

SC 4: Individual-based population modelling in support of Environmental Risk Assessment of Chemicals

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Abstract

Population modelling is commonly recognised as a tool that could support decision making for the Environmental Risk Assessment (ERA) of chemicals. Possible application areas are the simulation of population level consequences of lethal or sublethal chemical effects, or the calculation of population recovery times after chemical stress events. In this course, we give an introduction into an individual-based population model for aquatic macroinvertebrates, that is based on a simplified Dynamic Energy Budget approach (DEBkiss).

Participants will be introduced in the principles of individual-based population models. They will have a tutorial focusing on the introduction into the modelling software, that is implemented in the freely available modelling platform NetLogo. Participants will learn how to parameterise and to perform single species simulations with and without chemical exposure and consequent lethal or sublethal effects. Further on, they will apply the model for a two-species competition situation to estimate the impact of competition on population recovery times.

Participants of this course will get an idea of the basics of population modelling in the context of environmental risk assessment. They will gather experience in performing model simulations in the NetLogo software, and how population models can be useful in the context of ERA of chemicals.

Course objectives

Introduction into population modelling in relation to environmental risk assessment

Course level

Introductory

Note

Participants should bring their own laptop in order to follow this course