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Population dynamic models to aid in fisheries resource management are based on two principal *de facto* assumptions: (i) the underlying and unobserved dynamical system is intrinsically predictable, and (ii) the effect of harvest decisions on the dynamics are well constrained within the model forecast horizon. This paper examines these assumptions using numerical simulations of a hypothetical stock.

We adopt a discrete-time, stage-structured biomass model to describe the dynamics of an assumed stock. Using time series of the biomasses derived from the model, we assess the predictability of the biomass trajectory, its forecast horizon, and how perturbations (withdrawals) may alter these attributes.

keywords: Time series, predictability, forecast, forecast horizon, stage-structured, biomass.