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Asymptotics for a population size estimator of a partially uncatchable population

Abstract We present the asymptotic distribution for an estimator of the population size for the case of *s* partially catchable populations. Our approach is useful for capture–recapture studies with photo-identification data where part of the population does not have any distinctive characteristic which allows unique identification of the individuals. This work represents an extension of Theorem 4 in Sanathanan (1972, *The Annals of Mathematical Statistics, 43*, 142–152).