

Missing Data and Implications for Scientific Uncertainty

Initial Discussion by MAFMC SSC

September 8, 2020

Problem: Due to the COVID 19 Pandemic, many of the data sets used in stock assessments will either be incomplete or unavailable in 2020. These data gaps have important, but as yet unknown implications for development of catch recommendations by the SSC in 2021.

Missing Data

NEFSC Surveys (Spring 2020, Fall 2020)

NEAMAP Surveys

Most state surveys

Partial Data

MRIP

Observer Data

Port sampling?

Largely Unaffected

Commercial catch monitoring (VTR, Dealer)

VMS

Ageing of samples

Objective: Begin discussion of implications for setting ABCs in 2021.

NEFSC and GARFO are coordinating a plan to identify all missing data and potential responses. Because the full extent of the data lacunae are unknown, scientific and management responses are still under development. Consequences for models vary by type but all can be sensitive to missing terminal years. Will be developing a matrix of data gaps and implications for assessment updates.

Example short-term fixes

Imputation (survey sampling)

Borrowing (e.g., adjacent area, previous year etc.)

Formal via GLM like approach; informal via “nearest neighbor”

Forecasting (time series)

Modeling

MRIP sampling has varying degrees of incompleteness depending on season and region.

Missing waves and changes to probability sample. FES doing OK but depends in part on the APAIS results. Some problems cannot be fixed with reweighting of sample.

Need to address totality of realized design and data in 2020.

Some information can be patched:

Generalized variance functions

Imputation
Modeling
Post hoc adjustment in 2021.

One possibility—interim estimates in 2020, followed by revision in 2021.

MRIP working with its consultants to devise best overall plan.

Potential SSC Responses

Overarching Principle—need to be objective, but identify concerns to management

Distinguish {Data updates, Level 1 Mgt Track} vs {Level 2, 3 and Research Track}

Insufficient information for action → Status quo

Insufficient information but population trend or status → revise CV for OFL, modify ABC

Some Key Concerns

Is the cure worse than the disease? (i.e., “fix” complicates rather than clarifies)

Risks of status quo?

Can we use forecasts with actual catch in interim years to project abundances?

Next steps

Monitor progress/recommendations from NEFSC and GARFO

Raise concerns to NRCC for fall 2020 meeting

Consider intersessional meeting as appropriate between now and March 2021.