UNIVERSITÄT DUISBURG ESSEN

Offen im Denken

DER REKTOR

We are one of the youngest universities in Germany and think in terms of possibilities, not limitations. In the heart of the Ruhrregion, we develop ideas of the future at our 11 faculties. We are strong in research and teaching, live diversity, support potential and are highly committed to an educational equality that has earned this name.

The **University Duisburg-Essen (Campus Essen)**, Faculty of Biology, Biofilm Centre, Department of Aquatic Ecology, offers a

PhD student position (f/m)
(salary equivalent to TV-L 13)

Effects of woody riparian buffer strips along rivers on biodiversity

associated to the EU BiodivERsA project "Optimising the configuration of woody riparian buffer strips along rivers to enhance biodiversity and ecosystem services" (Oscar)

Background and overall objectives of the Oscar project

Woody riparian buffer strips along rivers (referred to as woody buffers in the following) offer multiple ecosystem services and increase biodiversity at different spatial scales. While the principal mechanisms at the reach scale are well understood, there is still a high uncertainty associated with quantifying these general effects. Even more important, most studies deal with the effects of individual woody buffers and there is very limited knowledge on how these effects depend on the spatial arrangement and add up at the catchment scale, and their function as migration corridors has hardly been studied as such.

Against this background, the BiodivERsA project "Oscar" - including partners from Norway, France, and Germany - aims at (i) summarizing and complementing the knowledge on reach-scale effects of woody buffers on biodiversity and ecosystem functions, (ii) investigating if effects depend on the spatial arrangement in a green infrastructure network and their function as migration corridors, (iii) quantifying effects on biodiversity and ecosystem services in four case-study catchments and for different scenarios, to finally (iv) give recommendations how to optimize the overall effects of woody buffers and to provide respective tools.

Topic of the PhD thesis

In cooperation with international partners from IRSTEA in France, the effects of woody riparian buffer strips on biodiversity will be investigated. This will include (i) a literature review, (ii) an analysis of the general reach-scale effects as well as some clearly novel aspects: (iii) an analysis of the effects of the spatial arrangement of woody buffers (e.g. fragmentation) at larger river network scales and (iv) the potential function of woody buffers as migration corridors. Hence, the PhD thesis will mainly deal with biodiversity and migration corridor aspects.

The analysis will mainly be based on existing biological monitoring data. The biological data will be complemented by information on woody buffer characteristics from e.g. land use data, aerial photographs and other remote sensing data, and the spatial arrangement quantified e.g. using different fragmentation metrics in GIS.

The preliminary workplan and study design that should be further developed in the PhD thesis includes:

(i) Literature review: The published and grey literature will be screened for information on the effects of woody buffers on biodiversity.

(ii) General reach-scale effects: Sampling sites will be selected from the existing German dataset, which are located in river reaches with woody buffers. Using a range of statistical techniques (BRTs, GLMs), the response of different organism groups (fish, invertebrates, macrophytes, riparian ground beetles, floodplain vegetation) and other selected terrestrial species (e.g. beaver, otter, invertebrate and plant species listed in the Natura2000 annexes) to woody buffers in general and to specific buffer characteristics (e.g. length, width, composition) will be investigated.

(iii) River network-scale effects: Sampling sites will be selected from the existing German dataset, which are located downstream of river reaches with different spatial arrangements of woody buffers. A set of variables will be used to describe the spatial arrangement of woody buffers upstream of the sampling sites, like the relative length of the river network with woody buffers, mean and maximum length and distance between the woody buffers, as well as fragmentation metrics

(iv) Woody buffers as migration corridors: The function of woody buffers as migration corridors will be assessed by a similarity analysis of near-natural sampling sites, which are separated by woody buffers with different spatial arrangements. The passability of river reaches between the sampling sites will be quantified using a least-cost GIS modelling approach: different "friction costs" are assigned to different riparian land uses including woody buffers and summed up for all reaches between sampling sites.

Your profile

M.Sc. degree or equivalent in natural sciences in geography, biology, ecology or related fields; good working knowledge of English; good knowledge of GIS and preferably also remote sensing; familiarity with and good knowledge of statistics in general (preferably R); interest and knowledge in aquatic and riparian ecology; above average ability to develop hypothesis, research approaches and study designs.

Start of position	01.08.2017
Contract period	36 months *(In accordance with a change of regulations in the Act of Academic Fixed-Term Contract ("WissZeitVG") since 11.03.2016 the actual duration of the contract might depend on individual qualifications of the applicant)*
Working time	50 % of a fulltime-position
Application deadline	*until 26.06.2017*

The University Duisburg-Essen aims at promoting the diversity of its members (http://www.uni-due.de/diversity).

The University Duisburg-Essen has been awarded for its effort to promote gender equality with the "Total-E-Quality-Award". It aims at increasing the share of women in the scientific personnel and therefore explicitly encourages women to apply. Women will be preferentially considered when equally qualified according to the state equality law.

Applications from disabled or equivalents according to § 2 (3) SGB IX are encouraged.

Contact Information

For further details and information please contact Jochem Kail. Please send your application with the reference-code 312-17 including expression of interest, CV, copies of relevant certificates, if available list of publications and the name of one referee (including email-address) preferably by email as pdf-file to jochem.kail@uni-due.de and daniel.hering@uni-due.de.

The Department of Aquatic Ecology (Centre of Water and Environmental Research) at the University of Duisburg-Essen is among the leading institutes of the field of aquatic ecology. It has a proven track record especially in the field of river assessment and restoration and has coordinated and/or participated in many large EU and national projects (e.g. AQEM, STAR, EURO-LIMPACS, RUBICODE, WISER, BioFresh, Reform): https://www.uni-due.de/aquatic_ecology/