

## THE EFFECTIVE POPULATION SIZE OF SOME AGE-STRUCTURED POPULATIONS

by

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It was shown in a previous paper that if generations are discrete the effective population size of a large population can be derived from the theory of multitype branching processes. It turns out to be proportional to the reciprocal of a term that appears in the denominator of expressions for survival probabilities when there is a supercritical positively regular branching process for which the dominant positive eigenvalue of the first moment matrix is slightly larger than 1. If there is an age-structured population with unchanging proportions among sexes and age groups, the effective population size is shown to be also obtainable from the theory of multitype branching processes. The expression for this parameter has the same form as in the corresponding model for discrete generations, multiplied by an appropriate measure of the average length of a generation. Results are obtained for dioecious random mating populations, populations reproducing partly by selfing, and populations reproducing partly by full-sib mating.

KEY WORDS: Effective Size, Age-Structure, Branching Processes