

Population dynamics in a nutshell

By Lia Hemerik

Population dynamics is the discipline that studies the size and age composition of populations as dynamical systems. Thus, the biotic and abiotic processes driving these dynamics are considered. Essentially, only four basic processes drive the dynamics of every population: birth, death, immigration and emigration. So this talk will start with an introduction of what types of population growth models are in general considered. I start with geometric growth and exponential growth and then I continue to limited growth. I also will explain the use and build-up of Leslie matrices and more general matrix population models. I end with some examples from my own research to illustrate the use of population dynamical models. Among these are the re-introduction of the otter in the Netherlands and Neanderthal viability analysis.

Lia Hemerik



Lia Hemerik is associate professor in theoretical biology at Biometris (Wageningen University and Research). She is trained as biologist and mathematician at Leiden University, where she also got her PhD in ecology in 1991. The subject of her thesis “Studies on larval parasitoids of *Drosophila*: from individuals to populations”, written together with Gerard Driessen already hints at her interest for population dynamics. From the start of her job in Wageningen (April 1990), she has been teaching courses on mathematical biology and population dynamics. In her research you can find, among others, models about behaviour, belowground food webs and matrix population models. She currently also participates in Homeward Bound (<https://homewardboundprojects.com.au/>), an Australian initiative that started in 2014 to have more female leadership around the globe in 10 years.