



Seminar Announcement

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NMFS/NEFSC, CINAR, and the
Woods Hole Oceanographic Institution ~ Biology Department

Tuesday June 13, 2017

10:00 am

***Paulik revisited: Statistical framework and
estimation performance of multistage recruitment functions***

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ABSTRACT

A wide variety of processes act at different stages and different intensities within the timeline between spawning and the age designated as “recruitment.” It is common practice to collapse this complex series of sequential stages into a single process between spawning stock size and resultant recruitment. Reasons for treating this as a single stage include lack of data on the intermediate stages, lack of understanding of the mechanisms and functional form governing intermediate stages, as well as lack of computational resources to model a multi-stage process in the appropriate statistical framework. Using a simulation study, we explore the estimation of multi-stage stock recruit functions in a state space framework. Factors explored include the number of stages, the form of density dependence, the magnitude of measurement error associated with each stage, and the magnitude of process error between stages. We summarize results in terms of parameter identifiability, bias, precision, and ability of the model selection criteria to identify the correct underlying model. We also fit a single composite stock recruit function to the first and last simulated stage, the status quo practice, and compare the resulting inference about shape of the stock recruit function (asymptotic or overcompensatory) and characterization of uncertainty. We conclude with a discussion of general recommendations and management implications.