Estimating exploitation rates of a migrating population of yellowtail flounders using multi-state mark-recapture methods incorporating tag loss and variable reporting rates

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Multi-state mark-recapture models can be used to model migration through stratification of the study area into states (location). We develop a migration model which also incorporates tag loss and reporting rates but who's primary purpose is to model exploitation rates and natural mortality. This model is applied to a yellowtail flounder (*Limanda ferruginea*) tagging study on the Grand Bank of Newfoundland from 2000 to 2004. We found that exploitation rates differed over both location and time; whereas survival rates were found to be constant. Migration rate estimates showed strong fidelity for state.