

Analysis of extended batch-marking studies

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Abstract: Batch-marking studies have been largely ignored by the capture-recapture community because of the loss of information due to using non-unique marks in the study design (Cowen et al., In press). However there are some instances when it is not possible to uniquely tag individuals uniquely, such as with juvenile fish or insects. Extended batch mark data arise when different batch marks are used for different batches, such as using different colours for each batch. We investigate an extended open-population batch-marking study of Pacific Sand Lance (*Ammodytes hexapterus*) and develop a hidden Markov model to model the observed capture process and the latent survival process. This work extends the modelling of Huggins et al. (2010) who presented a simplified, pseudo-likelihood, followed by model-fitting using estimating equations. In the case of the sand lance, not all unmarked fish that were captured were marked as fish could only be kept for a limited time before they had to be released.

References

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