

Research Project

Methodologies to measure and characterise fine sediment input to rivers and their effects on health and reproduction of gravel spawning brown trout (*Salmo trutta*)

Third-party funded project

Project title Methodologies to measure and characterise fine sediment input to rivers and their effects on health and reproduction of gravel spawning brown trout (*Salmo trutta*)

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Departement Umweltwissenschaften / Applied Geology (Huggenberger)

Department

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Probable end 31.08.2011

Status Completed

Alpine and sub-alpine rivers are threatened by global climate on one hand and on the other, by land use change which both lead to increased erosion and hence sediment supply to rivers. Fine sediments are a neglected threat to our rivers and can determine stream quality to a large extent. Sediments in rivers cause increases in turbidity and sedimentation and can ultimately lead to clogging of the river bed. This, in turn, compromises the ecological integrity of the aquatic environment, and can affect the health, reproduction and development of gravel spawning fish, such as the brown trout (*Salmo trutta*). This project aims to further our understanding of the complex interactions of sediment input and effects on brown trout by firstly, characterising the sediment load, the relationship between water flow and clogging, river bed erosion and dynamics of sediment input during the year, as well as of the composition and quality of the fine sediment particles. Secondly, methods to study the effects of the sediments in the abiotic aquatic environment, such as river bed clogging, will be developed and optimized. Thirdly, biotic components will be studied by assessing the health, reproduction and development of brown trout in the field and in the laboratory. Special emphasis will be given to the effects of environmentally relevant conditions such as exposure regime and composition of sediments, their particle size and quality of suspended as well as bedload sediments on the biotic components studied. Finally, a model based on the life-cycle of the brown trout will be used to assess the effects of fine sediments on trout recruitment. To address the corresponding questions, an interdisciplinary research approach is needed.

Keywords erosion, sediment, river, hydrology, fish, reproduction, health, brown trout

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Add publication

Published results

86868, Scheurer, K.; Alewell, C.; Bänninger, D.; Burkhardt-Holm, P., Climate and land-use changes affecting river sediment and brown trout in alpine countries-a review, 0944-1344, Environmental Science and Pollution Research, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

981752, Page, R. M.; Huggenberger, P.; Epting, J.; Lischeid, G., Risk analysis for groundwater extraction, 978-1-907161-16-2, Publication: ConferencePaper (Artikel, die in Tagungsbänden erschienen sind)

981768, Auckenthaler, Adrian; Baenninger, Dominik; Affolter, Annette; Zechner, Eric; Huggenberger, Peter, Drinking water production close to contaminant sites: a case study from the region of Basel, Switzerland, 978-1-907161-16-2, Publication: ConferencePaper (Artikel, die in Tagungsbänden erschienen sind)

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Document

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ID	Kreditinhaber	Kooperationspartner	Institution	Laufzeit - von	Laufzeit - bis
2355890	Holm, Patricia	Tierney, Keith, Dr., Assistant Professor	University of Alberta, Edmonton, Canada	01.01.2013	31.12.2016