

The adaptation of winter moths to climate change

Supervision by: Natalie van Dis

Contact: n.e.van.dis@rug.nl, room 5172.0666; language: English or Dutch



Picture credits: Lucia Salis

Winter moths are rapidly adapting to a changing environment. Climate change causes the timing of oak bud burst and winter moth egg hatching to change, such that asynchrony occurs between this critical food source for winter moth larvae and winter moth egg hatching. In response, winter moth egg development has genetically changed and seems to have become less sensitive to temperature resulting in a better match with oak phenology.

In my PhD project, I aim to uncover the mechanism of adaptation underlying the observed changes in winter moth egg phenology, linking ecological dynamics and functional genomics in the context of a changing environment. This

project will include: an investigation of the processes during egg development regulated by temperature, studying population dynamics over time in relation to oak phenology, a quantitative genetics approach to establish genetic variability in egg phenology, manipulating timing in different stages of the Winter moth life cycle [*1], and sequencing the genomes of winter moths to identify 'signatures of selection' across the whole genome and changes in allele frequencies. Part of this research will be conducted at the Netherlands Institute for Ecological Research (NIOO) in Wageningen.

Students interested in doing a research project within this research line can contact me to discuss the possibilities and options.

Methods: egg developmental assays, field collections & population dynamic surveys, quantitative genetics, population genomics & transcriptomics, experimental manipulations

Starting date: spring 2019 or later; [*1] will start in 2020