Final ToR for Index-Based Stocks Research Track – revised (10-30-19)

1. Develop methods to create data that if assessed with standard age-based approaches (e.g., VPA or ASAP) could exhibit a strong retrospective pattern.
2. Identify a number of index-based methods and a range of harvest control rules for use in closed-loop simulation, using index-based data resulting from ToR 1.
3. Identify metrics from the index-based assessment results that could be used in evaluations of trade-offs in performance among harvest control rules and index-based methods.
4. Evaluate the combinations of index-based methods and control rules using the metrics in ToR 3 to determine candidates for consideration by the Councils or other management authorities.
5. Provide guidance on specific situations that are and are not well-suited for a particular control rule or index-based method identified in ToR 4.
6. Create guidelines for setting biological reference points for index-based stocks.

Background

There are two reasons stock are assessed with index-based approaches. Either the data are not available to support an age-based assessment, e.g., ocean pout, or the age-based assessment was rejected and replaced by an index-based approach, e.g., Georges Bank yellowtail flounder. In recent years, the number of index-based assessments due to the latter reason has increased. This research track is focused on how to deal with this situation because the presence of a strong retrospective pattern is an indication of an inconsistency in the data and model that prevents standard simulation testing approaches to be used.

The Councils are charged with setting harvest control rules for each stock. The work conducted during this research track is meant to inform this decision by testing a range of harvest control rules against simulated data that would generate strong retrospective patterns in an age-based assessment.

Many of the index-based approaches currently used do not have the ability to generate biological reference points because they do not have an underlying population dynamics model. The creation of reference points for such situations requires expert knowledge about the fish and fishery. The guidelines created to address ToR 6 cannot be formulaic because of this dependency. Instead, the guidelines can be considered more of a checklist of items to consider when setting the biological reference points for a particular stock. The National Standard 1 technical guidance working group (subgroup 1) will provide some of the information to support this effort.

Simulation will be the approach used to address the ToR. If time permits, historical data may be used to see how the catch advice resulting from any recommended harvest control rules compares to what was used, particularly for situations where retrospective adjustments were made to analytical models in the past. The most recent data for any stock will not be used to prevent the creation of a “new” assessment that could require action by a Council.

Index-based approaches can be more impacted by missing survey data than age-based assessments, in some situations. This research track is not intended to examine the challenges associated with missing

or partial survey data, or any other logistical issues associated with the generation of an index to be used.