

# Chasing Shadows: Analysing Data from Camera Trap Studies

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**Abstract:** Advances in technology have led to new ways of "capturing" animals including DNA analysis and camera traps that are especially useful for monitoring rare and elusive animals. Traditional capture-recapture (CR) and spatially explicit capture-recapture (SECR) models are based on a discrete sampling process that leads to well defined sampling occasions, but camera traps are continuous-time samplers which record the exact time of capture.

We develop continuous-time models for camera trap surveys, discuss their strengths and weaknesses relative to discrete-time models, and suggest aspects of the models that would benefit from further development. We use a continuous-time estimator to estimate jaguar density from a camera trap survey in Belize and investigate estimator properties by simulation.