Definitions for herring presentation September 9, 2019

MODEL DIAGNOSTICS

Retrospective analysis: How does a stock assessment perform when data is sequentially removed?

Retrospective bias: Chronic over- or under-estimation of mature biomass.

REFERENCE POINTS

Biological reference points: How fishery managers measure the status or health of a stock

Equilibrium conditions: Long-term average

MSY: maximum sustainable yield, the maximum level of harvest that can be routinely achieved without long-term depletion

B_{MSY}: Mature biomass needed to provide maximum sustainable yield

F_{MSY}: Fishing mortality at maximum sustainable yield

B_0: Unfished, long-term average mature biomass

R_0: Unfished, long-term average recruitment (e.g. age-3 herring entering population)

Limit reference point: The danger zone, or point beyond which fishing is no longer sustainable (Example: Herring in British Columbia: 30% of B_0)

Target reference point: Ideal fishery state that can be based on ecological, social, economic, and/or biological considerations

MANAGEMENT

Management Strategy Evaluation (MSE): tool used to test whether potential harvest strategies or management procedures can achieve pre-agreed management objectives. Used to balance competing objectives and determine the harvest strategy likely to perform best.

Harvest strategy: a set of defined actions that will occur based the current or likely performance of a fishery. Provides a transparent and consistent approach to making management decisions.

INTERPRETTING UNCERTAINTY

Frequentist confidence intervals: If we collected our data and ran our model many times, 95% of our confidence intervals would contain the true value (e.g. mean egg deposition).

Bayesian credible intervals: Given our data, there is a 95% probability that the true value (e.g. mean egg deposition) falls within the credible interval.

Bayesian posterior predictive intervals: Given the uncertainty in the data and the model, there is a 95% probability that if we were to collect more data, the mean would fall within this interval.