
In the autumn and winter the project team is hard working on organising the museum exhibitions considering our 7-year research of umbrella species *Pelobates fuscus* and importance of wetland habitats in collaboration with the Museum of Republic of Srpska and The National Museum of Bosnia and Herzegovina.



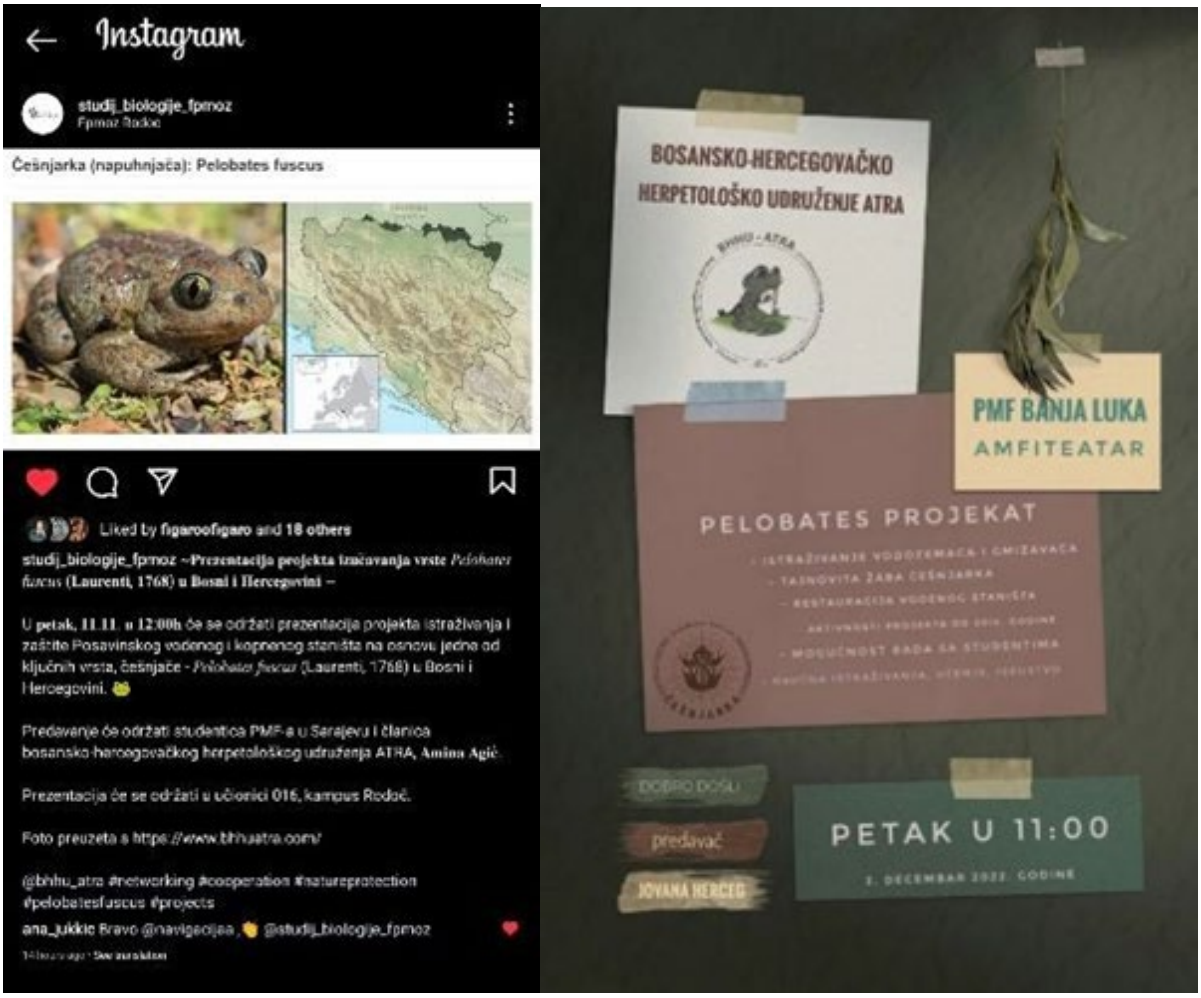
Picture 3. Examples of exhibition preparation

Museum exhibitions will focus on umbrella species *Pelobates fuscus*, its habitat and life cycle. The 3D models of tadpole and two adults in natural size are in the process of preparation and will be used as an interactive part of the exhibition together with posters, rollups and museum specimens.

Lectures: education, promotion and opportunity for field work

In order to achieve the goals and tasks of this project, we have organised two presentations on five different universities: University of Tuzla, University of Mostar, University of Sarajevo, Universities of Banja Luka. Presentation lasted about an hour on each University, with an overview of the main place of the project realisation, essential features of the studied frog species *Pelobates fuscus*, research methods, results of previous work and projects, and explanation of different ways of all possible involvements of students.

Presentation of the project and education of students in Tuzla occurred on the 3rd November 2022 in the premises of Faculty of Natural Sciences and Mathematics, Department of Biology. There were students mainly from the first and second year of studies. During the presentation, main activities and goals of the project were presented to students and they responded with questions to know more about the biology of common spadefoot toad, potential new discovery sites and how can they help with the project realisation. Generally, considering the number of enrolled students per year, it can be said that student response and attendance was positive and that they were highly interested in all the aspects of the project.

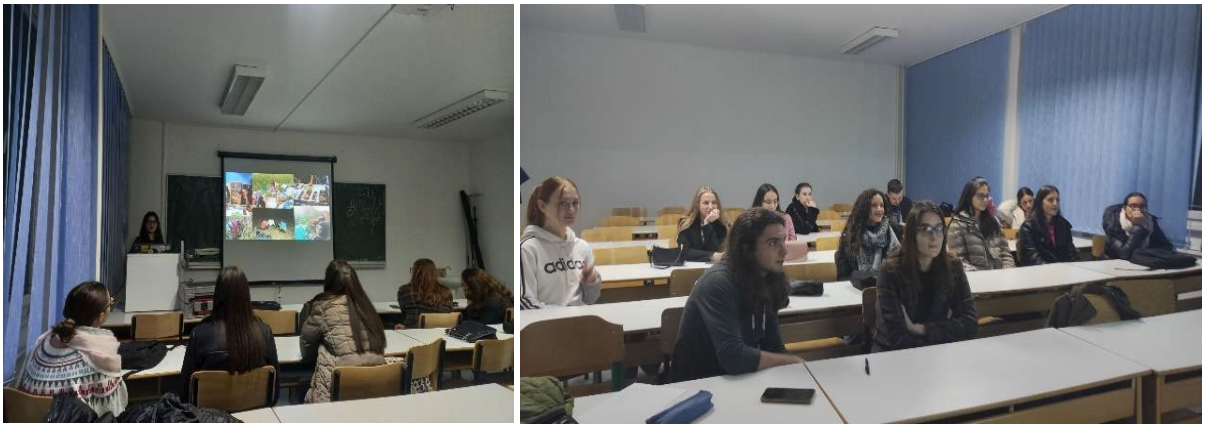


Picture 4. Examples of online lecture announcement post and poster presentation

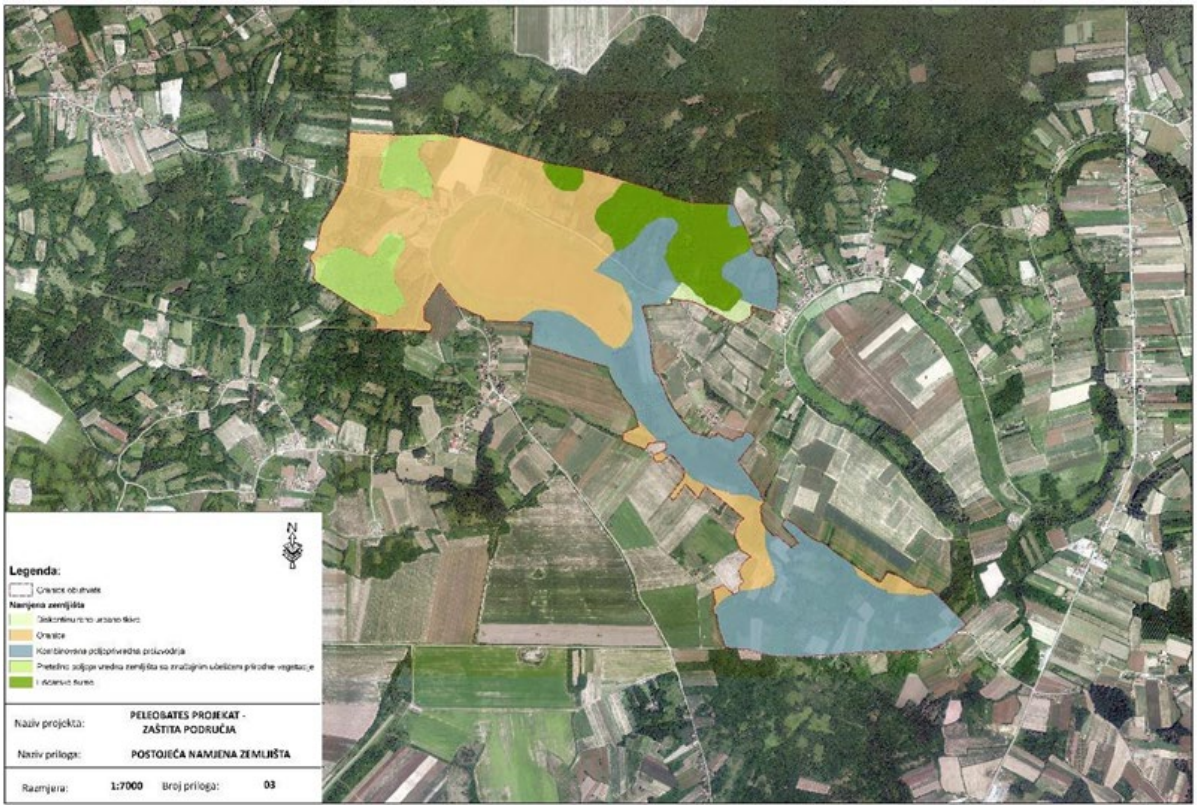
When it comes to presentation at University of Mostar, it was held on the 11th November 2022 at Faculty of Natural Sciences, Mathematics and Education,

Department of Biology. The student turnout was lower compared to Tuzla. Nevertheless, they still showed interest in project activities and methods of research. In order to engage students in further project plans, we explained all opportunities and benefits that are enabled within this project, and we left contact information they can use for their future inclusion.

At the University of Sarajevo, the Faculty of Natural Sciences, Department of Biology, the presentation was held on 8th December 2022. The number of students was excellent, and they were more than interested in the lecture and project activities.
Before the spring 2023 we will finish the two more important lectures on two Universities in Banja Luka.



Picture 5. Project lectures at Department of Biology at University of Sarajevo



Picture 6. One of the maps for: Land purpose of proposed protected area

GIS maps
Our team member in spatial planning finished mapping and zoning of the narrow-proposed area for the purpose of habitat protection. Mapping and zoning include field activities, collecting existing documentation and geographical backgrounds and collaboration with locals and municipality to collect all necessary data for drafting the spatial plan maps. With all the data collected so far and during this project four maps have been prepared.

Research continuation
Further research continued with a focus on hydrology and geology, since we collected important biodiversity data. Hydrology and geology research include literature and field research, collecting and bounding all necessary data in elaborate which will be used in the Study for habitat protection.


Picture 7. Geological and hydrological field visit in October 2022

The protected area is a lowland area of Bosnian Posavina with a very low slope. The terrain is slightly inclined to the northeast, in the direction of the outflow of water towards the main recipient, that is, the Sava River. The altitude ranges between 95 and 100 m asl and on the site between 98 and 99 m asl.

In geotectonic terms, the area is located within the Miloševac depression with the Tolisa depression, which, together with the Gradačac block, is separated by the Rajska River fault zone from the neighboring Modriča, Trebovac and Tinja blocks. This fault zone led to the lowering of the terrain and the formation of the Miloševac depression, as the southern part of the Sava Basin. It is assumed that Quaternary sediments were brought down along the fault zone and brought into contact with the Eocene. The Rajska River fault zone belongs to the seismically active faults together with the Slavonski Brod faults, i.e., the Sava Basin.

The area belongs to the alluvial plain of the Sava River and its tributary Tolisa. Fluvial landforms are dominant, especially the accumulation type. The depression or subsidence of the terrain in which water is occasionally retained, i.e., it has the characteristics of a marsh area, is in the form of a narrowed ring - oxbow and extends in the northwest-southeast direction. In the center of the ring there is a slightly higher terrain called Ada. The toponym itself indicates that the terrain along the entire perimeter of the oxbow is occasionally under water. The lowest depression pockets are located in the northwestern part, and this is where the longest retention of water is recorded.

Regarding the hydrological conditions during the field visit in October 2022, it can be stated that the main feature is the lack of water, caused by a long-term drought in most of the summer and disconnected oxbow from the main Tolisa River stream. Based on the presented climatological indicators in the last 10 years, an increasing number of extreme phenomena have been recorded, primarily droughts, and then floods. In the precipitation regime, more frequent storms with short-term, but intense rains are possible. All projections indicate an increase in air temperatures in the coming period and an increase in the frequency of hot weather waves. All those factors will adversely affect the protected area, in terms of lack of water (both surface and underground) and unreliable feeding regimes.

Nevertheless, for a precise assessment of the situation, from which measures and guidelines could be created to improve conditions, i.e., habitat revitalisation and its self-sustainability, it is necessary to establish regular monitoring.

Designing mini educational boards in progress
Mini educational boards are planned to be set at the defined points to show specific species or their behaviour that all visitors could observe, even without a guide. Mini boards will be made and designed for all ages. More ideas will be drafted in the Study for habitat protection.

The pond restoration is prolonged for the end of summer 2023 since in 2022 the prices of fuel were doubled regarding the project budget and the soil was very moist and wasn't adequate for mechanisation to approach the target area.

The restoration will be done in the late summer in 2023 when most pond related animals have finished their breeding life cycle and are just in the stage of inaction. The first step of restoration is mulching the dense vegetation and preparing the pond for the excavation of the pond muck. With the excavator, pond muck will be extracted down to the mineral soil at the deepest point (clay soil, spread out and left for 24-48 hours in case some animals were dug in). Pond banks will be levelled to create shallow littoral zones with warm water.

Co-funding from NPO Idea Wild was excepted and DJI drone has been purchase for purpose of shooting the videos and preparing short promotional and educational movies.