
Paradise burns: life-history evolution and future survival of serotinous tree species

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Abstract

Many plant species have evolved serotiny, i.e. the retention of mature seeds in closed cones within the plant's canopy, as a means to deal with recurring fire events. We build on a recent model of serotiny evolution in fire-prone environments and extend it to explore the role of metapopulation dynamics and recruitment between fires. In this respect we are to our knowledge the first to investigate the interplay between dispersal and serotiny. We have therefore developed an individual-based metapopulation model of a serotinous tree species with several life-history traits evolving (age of first reproduction, reproductive effort, degree of serotiny). In the talk I will cover usage of the model to 1. understand and predict optimal life history strategies under varying fire regimes and 2. investigate the survival and adaptation of serotinous tree populations under potential future fire conditions. The results of this project can provide important insight into the adaptive potential of such species and assist in guiding management strategies.

Keywords: life, history evolution, serotiny, adaptation, fire regimes

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