

## **State-space Assessment Models Research Track**

### **Terms of Reference**

**(v. 03/02/2021)**

1. Develop guidelines for diagnosing and selecting preferred state-space model structures. Comment on when alternative random effects assumptions and observation models are appropriate.
2. Investigate the efficacy of estimating stock-recruit functions within state-space models and their utility in generating scientific advice.
3. Develop guidelines for including ecosystem and environmental effects in assessment models and how to treat them for generating biological reference points and scientific advice.
4. Through simulation studies, evaluate relative performance of traditional and state-space models with respect to management metrics such as average and variability in catch, and stock and fishing mortality status. Consider factors such as life history type, sources of model-misspecification (as causes of retrospective patterns), and environmental effects.
5. Demonstrate any possible effects on stock status and scientific advice with incremental changes from statistical catch-at-age to full state-space model for applicable Northeast US stocks.