

Project Update: July 2023

Monitoring of the restored pond continued in 2023. Students from Sarajevo University (project team members and members of the Herpetological Association in Bosnia and Herzegovina - ATRA) together with the assigned project mentor visited the Čardak locality in the spring and summer periods. During the field visits, they collected all the data regarding habitat conditions and the present species.



Figure 1. Habitat condition of restored pond in February 2023.

In the summer, during the monitoring period, the number of adult European pond turtles (*Emys orbicularis*) was surprisingly low. However, the richness and density of other amphibian species were quite satisfactory.

In February 2023, a larger number of green algae appeared on the surface of the pond, but after the vegetation season started for *Typha* and other submerged plants, the habitat conditions became established and satisfactory.

As mentioned in the previous report, despite many years of education and drawing attention to the importance of these unique water bodies, someone stocked the restored pond with Prussian carp (*Carassius gibelio*) fish, which, in this habitat of specific biodiversity, represents a predator. We monitored the species density, specifically observing the presence of a large number of European pond turtles as potential predators for the fish species. In the spring and summer, we noticed a significantly smaller number of Prussian carp in the restored pond. In addition, we did not notice a significant difference in amphibian species' reproduction preferences regarding the presence of the predator.

In the meantime, after installing "No fish introduction" signs at the locality, we did not notice any new fish introduction into the restored pond. We will continue monitoring the situation and take necessary actions to ensure the preservation of the habitat and its biodiversity.



Figure 2. Oxbow filled with water in February 2023, Čardak locality.



Figure 3. Students working at the Čardak locality – collecting DNA samples and marking the European pond turtles.



Picture 4. "No fish introduction" sign at the Čardak locality and restored pond in spring 2023.

Research camp "Čardak-Modriča 2023"

In spring 2023, one more small biological camp, this time focused on student education, was organised at the locality of Čardak. The indicative and organisation were on the behalf of Association of Biology Students in Bosnia and Herzegovina in cooperation with our project team, Herpetological association in Bosnia and Herzegovina, and Society for research and protection of nature, supported by Municipality of Modriča, Local community Čardak and several private donators.



Figure 5. Students participating the "Čardak-Modriča 2023" biological research camp.

In order to conduct a species inventory, research was carried out in the Čardak area in the municipality of Modriča. The research took place as part of the scientific research camp "Čardak- Modriča 2023" from 30th March to 2nd April 2023.

Students were researching the most important animal groups in this locality: amphibians and reptiles (herpetofauna), birds (ornithofauna) and bats (chiroptera). Various catching and research methods were tested and shown to students: specific nets for all three groups, bat sound recordings of echolocation calls, trapping, capture-mark-recapture method, recognising birds by their song, animal traces, DNA sampling, swab sampling, etc. All of these methods were carried out in a way to prevent any animal harness and stress.

Regarding herpetofauna, methods used for amphibian and reptile research were manual catching and the application of trapping methods to monitor species from the group of amphibians and reptiles in the restored pond. The trapping method, used to record the presence of species of interest and other fauna members, as well as to estimate the population size, involved setting traps in the late afternoon of 30th March 2023 (at 7 PM), and lifting the traps in the early morning of the next day, 31st

March 2023 (at 7 AM), after 13 hours. The positioning of traps required their upper part to be above the water level to ensure oxygen flow for temporarily caught individuals in the traps. Tissue samples taken from a certain number of individuals for future DNA analysis were permanently stored in 96 % ethanol and kept at – 20 °C. Between each new tissue sample collection, the equipment (scissors and forceps) was disinfected with alcohol and flame. When handling amphibians with permeable and sensitive skin, disposable gloves were used and changed for each new handling with another individual to prevent possible fungal diseases.

During the research, the presence of eight species was recorded, all belonging to the class Amphibia (*Bombina bombina*, *Triturus dobrogicus*, *Lissotriton vulgaris*, *Bufo bufo*, *Rana dalmatina*, *Pelobates fuscus*, *Pelophylax* sp., and *Hyla arborea*). Among the recorded species, the presence of 11 individuals of *Triturus dobrogicus* and 10 individuals of *Lissotriton vulgaris* was recorded using trapping method, while 17 individuals of *Pelobates fuscus* were observed and manually caught.

Considering the period of research (late March and early April), which still represented the hibernation period for some species, it was unable to conduct monitoring on the species *Emys orbicularis*. Therefore, the recorded number of species represents only a part of the expected herpetofauna.



Figure 6. Part of amphibian species found during student's camp in Čardak 2023 – Fire-bellied toad, European tree frog, Danube crested newt and European common spadefoot toad.

Museum exhibitions, education and promotion

The exhibitions were planned to be set up in Museums of Republic of Srpska and The National Museum of Bosnia and Herzegovina. The opening of the first exhibition was in Sarajevo, in the National Museum of Bosnia and Herzegovina, was on 7th April 2023 and the second exhibition is currently taking place in the Museum of Republic of Srpska in Banja Luka. The authors are Ana Ćurić and Adnan Zimić and designer of the event is Vanja Lazić.

Museum exhibitions focus on umbrella species *Pelobates fuscus*, its habitat and life cycle.

The concept of the exhibition was to present the 9 years of work within all four main projects. Each project highlighted its main and most important goals and results, accompanied by authentic photography. A short promotional and educational movie was streamed, featuring an all-around sound effect to give visitors an idea of the vocal and harmonious sounds of amphibians and birds at the Čardak and similar localities.

The third part of the exhibition focused on the process of European common spadefoot toad development and metamorphosis. Interactive displays allowed all visitors to observe samples of tadpoles from embryo to metamorphosed frog, accompanied by authentic pictures presenting the highlighted developmental phases. The entire process was also presented on a specially designed roll-up.

The fourth part of the exhibition included 3D models of male and female adult individuals, as well as the largest tadpole found in Bosnia and Herzegovina (14 cm). The fifth part of exhibitions show other animal species present in the same habitat as *Pelobates fuscus*.

In the sixth part, important information about the species' endangered category (national, regional, European, and global) was presented. There was also a scent display where all visitors could understand why the European common spadefoot toad has its national (and regional) name – “Garlic toad”.

Finally, at the end of the exhibition circle, promotional material was presented to further promote and raise awareness about the projects and their valuable contributions.



Figure 7. Exhibition in Sarajevo.

After the first exhibition, in collaboration with BHT (Bosnian national television) we filmed a short documentary.

<https://www.youtube.com/watch?v=IBKvI9zXq-U>

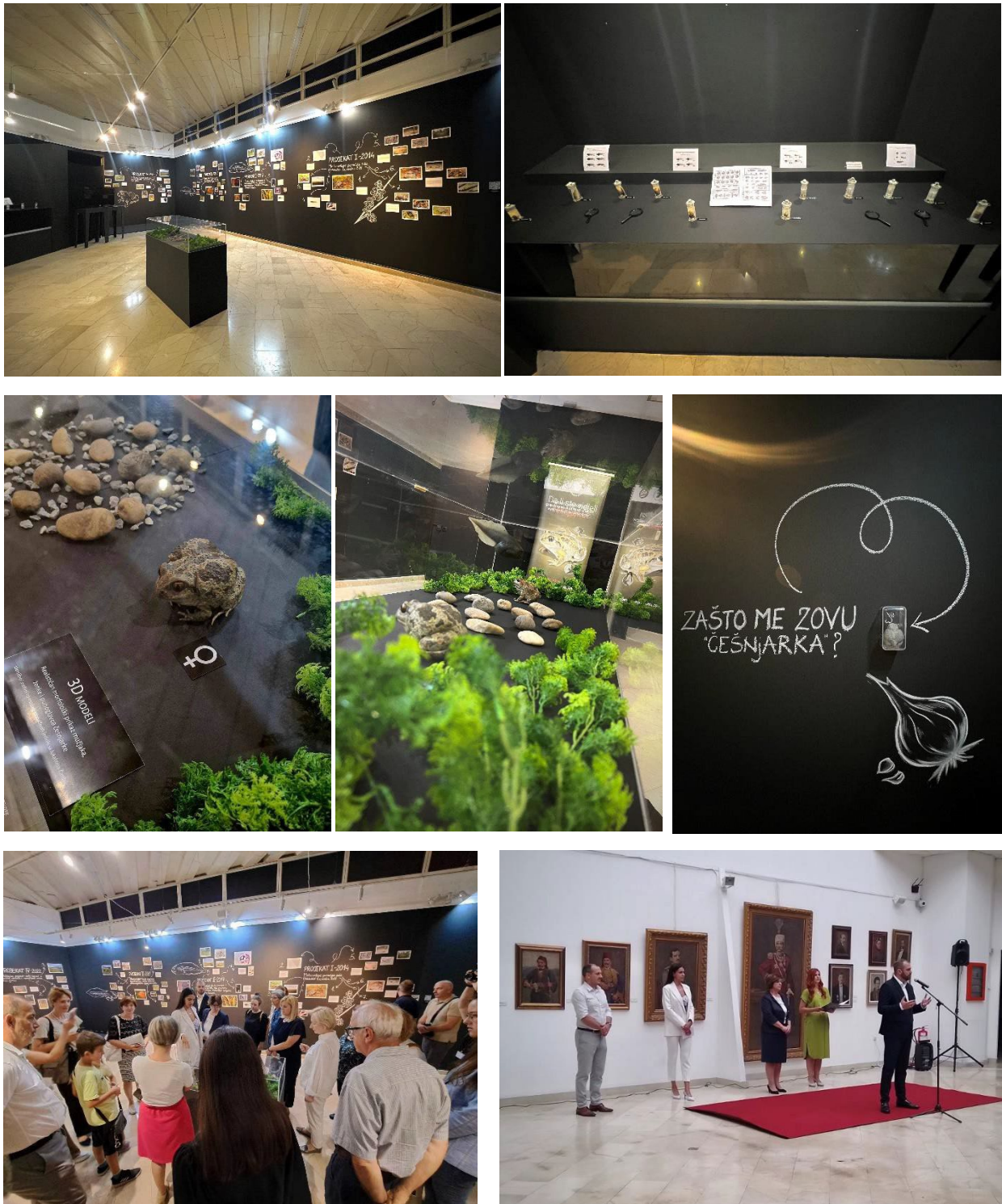


Figure 8. Exhibition opening in Banja Luka

One of the videos filmed during the opening of the exhibition in Banja Luka

<https://www.youtube.com/watch?v=1lhxm2rBss>



Biologija Fpmoz

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~Prezentacija projekta izučavanja vrste *Pelobates fuscus* (Laurenti, 1768) u Bosni i Hercegovini ~

U petak, 11.11. u 12:00h će se održati prezentacija projekta istraživanja i zaštite Posavinskog vodenog i kopnenog staništa na osnovu jedne od ključnih vrsta, češnjake - *Pelobates fuscus* (Laurenti, 1768) u Bosni i Hercegovini. 🐸

Predavanje će održati studentica PMF-a u Sarajevu i članica bosansko-hercegovačkog herpetološkog udruženja ATRA, **Amina Agić**.

Prezentacija će se održati u učionici 016, kampus Rodoč.

Foto preuzeta s <https://www.bhhuatra.com/>

Herpetological Association in Bosnia and Herzegovina ATRA
Fpmoz Rodoc

#networking #cooperation #natureprotection #pelobatesfuscus
#projects

Češnjarka (napuhnjača): *Pelobates fuscus*



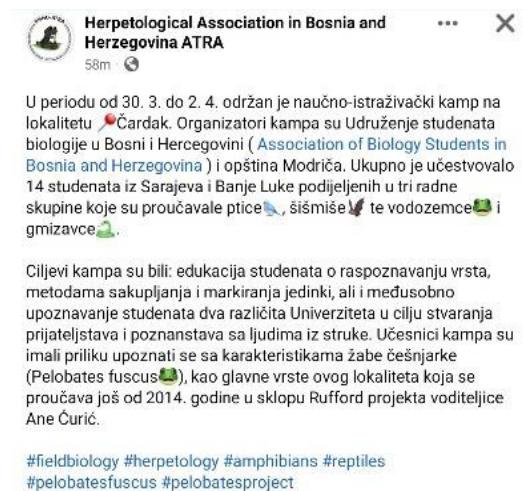


Figure 9. Additional promotion of the Project through social media

Habitat restoration

Regarding the hydrological conditions during the field visits in 2023, it can be stated that the planned area for restoration is not suitable due to high water levels or high soil moisture. The problem is of a mechanical nature (mechanisation not able to approach the target area), and if the habitat is still unsuitable for restoration by the end of summer 2023, we will choose another spot at the same oxbow.

The restoration is planned to be conducted in late summer 2023 when most pond-related animals have finished their breeding life cycle and are in a stage of inactivity. 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.

Designing mini educational boards in progress

The design of mini educational boards has been completed, but their installation at the Čardak locality will be carried out after the second restoration. Additional ideas and content for the main boards will be developed in the Study for Habitat Protection.