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`Quenched effective population size.`

Abstract
We study the genealogy of a geographically structured version of the Wright-Fisher population model with fast migration. The new feature of our model is randomly changing migration probabilities. Applying Takahashi's results on Markov chains with random transition matrices we establish convergence to the Kingman coalescent as the population size goes to infinity.

This brings a novel formula for the coalescent effective population size (EPS). We call it a quenched EPS to emphasize the key feature of our model - random environment. The quenched EPS is compared with the 'annealed EPS' which describes the case of constant migration probabilities obtained by averaging the random migration probabilities over possible environments. (Joint work with P.Jagers and V.Vatutin.)