

STATISTICS SEMINAR

Estimating Population Density in Line Transect Sampling using Kernel Methods.

by

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Abstract

Line transect sampling is a popular method used by biologists and ecologists to estimate population density. The probability density of perpendicular sighting distances from randomly placed transect lines are modeled to derive an estimate of population density. Nonparametric density estimation, particularly kernel estimation, has been suggested for use in this context. In this presentation, two pertinent aspects of kernel estimation of population density are investigated. First, two new local bandwidth selection techniques are compared with methods found in the literature including global bandwidth techniques, adaptive techniques, and local normal scale rules. Additionally, a new method for combining estimates from multiple transects is proposed. It is shown to be asymptotically superior to the usual "pooled" estimator. The new estimator is found to perform marginally worse in some cases and clearly outperform the pooled estimator in simulation studies.

Date: September 26, 2003

Time: 12 Noon- 1 PM

Location: Hume 331