

## Session 10: Climate Change

### Keynote

Date: Thursday 2 November, 2017  
Time: 13:30 – 14:15  
Room: Seminar Room

## Hole-nesting passerines in a warming world

Author: **Marcel E. Visser**

Affiliation: Department of Animal Ecology, Netherlands Institute of Ecology,  
Wageningen, The Netherlands

Spring temperatures are increasing due to climate change and this has had profound effects on the spring phenology of many organisms. These shifts in phenology however vary substantially among species, with predatory species shifting only at half the rate as their prey. This leads to so-called phenological mismatches: the phenology of predators and their prey get out of synchrony. I will give an overview of these mismatches, the evolutionary consequences and the population consequences using data from our long-term study on great tits. I will present the updated version of our paper from 1998 and will show that after a period in which the mismatch was increasing over time, there is now a period in which the mismatch gets smaller again. I will present data of birds, caterpillars and trees to show that to understand such patterns we need to take the phenology of the entire food chain into account. Next, I will switch gears and focus more in detail on potential for genetic change in response to selection on timing of reproduction in great tits. We have been studying the genetics and physiology underlying timing of reproduction by creating selection lines of early and late reproducing great tits, using genomic rather than phenotypic selection. We breed great tits of these selection lines under controlled conditions and look at their lay dates as well as at RNA expression. As a final step we have introduced selection line eggs into our wild population and in 2018 we will have the first F4 offspring breeding in the wild and we can then measure their fitness depending on their timing of reproduction. In contrast to for instance egg or chick swapping manipulations, these birds need to make the full costs of laying early, which should provide us with an unbiased measure of fitness.