

A replicated climate change field experiment reveals rapid evolutionary response in an ecologically important soil invertebrate - DTU Orbit (09/11/2017)

A replicated climate change field experiment reveals rapid evolutionary response in an ecologically important soil invertebrate

Whether species can respond evolutionarily to current climate change is crucial for the persistence of many species. Yet, very few studies have examined genetic responses to climate change in manipulated experiments carried out in natural field conditions. We examined the evolutionary response to climate change in a common annelid worm using a controlled replicated experiment where climatic conditions were manipulated in a natural setting. Analyzing the transcribed genome of 15 local populations, we found that about 12% of the genetic polymorphisms exhibit differences in allele frequencies associated to changes in soil temperature and soil moisture. This shows an evolutionary response to realistic climate change happening over short-time scale, and calls for incorporating evolution into models predicting future response of species to climate change. It also shows that designed climate change experiments coupled with genome sequencing offer great potential to test for the occurrence (or lack) of an evolutionary response.

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