ON THE INADMISSIBILITY OF WATTERSON'S ESTIMATOR

Andreas Futschik and Florian Gach

University of Vienna

We consider the estimation of the scaled mutation parameter, which is one of the parameters of key interest in population genetics. We provide a general result showing when such estimators can be improved using shrinkage when taking the mean squared error as the measure of performance. As a consequence, we show that Watterson's estimator is inadmissible, and propose an alternative shrinkage-based estimator that is easy to calculate and has a smaller mean squared error.

We then derive improved versions for other estimators, including the MLE. Simulations provide information about the amount of improvement achieved by our alternative estimators.