

## Session 10: Climate Change

Date: Thursday 2 November, 2017  
Time: 15:50 – 16:10  
Room: Seminar Room

### **Seasonal decline in fitness: its causes and its relation to warmer springs in northern wheatears**

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We investigated 20-year trends in spring timing, breeding time, selection for breeding time and annual demographic rates of northern wheatears. Both thermal progression of spring and breeding time of wheatears advanced in time during the study period, but despite breeding on average 7 days earlier with respect to date, wheatears bred about 4 days later with respect to thermal spring progression. Over the same time period selection for breeding time changed from distinct within-season advantage of early breeding to no or very weak advantage. During the same time period demographic rates (nest success, fledgling production, recruitment, adult survival) and nestling weight declined markedly, by 16-79%. In contrast to the breeding mismatch hypothesis, these dramatic changes in demographic rates and patterns of selection for early breeding were not related to the annual estimates of the thermal timing of breeding. Other analyses suggest a large part of the seasonal decline in fitness is likely driven by a corresponding deterioration of breeding conditions and we therefore suggest a general deterioration of the breeding environment may reduce the benefit of being early and reduce annual demographic rates.