

# **System Dynamics Modelling in species management: the case of the beaver**

## **Keywords**

Beaver management, Ecosystem services, socio-ecological approach, system dynamic model, human-wildlife interactions

## **Abstract**

The management of human-wildlife interactions is a complex topic due to the variety of variables and interactions. However, variables and interactions can be analysed through system dynamics (SD) models. SD are used in several different contexts and they are used in wildlife management to simulate the effects of management policies and evaluate alternatives. Beavers are semi-aquatic mammals that have positive and negative effects when their proximity to human activities is strong. The management of the effects of beaver presence is a currently discussed topic that has been addressed with different approaches over time. As regards the application of SD modelling, only one case study has been developed. However, this study focused on pure conflict management without considering the ecosystem services offered by beaver activities. Currently, beaver management is projected towards a socio-ecological approach that underlines the importance of the species by improving and not hindering human-beaver coexistence. In order to understand the current dynamics involved in beaver management, the present work structured a system dynamic model that focused on benefits and conflicts derived from human-beaver coexistence. Furthermore, this work aims to create a decision support and discussion tool that allows the evaluation of individual management practices and their interaction.