Calculation and Estimation of the Variance Effective Population Size when Age Class Sizes Fluctuate

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The variance effective population size is an important parameter in population genetics. It quantifies the amount of genetic drift in the population and makes it possible to compare populations with different demographic parameters. In this presentation we consider populations of haploid individuals with overlapping generations where the age class sizes fluctuate. In such populations, the variance effective population size will depend on how the different age classes are weighted together, and it is defined as a function of these weights. To estimate the variance effective population size in real populations, the temporal method is commonly used by comparing two samples from the population sampled at different time points. We will present a method for how to estimate the variance effective population size with the temporal method if the demographic parameters of the population are known or can be estimated.

Key words: Fluctuating population size, overlapping generations, temporal method.