



HeatWaveSS - Intra and inter-generational effects of heatwaves on sexually selected traits and reproductive success

Heatwaves are a current problem faced by society and are increasing in frequency and intensity under ongoing climate change. While many climate change studies exist, those investigating the consequences of heatwaves are scarce, especially in relation to reproduction. The extreme temperatures experienced during heatwaves are likely to have negative effects on many aspects of reproduction (including fertility, morphology and behaviour), thus for the persistence of populations and, ultimately, biodiversity. Therefore, studying how heatwaves affect reproduction is a key issue that should be addressed now.

This project aims to study how heatwaves affect traits important for reproductive success, to understand the long term consequences of heatwaves on populations, and how parental exposure affects the fitness of offspring. Experimental guppy populations (*P. reticulata*) will be exposed to experimental heatwaves either during ontogeny or after attaining sexual maturity (reflecting the unpredictable nature of heatwaves). The consequences on morphology, fertility, and reproductive behaviour across two generations will be assessed. The sex ratio of the populations (the proportion of males to females ready to mate) will also be manipulated, since sex ratios fluctuate naturally and importantly affect mating decisions and reproductive investment, and thus effects of heatwaves may differ according to the sex ratio of the population.

By investigating the effects of heatwaves at different levels, data from this project will offer unique insights into their effects on individuals and populations, thus contributing to our understanding of the consequences of climate change and the processes underlying responses to environmental changes. Through enhanced knowledge in the fields of behavioural ecology, reproductive biology, and evolutionary biology, the proposed project will contribute to the progress of the European scientific community, with potential applications in conservation.

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