Fish mesohabitat characteristics in Austrian lowland rivers

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ABOUT THE PROJECT
Climate scenarios of the IPCC (1) for the Central European area expect that the climate will warm up in all seasons. Global warming has already shown impacts on European freshwater ecosystems and the services they provide to humans. Main goal of the project is to understand and define the mitigation effect of riparian vegetation to benthic invertebrate and fish communities against adverse effects. Our task is to assess the habitat use characterisation for key fish species and their life stages. This should give a valuable contribution to support river managers in sustainable river restoration towards climate change adaptation, ecological services and socio-economic consequences.

STUDY SITE & METHODOLOGY
The study is conducted at two rivers in the “Hungarian Plains” ecoregion, Austria, i.e. Lafnitz and Pinka. This lowland region is subject to the highest future temperature increase in Austria (2 - 2.5°C until 2040) (5).

RESULTS
First results have unveiled significant differences between the two rivers concerning main abiotic parameters. Modelling habitat preference by logistic regression allows to calculate the potential available habitat for different fishes- and life stages. Figure 5 shows that both Lafnitz and Pinka serve only very limited habitat for Grayling. Both rivers provide habitats for spawning of Barbels and Nase but juvenile habitats are limited, especially for Barbels resulting in a possible loss of recruitment for that species.

DISCUSSION
Temperature is a crucial factor determining the habitat usage of fish. Increasing temperature in combination may result in the loss of suitable environment for certain species and further in a decrease of biodiversity. We expect that riverstretches with a high amount of shading are more likely to buffer the expected temperature increase caused by climate change.

Suitable habitat for all life stages is essential in maintaining healthy fish stocks. Statistical tools such as logistic regression, Answer-tree or clustering methods can help to identify the typical and atypical habitats of fishes and furthermore contribute to restoration measures aiming at fish populations

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