OMICS Group Conferences
Accelerating Scientific Discovery

International Symposia on
Entomology

September 04, 2013 Holiday Inn Orlando International Airport, Orlando, FL, USA

Adaptation and speciation patterns in the saw-toothed grain beetle *Oryzaephilus surinamensis* (Linnaeus, 1758), (Coleoptera: Cucujidae)

Kamal Sharaf[1,2], Tomas Pavliicek[2] and Eviatar Nevo[2]
[1]Graduate Studies Authority, University of Haifa, Israel
[2]Institute of Evolution, University of Haifa, Israel

The main objective of this study was to unfold patterns adaptation and speciation population differentiation in the wild and by human influence in direct cultivation in a silo. The relationship between pest populations adapted to human-made habitats and their counterparts adapted to natural habitats is not well understood. We studied genetic, morphological, and reproduction differentiation between natural and human-made habitats in the beetle *Oryzaephilus surinamensis* (L.). Natural habitats were represented by a "European forested, north-facing slope ("ES") separated by 100 meters at the valley bottom and by an "African savannah-like" south-facing slope ("AS") of the lower Nahal Oren Mount Carmel. The human-made habitat was represented by a grain silo ("SIL"), with temperatures inside ranging between 22°C-26°C and by relative humidity as low as 14%, and was located 26 km apart from the "ES" and "AS". Our results indicate: a) Genetic separation (by AFLP and genome size) between analyzed populations accompanied by the highest genetic diversity present at the "AS"; b) Loss of genetic variability in mitochondrial COX-1 and 16Rrna genes; c) Increases in body size in the direction "SIL"<"AS"<"ES", d) Differences between inter- and intrapopulation crossings of *O. surinamensis*: Incipient sympatric speciation; e) Horns present in males at "AS"+"ES" (43%) but not in "SIL". In this study evidence for the local interslope genetic, morphological, and behavioral adaptive divergence of *O. surinamensis* along the sharp ecological gradient in "EC" was reported, indicating sharp adaptive evolution and incipient sympatric ecological speciation. Genomic and genetic diversity decrease as follows: AS>ES>Silo; likewise, incipient speciation is indicated by intra and inter slope crosses at EC, the later indicating inferiority in fertility.

kamalshrf8@gmail.com