

Goodness of fit procedures for Integrated Population Models

P.T. Besbeas ^{a,b} and B.J.T Morgan ^b

^a Department of Statistics, Athens University of Economics and Business
Athens, Greece
ptb@kent.ac.uk

^b School of Mathematics, Statistics and Actuarial Science
University of Kent, Canterbury, Kent
London, England
bjtm@kent.ac.uk

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Abstract: Integrated population modelling has become an increasingly familiar technique in statistical ecology. However there is currently no formal method for judging how well models fit data. We propose and evaluate a new approach, of calibrated simulation. Here comparative data sets are obtained from simulating data when model parameter values are obtained from asymptotic normal distributions of the maximum-likelihood estimators from the real data. The approach is attractively simple relative to Monte Carlo randomisation techniques, as it limits the additional model-fitting that is required. We discuss issues with respect to, for example, choice of discrepancy measure and lack of asymptotic normality, and illustrate the approach using real avian abundance and demographic data. The potential of the approach in capture-recapture in general is discussed.

References

Besbeas, P. and Morgan, B.J.T. (2014) Goodness of fit of integrated population models using calibrated simulation. Technical Report.