Bisexual branching process depending on the number of couples and environment process

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Abstract

In this paper, we introduce a bisexual branching model with offspring and mating
depending on the number of couples and an environment process. This model has
no Markov property. We are mainly concerned with the case when the mean m_k as
the population size k grows to ∞, $m_k \to m$. It is shown that even if $m < 1$, the
process does not die out with probability 1. We give a criterion to identify whether
the process admits ultimate extinct with probability one.

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