Geophysical Research Abstracts
Vol. 21, EGU2019-9620, 2019
EGU General Assembly 2019

Dynamics of adaptation in structured populations

Yichen Zheng (1), Felix Merklinger (2), and Thomas Wiehe (1)

(1) Institut für Genetik, Universität zu Köln, (2) Nees Institut für Biodiversität der Pflanzen, Universität Bonn

All living species in the Atacama desert, animals and plants in particular, have to deal with very severe environmental conditions. Besides extreme aridity, heavy habitat fragmentation is a major factor influencing survival and evolutionary potential of desert species. Complementing the ongoing experimental projects on Tillandsia, a so-called air plant, and on Tenebrionid beetles (see the Abstract by Heger et al.), we investigated by computer simulations of a population genetic multi-deme model the effect of habitat fragmentation and of limited migration between demes on their genetic variability and differentiation. Concentrating on time and probability of fixation of newly arising adaptive mutations, we studied the evolvability of populations which - due to their fragmented habitats - have to cope with very small effective population sizes and therefore a severly reduced efficacy of natural selection. We will present results of our simulation studies with application to preliminary population genetic data from Tillandsia landbeckii.