



**Adapting Fisheries Management to a Changing Ecosystem**  
**7th National Scientific Coordination Subcommittee Meeting**  
August 15-17, 2022, Harrigan Centennial Hall, Sitka, Alaska

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**Case Study 5**

**Using nonstationary stock assessment models to diagnose meaningful ecosystem indicators**

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ABSTRACT

Many stock assessments have been of concern because of multiple reasons including inconsistent abundance indices and likely changed population productivity, key life-history processes, and spatial distribution. The Atlantic weakfish (*Cynoscion regalis*) is an example to deal with such issues. We developed and operationalized models for Atlantic weakfish to evaluate and incorporate nonstationary population dynamics and to develop relevant management reference points. A model averaging framework based on the Atlantic weakfish example and the explored stationary and nonstationary statistical catch-at-age models was developed and provided a case study to use multiple models in fisheries stock assessment and management.