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# **Asymptotics for a population size estimator of a partially uncatchable population**

Received: 18 October 2004 / Revised: 7 December 2005 /  
Published online: 22 August 2006  
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**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).

**Keywords** Capture–recapture · Closed uncatchable populations · Asymptotics