

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.

50 Shades of Incompleteness

- Missing
 - NEFSC Surveys
 - NEAMAP Surveys
 - Many State Surveys
- Partial
 - MRIP
 - Observers
 - Port sampling?
- Largely Unaffected
 - Commercial catch monitoring
 - VMS
 - Ageing of samples

NEFSC and GARFO are coordinating a plan to identify all missing data and potential responses.

- Consequences will vary by type of assessment and models used, however, all models are sensitive to missing terminal years.
- Potential short-term fixes
 - Imputation (survey sampling)
 - Borrowing (e.g., Adjacent area, previous year etc.)
 - Formal via GLM or statistical model
 - Informal “nearest neighbor”
 - Modeling

MRIP

- APAIS—Missing waves and changes to sampling.
- FES—OK but depends, in part, on APAIS
- Some problems cannot be fixed with reweighting of sample
- Will need to consider totality of realized sampling design and data in 2020
- Some options
 - Generalized variance functions
 - Imputation
 - Modeling
 - Post hoc adjustment in 2021: interim 2020 estimates followed by revision in 2021
- MRIP working with consultants to devise best overall plan

Potential SSC Responses

- Overarching Principle—objective but need to identify concerns to management
- Distinguish
 - {data updates, Level 1 Management Track}
 - {Level 2 and 3 Management Track, Research Track}
- Options
 - Insufficient information → Status quo
 - Insufficient information but know status or trend → revise OFL CV, modify ABC
- Key Concerns
 - Is cure worse than disease?
 - Risks of status quo?
 - Value of forecasts with actual catch in interim years to project abundance?

Next Steps

- Monitor progress/recommendations from NEFSC and GARFO
 - Raise concerns to NRCC for its fall meeting
 - Consider intersessional meeting as appropriate between now and March 2021.
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- **DISCUSSION?**