University of Antwerp
Faculty of Science

ECOSPHERE

***The ECOSPHERE research group aims to study aquatic and valley ecosystems that are continuously challenged by natural and anthropogenic stressors. The research focuses on acquiring fundamental and applied knowledge at different levels of structural and functional organisation in order to underpin environmental management decisions.***

## MASTER THESIS SUBJECT 2023

# Relation between riparian *carabidae* (ground beetles) and vegetation in restored riverbanks

**Research group:** ECOSPHERE

**Hosting laboratory:** CDE – building C

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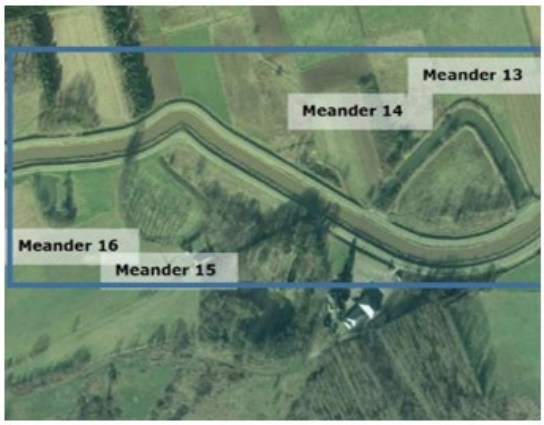
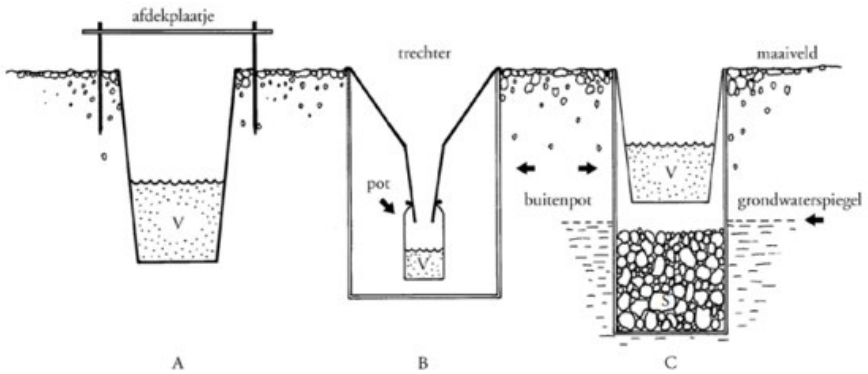



**Figuur 13**
Schematische weergave van verschillende typen vangpotten. A = potval met afdekplaatje en vangvloeistof (v). B = trechterval met aan de tuit van de trechter de vangpot met conserveringsvloeistof. C = vangpot voor natte terreinen; de buitenpot is met stenen (s) verzwaard.




***Carabid beetles are caught with pitfall traps.***

- **This topic mostly contains ☒ literature study, ☒ lab work, ☒ field work, ☐ experimental work, ☐ GIS, ☐ numerical modelling, ☐ other: ……**
- **Possession of driver's license B is ☐ needed, ☒ recommended, ☐ not needed**
- **Possession of certificates needed: ☐ FELASA C, ☐ other: ……**

**Summary Summary:**

The water quality in the Demer river is severely degraded by combined sewage overflows and agricultural pollution. Moreover, the Demer river has been canalized, diked in and deepened in the 1850's for economical purposes. Consequently, biodiversity dropped drastically, and more floods took place. As a response to the many floods caused by the canalization of the Demer, the Sigmaplan was introduced by the government in 1977. The Sigmaplan enhances the realization of water safety and nature goals by 2030 in the Demer valley. The project includes the reconnection of 30 old meanders and the restoration of 2850 ha floodplain in the Demer valley. As a pilot project, 6 meanders were already reconnected over the past years and their riverbanks were restored.

As the restored riverbanks in the Demer flood during high discharges and dry up in summer, nutrient-rich mud bank vegetation with open patches were created. This type of habitat is interesting to riparian ground beetles. Ground beetles are considered relevant bio-indicators for conservation and habitat restoration. The abundance and species richness of beetles teach us more about the naturality of the vegetation and the state of the riverbanks. Soil components also affects the biodiversity and abundancy of ground beetles.

The goals of this research are (1) to investigate whether the restored riverbanks have a higher abundance and species richness in ground beetles compared to natural riverbanks and altered riverbanks, (2) to research the link between the ground beetle populations and the vegetation in restored river banks, (3) assess abiotic factors possible contributing to the carabid beetle population.

The work for this research involves both field work and lab work. Fieldwork will be conducted in spring/summer, every two weeks. It is thus important that there is availability **during the summer**. Beetle traps will be placed on several restored riverbanks and shores. The captured individuals will be identified upon species level. As other parameters also affect the presence of beetles, the riverbank vegetation will be inventoried twice, in spring and late summer, using the Tansley scale. Other parameters, such as temperature, soil moisture and soil composition will also be measured. This thesis is ideally for students with interest towards entomology. It is also possible to focus on other entomological groups that can be captured using pitfalls (such as spiders, centipedes,…).

*Source: Kirichenko-Babko, Marina & Danko, Yaroslav & Franus, Małgorzata & Stępniewski, Witold & Babko, Roman. (2020). Riparian Ground Beetles (Coleoptera) on the Banks of Running and Standing Waters. Water. 12. 1785. 10.3390/w12061785.*

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