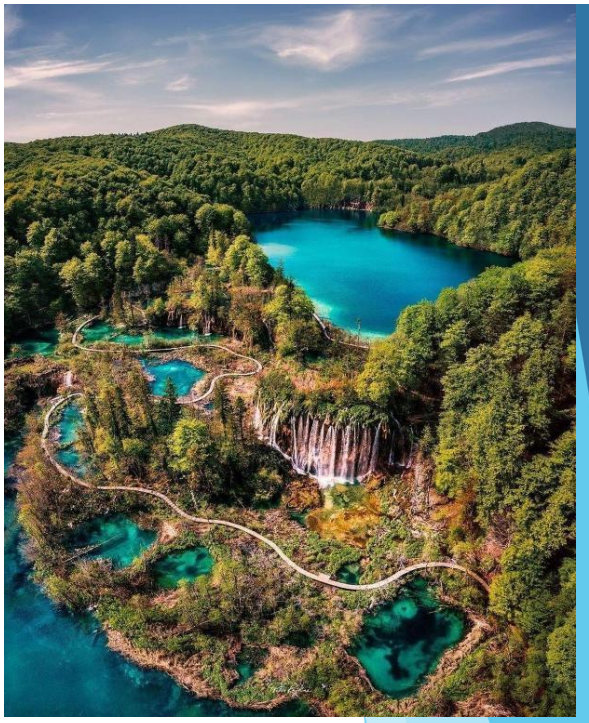
From low hanging fruit to regional impact

Matea Jarak
WWF Adria- Freshwater program

National park Plitvička jezera



Before…

After…

Project activities

- 2015- For the purpose of determining the ecological status of the Bijela River, a study was conducted in 2015 to assess the deviation of biological quality elements (composition of phytobenthos, macrobenthos, and macrophyte communities) and the physico-chemical properties of water from the reference state prescribed by the Regulation on Water Quality Standards.
- Hydrological studies were conducted
- 2021 local stakeholder meetings and informing
- 2022 – 2023: A technical report was prepared
- Removal works began in May 2024 and were completed in April 2025.
- May 23rd and 24th, 2024: National Seminar on Barrier Removal in Plitvice
- Monitoring: April – October 2025
- Ichthyology, macrozoobenthos, phytobenthos, and macrophyta

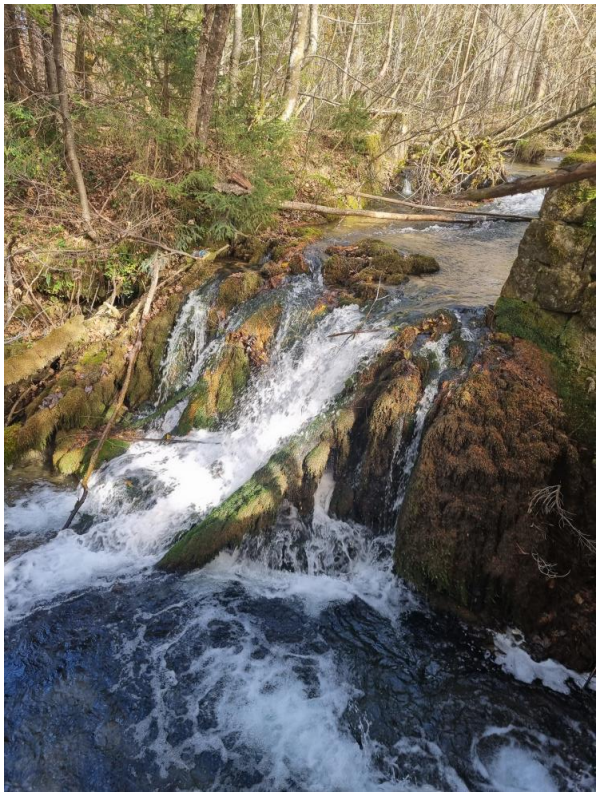
COMMS

- NOVEMBER ’23 PR was covered by all major media in Croatia
- Project presentation on “Good Morning Croatia”
- Live project presentation on HRT 4 show “Green Line”

Challenges

- There is no data in a single database
- Little interest in barrier removal
- Regulations and procedures
- Contractors?

- Work delayed due to early trout migration
- Spring start of work delayed due to high water levels due to snow
- Work delayed at final location due to unavailability of dry stone bridge contractor
- Monitoring delayed due to work



Monitoring results - trouts

- 1. Danube trout populations are present in the middle and lower reaches of the Bijela River. Thanks to the river continuity restoration activities, trout have begun to occupy upstream habitats again and have been recorded upstream of Stipanov mlin. Individuals are also present in the most downstream section of the Bijela River, above its mouth.
- 2. The density of the trout population in the Bijela River is very low and below the habitat capacity and natural density as described in older literature. The highest number of individuals is present in the middle reaches.
- 3. The activities to restore adequate habitat conditions in the Bijela River and river continuity have led to positive effects for the Danube trout population immediately after implementation, while even more pronounced positive effects are expected in the following years.
- No negative consequences of the barrier removal activities have been observed or expected.

Monitoring results - macrozoobenthos

- Of particular importance is the positive shift in the accumulation segment of the Bijela Rijeka, which in 2015 was the most degraded part of the system, with very low community diversity and limited presence of rheophilic taxa. In 2025, this segment shows clear signs of recovery – increased diversity and the presence of typical rheophilic species. The above indicates that the removal of artificial barriers has a strong positive impact on the longitudinal connectivity of habitats and the general restoration of the ecosystem.
- Taking into account the composition and structure of macrozoobenthos, the results confirm that the removal of hydromorphological barriers in 2024 has a positive and visible effect on the restoration of the ecosystem. The improvement of conditions in the accumulation segment clearly demonstrates the importance of preserving the natural longitudinal connectivity of water bodies.
- While the upstream segments maintain stable, natural conditions, the downstream parts are still influenced mainly by natural processes of flow deceleration and sediment accumulation, which is manifested through an increased presence of opportunistic groups.

Monitoring results - macrophyta

- The target species, creeping celery (Apium repens), was found at stations 1, 2, 4 and 5 and was present everywhere with relatively large stands consisting of vital and well-developed plants.
- It can be concluded that the work carried out did not have negative effects on macrophyte communities and species in the Bijela Rijeka.
- One location was excluded from removing the barrier as there was a big and helthy population of A. Repens – instead old waterbed was restored

What is next?

- Barrier removal projects in the region are coming to an end (SLO & KOS)
- Reporting new projects to the ORP financing
- Seeking funding for mapping obsolete and damaged barriers in Croatia
- Promotion of the removal of barriers as part of the NRP
- Working in partnership with the relevant ministries to improve the efficiency of the procedures for obtaining permits for the removal of barriers
- Informing and educating professional stakeholders about the benefits of removing barriers – „how to" technical education and on removal project development
- Gathering data on obsolete barriers in areas managed by public institutions managing protected areas to build on National barrier database (bioportal.hr database)