

## Master's or Project Thesis FS 2022



Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie

Head: Prof. Dr. Robert Boes Supervision: Dr. Isabella Schalko Partner: Dr. Markus Holzner (WSL/Eawag)

## Response of benthic invertebrates to logjams

Logjams consist of several wood pieces and may form at natural obstructions or are placed intentionally in a river section as so-called "engineered logjams" (Fig. 1). Such structures are used for river restoration with the objective to create heterogeneous flow conditions and provide shelter for fish. Logjams generate important riverine habitat by increasing the upstream water surface elevation and creating an upstream pool with slower, deepened water. The downstream section of a logjam is also characterized by slower flow velocity, which can promote the deposition of nutrients and additional vegetation growth. Small animals such as benthic invertebrates are known to quickly respond to variations of flow velocity or turbulence level and have been studied to evaluate river habitat. The response of benthic invertebrates to logjams has not been studied so far.



Fig. 1: Engineered logjam at the Trinity River, California (photo: DJ Bandrowski)

In this thesis, flume experiments are to be conducted in collaboration with Dr. Markus Holzner from WSL/Eawag to study how benthic invertebrates respond to different setups of logjams. The objectives are to (1) design a laboratory setup including different logjams, (2) identify the location of benthic invertebrates in the flume without logjams (reference test), and (3) determine the effect of logjam size (length and width) on the location of benthic invertebrates will contribute to an improved process understanding of how to design logjams for river restoration.

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Hydraulic laboratory experiments; Project language: English or German 1 student for Master's or up to 2 students for project thesis