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DEPARTAMENTO DE MATEMÁTICA

Centro de Investigação em Matemática e Aplicações
Programa de Doutoramento em Matemática
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Departamento de Matemática

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Sampling elusive populations: methods and applications

Russell Alpizar-Jara

(Professor Associado, alpizar@uevora.pt)

Departamento de Matemática, Escola de Ciências e Tecnologia
Centro de Investigação em Matemática e Aplicações, Instituto de Investigação e Formação
Avançada, Universidade de Évora

Abstract When counting elusive populations it is often impossible to see all individuals, we can only see a proportion of them. In some circumstances, even entire wildlife species can go undetected. To base population estimates on observed individuals, it is necessary to estimate that proportion of captured (or detected) individuals to extrapolate to the entire number in the study area. Capture-recapture and distance sampling methods are some of the most commonly used techniques to account for capture or detection probabilities to estimate abundance or density of wildlife populations. We will introduce some of these methods focusing on the concepts and their importance for various applications. In particular, we will illustrate the use of capture-recapture methodology for estimating species richness, an important metric used to measure biodiversity, and other community dynamics parameters.