



Conference Abstract

Evaluating eDNA-based monitoring of fire salamander larvae under field conditions

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Abstract

Amphibians globally belong to the most threatened animal groups and monitoring their populations is of critical importance for their conservation. The fire salamander (*Salamandra salamandra*) is one of the European amphibian species which has been experiencing drastic regional population declines due to the spread of the invasive chytrid fungus *Batrachochytrium salamandrivorans*, making it a key species for monitoring efforts. Here, we evaluated how the sampling and analysis of eDNA can aid the monitoring of larval salamander populations in small streams under field conditions.

Nine small streams with known adult and larval fire salamander populations were investigated in Tirol (Austria). Per stream a stretch of 30 m downstream from its source was divided into 10 m sections where salamander larvae were counted. Water samples were taken at the end of each section and filtered on site. The DNA extracted from these filters was tested by a new PCR assay developed for the detection of mitochondrial DNA of *S. salamandra*. This assay combines endpoint PCR with capillary electrophoresis, allowing to relatively quantify the amount of fire salamander eDNA present in the water samples. In two of the nine streams no eDNA of *S. Salamandra* could be detected. The outcomes of an analysis of how larval densities, discharge and volume of filtered water affected the detection of salamander eDNA will be presented. Finally, we will conclude on the practical

implications of the current findings for eDNA-based monitoring of fire salamander populations.

Keywords

amphibians, monitoring, density, diagnostic PCR, quantification

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