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Challenges in intermittent river assessment: Prospects for an unexpected obscure animal group (Acari: Hydrachnidia)

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Water mites have complex life cycles, synchronizing five life stages according to host, prey and habitat availability and in intermittent rivers (IRs), to dry periods as well. Multiple connections of water mites to the environment make them sensitive to any changes and consequently, good bioindicators. Their dynamics and potential in intermittent river bioassessment is discussed. Nine study sites from seven karst rivers, where intermittency naturally occurs, were analyzed in order to assess water mite occurrence along several hydrological metric gradients. The sites ranged from perennial or rarely ceasing flow to regularly ceasing flow or extremely intermittent categories. Water quality indices that include water mites (PTH and PTHfam index, Plecoptera, Trichoptera, Hydrachnidia) were tested and compared with the EPT index (Ephemeroptera, Plecoptera and Trichoptera) in order to test their applicability in intermittent river monitoring. Water mites positively associated with unstable hydrological conditions (drying events with greater unpredictability) showed morphological features (swimming setae) typical for lentic habitats. On the other hand, crawling mites (inhabiting both lentic and lotic hydrosystems) were found to positively correlate with higher values of both the PTH and EPT indices (higher quality classes). The PTH and PTHfam indices were (significantly) positively correlated with the EPT, showing slightly higher quality values (classes) in IRs when compared to the values of the EPT index. Water mites can thus be considered as indicators that bridge the gap IR bioasssesment caused by insect taxa sensitive to flow intermittency and pristine, naturally intermittent rivers.

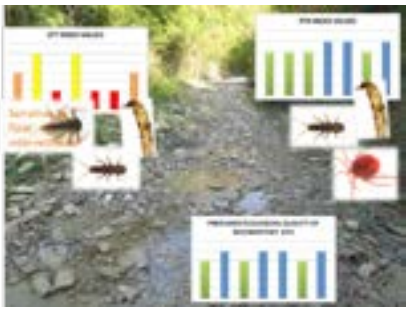

Figure 1: Graphical abstract of conference paper

Recent Publications

1. Pozojevic, Ivana; Brigic, Andreja; Gottstein, Sanja. Spatial distribution and seasonal changes of water mite assemblages (hyrachnidia) in dinaric karst springs // 10 Symposium for European freshwater sciences 2017 abstract book.
2. Pozojevic, Ivana; Pesic, Vladimir; Gottstein, Sanja. Surviving the dry phase: Water mite (Acari: Hydrachnidia) adaptations to flow intermittency in karst rivers // The Book of Abstracts 7th International Symposium of Ecologists of Montenegro-ISEM7
3. Vuckovic, Natalija; Vilenica, Marina; Kralj, Tomislav; Pozojevic, Ivana; Milisa, Marko; Kerovec, Mladen; Ternjej, Ivančica; Mihaljevic, Zlatko. Littoral macroinvertebrate communities in reservoirs of the Dinaric karst of Croatia // 10th Symposium for European Freshwater Sciences.
4. Pozojevic, Ivana; Lajtner, Jasna; Rubinic, Josip; Barac, Ivica; Gottstein, Sanja. Key zoobenthos inhabitants as indicators of hydrological dynamics in karst springs // Book of abstracts and programme. 2nd Central European Symposium for Aquatic Macroinvertebrate Research.
5. Pozojevic, Ivana; Gottstein, Sanja; Mihaljevic, Zlatko. Strategije prezivljavanja vodengrinja (Acari: Hydrachnidia) u rijekama Hrvatske koje presusuju // Knjiga sazetaka (Simpozij o biologiji slatkih voda, USB)

Biography

Ivana Pozojevic is a PhD student at the Department of Biology, Faculty of Science at the University of Zagreb, Croatia. Her research focuses on the community ecology of springs, intermittent rivers and freshwater organisms, and she is especially interested in water mites (Hydrachnidia).

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