

## Project Update May 2020

### 🚩 Project preparation and Covid-19 situation

The project activities started in winter 2019 with preparation of all necessary presentations for the educational part of the project, preparing letter for ministries, high schools and faculties, meetings with experts and scientists from Serbia and Croatia who are experienced in water bodies restorations, and project team meetings for planning all research of flora and fauna in 2020.



Fig. 1. Presentation: local community meeting

Unfortunately, in March 2020, due to Covid-19 and restrictions in Bosnia and Herzegovina and worldwide, we had to adapt our project to the situation as much as possible. Considering lectures, in the next few months, we will have online Zoom lectures with students that were planned to be take place in state school institutions. At this moment we are still waiting for the dates of lectures, since the students are engaged in online lectures and exams.

Our fieldtrips and research started by the end of March 2020, but with the time restrictions we were not able to stay in the field as planned and for no more than 1 day. Our planned meetings and education with locals are postponed and will be

arranged at the earliest in late summer. One of the important meetings was organised with the president of the local community. We presented all activities done in Cardak region since 2015 (I, II and III Rufford and other project) and all project activities that need to be done in 2020 regarding restoration and protection of water habitat (Fig. 1). The meeting went well and we are now in active cooperation with a local community. Also, the most important meetings regarding restoration and Cardak legal protection will be postponed until there is a possibility to arrange the meetings in government institutions.

#### 🚧 Field research and project activities

Flora and fauna research started in March 2020. We have done terrain GPS mapping of a potential protected area border. In March and April 2020 our project team started detailed research on flora (Fig. 2), herpetofauna and birds. Also, research on mammals and insects started but the intensive field trips will start at the beginning of May 2020.



Fig. 2. Plant species and woodland habitats

Last autumn and winter (2019/2020) had minimum rainfall and no snow. The consequences can be seen in spring 2020 at the water habitats in Cardak which are almost dried out. Another reason for the low water level is a high area covered mostly with *Thypha latifolia* whose rhizomes have been absorbing all precipitation water. Since 2014 the Cardak pond has never be drier (Fig. 3).



Fig. 3. Water level at the same pond: March 2018 and March 2020 (the highest water level)

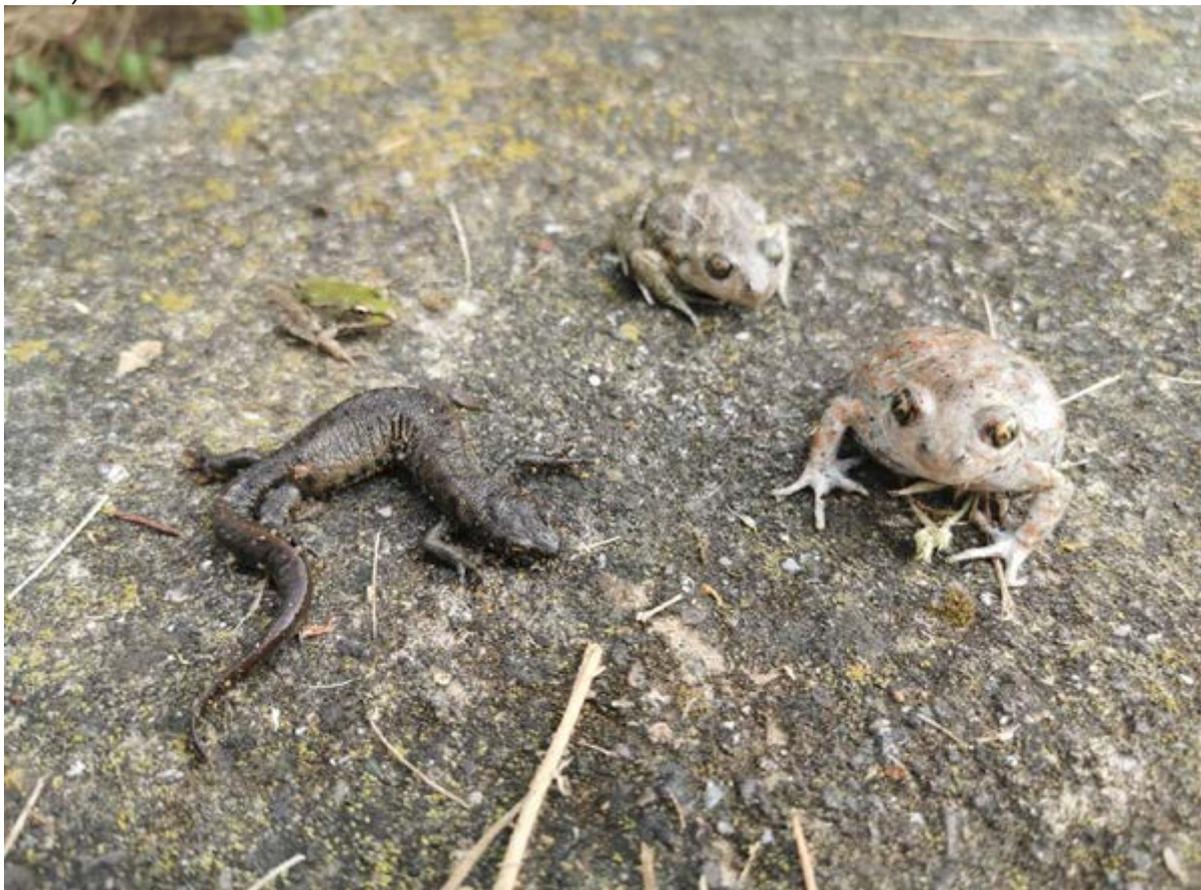


Fig. 4. Green frog, European spadefoot toad and Danube crested newt found and saved from local manhole

According by the locals' stories, the previous driest year was in the 1950s, when the Tolisa River was still flowing. They said that the river stopped flowing. Today, the Cardak pond depends mostly on precipitation and underground water when the level is high. At the moment, the pond has several depressions with shallow water and the *Typha* has been absorbing all precipitation water and overgrowing the water body. But, the amount of water is not enough for the amphibian species that are now using nearby drains, wells and other anthropogenic water sources for their reproduction. The enthusiastic ones that spawn in shallow water now have their egg clutches dry out and any embryos or hatched tadpoles die. Also, the lack of water represents a problem for the birds and insects (e.g. Odonata). In one backyard channel we found several species of frogs and toads (*Bufo*, *Rana*, *Pelophylax*, *Bombina*, *Hyla*) (Fig. 4) spawning, as well as European pond turtles. Even European common spadefoot toad, which spawn from April, have not yet been seen spawning in any water bodies (including man made water bodies or any kind of water that retains on any surface).

As the new part of this project, and as the Rufford project from our colleges from Serbia, we expanded the Biologer application to Bosnia and Herzegovina. During this project we are actively using this application for collecting all species data in the field with the focus on photographing and sharing species of other taxonomy groups that we find interesting (Fig. 5).

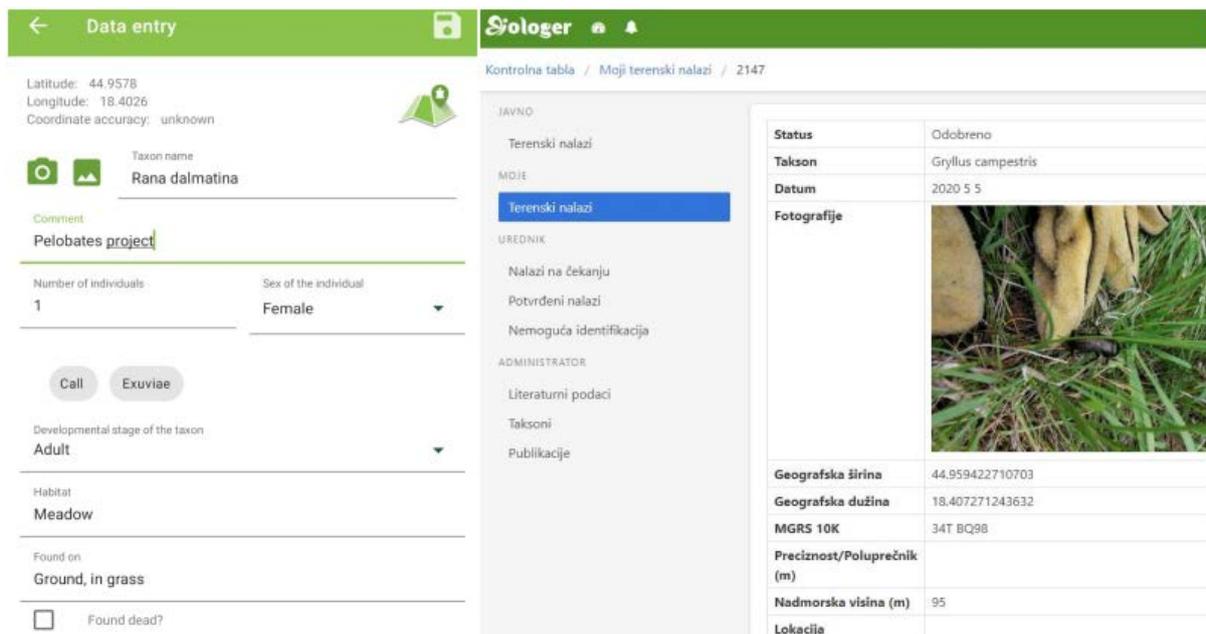


Fig. 5. Biologer application and web platform

At the moment we are in the process of arranging the mini biological camp and photo-camp for the end of May and beginning of June 2020. This will be the next step of introducing the students with idea and work in "laboratory in situ".