

ON THE THEORY OF PARTIALLY INBREEDING FINITE
POPULATIONS IV. THE EFFECTIVE POPULATION SIZE FOR
POLYPLOIDS REPRODUCING BY PARTIAL SELFING

by

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Abstract

Consider a population of size N in which there is reproduction by selfing with probability β and by random mating with probability $1 - \beta$. In each cell of any individual homologous chromosomes appear $2n$ times, with n among them having been contributed by each parent. Wright (1938) showed that if $\beta = 0$, there is no double reduction in gamete formation, and a Poisson offspring distribution, the probability of nonidentity by descent of two random copies of a gene in an individual of generation $t + 1$ is approximately $1 - 1/(2nN)$ times as large as it is in generation t if N is large. This result will be generalized to populations with any $\beta \geq 0$ and any offspring distribution. If $n = 2$ or 3 , a result will be obtained that also holds for any probability of double reduction.