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Genetic structure of a naturally regenerating post-fire *Pinus halepensis* population

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Pinus halepensis (Aleppo pine) produce two cone types. Regular cones open and disperse their seeds by winds in summer, and serotinous cones that disperse their seeds mainly after canopy fires. Due to short seed dispersal distances, and the preferred post fire regeneration microhabitat in ash beds under the burned canopies of large dead pines, each such a tree is the potential mother of the numerous seedlings under its canopy that construct the post-fire generation. To study the effects of wildfire on population genetics of a wind pollinated and wind dispersed tree, the genetic structure of a post-fire, naturally regenerating seedling population of *Pinus halepensis* Miller, on Mt. Carmel, Israel, was analyzed. The results revealed that the post-fire seedling population is polymorphic, diverse, and reflects the pre-fire random mating system. No division of the post-fire seedling population to distinct sub-populations was found. Furthermore, as a result of post-fire seed dispersal to longer range than the average pre-fire inter-tree distance, seedlings found under individual burned trees were not necessarily their sole offspring. Surprisingly, although the population as a whole showed a Hardy-Weinberg equilibrium, significant excess of heterozygotes was found within each tallest seedlings group growing under single, large, burned pine trees. These findings indicate the possible existence of intense natural selection for the most vigorous heterozygous genotypes that are best adapted to the special post-fire regeneration niche, which is the thick ash bed under large, dead, pine trees.

Biography

Rachel Ben-Shlomo is the Head of the department and a Senior Lecturer at the Department of Biology, Faculty of Natural Sciences, University of Haifa - Oranim, Israel. She has earned Doctoral degree in Genetics from The Hebrew University, Jerusalem, Israel. Her main research interests are in population genetics, molecular ecology and molecular chronobiology. Her research is centered on the interaction between the environment and an organism's genetic structure at both the gene and the genomic levels.

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