**Allee invasion sims:**

1. The initial population size at time *t* and location *l* is given by

Allele frequencies for the first time step and location are drawn from a binomial distribution with probabilities *p*0​ and population size 2*k*

Where *p*0 = initial allele frequency, k = carrying capacity and *n.l* = number of loci

1. The reproduction computes the number of offspring for each location based on the number of females drawn from a binomial distribution of the population size at time *t*

Where is the number of females at time *t* and location *l*, the number of offspring and *r* the reproduction rate. The offspring was updated using a Poisson distribution:

The allele frequencies for this generation are updated by a binomial distribution:

Where *x* is the number of locations, n.a, = 2 which is the number of alleles in the current generation (*t* + 1)

1. Mortality models the survival of the individuals in the population based on their genotype. And is given by:

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Where is the probability of survival and is applied to all the alleles and locations in the

population , the updated allele frequency at *t* + 1 is =

1. The dispersal process moves individuals between spatial locations using a transition matrix and updates allele frequencies according to migration. The number of migrating individuals in each location is given by

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Where *m* the migration rate, is the allele frequency of the migrating individuals, *d* is a transition matrix for dispersal