

SEDAR Stock Assessment Report General Outline

(Note: Submit document sections in word or compatible format - not .pdf)

I. Introduction

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|---|--------------------|
| 1. SEDAR Process Description | SEDAR STAFF |
| 2. Management Overview | COUNCIL/SERO STAFF |
| 2.1 Management Unit Definition | |
| 2.2 Regulatory History | |
| 2.3 Current Management Criteria and Stock Benchmarks | |
| 3. Assessment History & Review | Assessment Agency |
| 4. Regional Maps | |
| 5. Assessment Summary Report [Compiled by SEDAR from workshop reports; to be completed following the Review Workshop] | |
- (In each topical paragraph specify the workshop report component or addendum from which results are reported.)

Executive Summary

Status of Stock Status - declaration of stock status, including table presenting stock status determinations and stock status criteria summary with recommended or mandated benchmarks and values summarized.

Stock Identification and Management Unit – the stock under assessment and its FMP-defined unit

Assessment Data - summary of input data sources as used in the assessment model base run or sensitivities

Release Mortality – a quantitative description of the portion of fish released that do not survive, by fishery sector with size distinction where available

Assessment Methods - summary of the assessment methods considered specifying the model employed

Catch Trends -summary of catches by fishery sector over time noting trends

Fishing Mortality Trends - summary of fishing mortality estimates over time

Stock Abundance and Biomass Trends - summary of abundance, biomass, and recruitment over time

Key Sources of Scientific Uncertainty - comments on recognized uncertainty around estimates, as well as sensitivity results of various model runs

Significant Assessment Modifications –

- Current assessment: notification and brief explanation of change during the SEDAR that affected data use, analytic approaches, or interpretation of results; includes issues involving significant change that lead to addenda to show revision or correction of the assessment outputs and modifies output parameters
- Comparison to previous benchmark assessment: summarizes modifications to input parameters or model approaches from the previous SEDAR benchmark assessment.

Plausible alternate states of nature

Special Comments – statements of comments of importance not provided for in other paragraphs

Figures:

- Landings and Discards
- Fishing Mortality
- Stock Biomass
- Abundance Indices

- Stock-Recruitment
- Stock Status and Control Rule

6. SEDAR Abbreviations [SEDAR]

II. Data Workshop Report

(Developed by Data Workshop Panel)

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1. Introduction *(Provided by SEDAR Staff)*
 - 1.1. Workshop Time and Place
 - 1.2. Terms of Reference
 - 1.3. List of Participants
 - 1.4. List of Data Workshop Working Papers
2. Life History
 - 2.1. Overview (Group Membership, Leader, Issues)
 - 2.2. Review of Working Papers
 - 2.3. Stock Definition and Description
 - 2.4. Natural Mortality
 - 2.5. Discard Mortality (Scientific studies)
 - 2.6. Age
 - 2.7. Growth
 - 2.8. Reproduction
 - 2.9. Movements & Migrations
 - 2.10. Meristics & Conversion factors
 - 2.11. Comments on adequacy of data for assessment analyses
 - 2.12. Research Recommendations
 - 2.13. Literature Cited
 - 2.14. Tables
 - 2.15. Figures
3. Commercial Fishery Statistics (may be subdivided by gears/fleets)
 - 3.1. Overview (group membership, leader, issues, Map of fishery area)
 - 3.2. Review of Working Papers
 - 3.3. Commercial Landings
 - 3.4. Commercial Discards
 - 3.5. Commercial Effort
 - 3.6. Biological Sampling
 - 3.6.1. Sampling Intensity Length/Age/Weight
 - 3.6.2. Length/Age distributions
 - 3.6.3. Adequacy for characterizing catch
 - 3.6.4. Alternatives for characterizing discard length/age
 - 3.7. Commercial Catch-at-Age/Length ; directed and discard
 - 3.8. Comments on adequacy of data for assessment analyses
 - 3.9. Research Recommendations
 - 3.10. Literature Cited
 - 3.11. Tables
 - 3.12. Figures
4. Recreational Fishery Statistics(May be further divided by Sectors, e.g., headboat, private, charter)
 - 4.1. Overview (group membership, leader, issues, Include map of fishery area)
 - 4.2. Review of Working Papers
 - 4.3. Recreational Landings
 - 4.4. Recreational Discards
 - 4.5. Biological Sampling

- 4.5.1. Sampling Intensity Length/Age/Weight
- 4.5.2. Length – Age distributions
- 4.5.3. Adequacy for characterizing catch
- 4.5.4. Alternatives for characterizing discards
- 4.6. Recreational Catch-at-Age/Length; directed and discard
- 4.7. Recreational Effort
- 4.8. Comments on adequacy of data for assessment analyses
- 4.9. Research Recommendations
- 4.10. Literature Cited
- 4.11. Tables
- 4.12. Figures
- 5. Measures of Population Abundance
 - 5.1. Overview (Group membership, leader, issues)
 - 5.2. Review of Working Papers
 - 5.3. Fishery Independent Surveys
 - 5.3.1. Methods, Gears, and Coverage (Map Survey Area)
 - 5.3.2. Sampling Intensity – Time Series
 - 5.3.3. Size/Age data
 - 5.3.4. Catch Rates – Number and Biomass
 - 5.3.5. Uncertainty and Measures of Precision
 - 5.3.6. Comments on Adequacy for assessment
 - 5.4. Fishery-Dependent Measures
 - 5.4.1. Methods of Estimation
 - 5.4.2. Sampling Intensity
 - 5.4.3. Size/Age data
 - 5.4.4. Catch Rates – Number and Biomass
 - 5.4.5. Uncertainty and Measures of Precision
 - 5.4.6. Comments on Adequacy for Assessment
 - 5.5. Consensus Recommendations and Survey Evaluations
 - 5.6. Research Recommendations
 - 5.7. Literature Cited
 - 5.8. Tables
 - 5.9. Figures
- 6. Analytic Approach
 - 6.1 Overview (Group membership, leader, issues)
 - 6.2 Suggested analytic approach given the data

III. Assessment Workshop Report

(Developed by Assessment Process Panel)

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1. Workshop Proceedings

1.1. Introduction

(Provided by SEDAR Staff)

1.1.1. Workshop Time and Place

1.1.2. Terms of Reference

1.1.3. List of Participants

1.1.4. List of Assessment Workshop Working Papers

1.2. Statements Addressing each Term of Reference

(Developed by the analytic team)

Consensus comments & recommendations, very similar to assessment panel reports prepared prior to SEDAR.

Each Term of Reference should be addressed directly and sequentially:

1.2.1. Term of Reference 1

to

1.2.x Term of Reference X.

1.3. Additional Panel Comments

2. Data Review and Update *(Lead analyst or data manager)*
Input data as used in assessment modeling should be tabulated here. Also address deviations from DW; Resolution of issues raised by DW; document any additional data analyses.
3. Stock Assessment Models and Results *(Prepared by Analyst for each model; may be finalized after AW)*
 - 3.1. Model 1 (Repeat to 3.X; X = # models considered. Model 1 is typically the ‘continuity case’)
 - 3.1.1. Model 1 Methods
 - 3.1.1.1. Overview
 - 3.1.1.2. Data Sources *(State sources and tabulate all data as used in the model - even if replication of some information in the data workshop report section)*
 - 3.1.1.3. Model Configuration and Equations *(Describe the configuration, explicitly state assumptions, list equations. If a standard accepted model (e.g. NFT, ICCAT, ICES, FAO, equations requirement may be accommodated by citation of program documentation.)*
 - 3.1.1.4. Parameters Estimated *(list all model estimated parameters)*
 - 3.1.1.5. Uncertainty and Measures of Precision *(Describe the methods used to evaluate sources of error- process, observation, etc)*
 - 3.1.1.6. Benchmark / Reference points methods
 - 3.1.1.7. Projection methods *(Describe methods, including assumptions)*
 - 3.1.2. Model 1 Results
 - 3.1.2.1. Measures of Overall Model Fit
 - 3.1.2.2. Parameter estimates & associated measures of uncertainty *(Provide table of all model parameters and their values. Include SE, CV, or other appropriate measures of variation)*
 - 3.1.2.3. Stock Abundance and Recruitment
 - 3.1.2.4. Stock Biomass (total and spawning stock)
 - 3.1.2.5. Fishery Selectivity
 - 3.1.2.6. Fishing Mortality
 - 3.1.2.7. Stock-Recruitment Parameters
 - 3.1.2.8. Evaluation of Uncertainty *(Broader than 3.1.2.2; evaluation of assumptions, model configurations etc. May include retrospective analyses, sensitivities)*
 - 3.1.2.9. Benchmarks / Reference Points / ABC values *(Provide the management parameters)*
 - 3.1.2.10. Projections
 - 3.1.3. Discussion
 - 3.1.4. Tables
 - 3.1.5. Figures
 - 3.1.6. References

IV. Research Recommendations

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1. Data Workshop Research Recommendations
2. Assessment Workshop Research Recommendations
3. Review Workshop Research Recommendations

V. Review Workshop Report

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1. Introduction *(Provided by SEDAR Staff)*
 - 1.1. Workshop Time and Place
 - 1.2. Terms of Reference

- 1.3. List of Participants
- 1.4. List of Review Workshop Working Papers & Documents
2. Review Panel Report *(Completed by Review Panel)*
Executive Summary *(written by Review Panel Chair)*
 - 2.1. Statements addressing each TOR
 - 2.2. Summary Results of Analytical Requests *(Sensitivities, corrections, additional analyses etc)*
 - 2.3. Additional Comments *(if necessary, to address issues or discussions not encompassed above)*
3. Submitted Comment
(Any written comment or opinion statements submitted by appointed observers)

VI. Addenda

Revisions or corrections to preceding sections.

Additional documentation of final review model configuration if required.

Appendix 1.

Recommended Tables and Figures

All input data and model configuration information should be included in the assessment report in tabular form. Tables that are included in a workshop working paper need not necessarily be replicated in the report, especially those tables that support information summarized elsewhere in the workshop report. Figures should be used to support the assessment and describe the input data, but no input data shall be presented solely in figure format and tables shall be provided for all data presented in figures. Large datasets such as length distributions or age-length keys may be included as appendices or provided in well organized spreadsheets that are submitted along with other workshop materials. Preliminary work and accessory tables in working papers may also be cited. However, all information required as input data for the chosen assessment models shall be listed in the report tables in the level of detail required for the assessment. The basic rule of thumb to follow is that the assessment report should contain all data necessary for one to duplicate the stock assessment.

The following list indicates the general information to be included in the tables of the assessment report. In some instances the list may include information (such as fecundity) or suggest a level of detail (such as 'by age') that is not feasible given the available data. Several listed items may be included in a single table. It is recognized that the specifics of each table can and will vary by assessment. The required reporting detail will be dictated by both data availability and modeling approach. For example, if the assessment model is based on annual landings at length by gear, then the report must include a table of landings by gear, year, and length class. Further, a model based on length may require that life history characteristics such as mean weight be reported by length class as well as age. Fisheries that have 'fishing years' that do not correspond to calendar years will require reporting of some data in both calendar and fishing year.

INPUT DATA TABLES & FIGURES (Data Workshop Report)

Life History

Mean weight & length
Maturation & sex ratio schedules
Fecundity
Age-Length/weight plots, age sample N, age distributions.
Growth models
Conversion factors
Natural Mortality ests.
Movement and Distribution Figures
Release mortality, depth relation

Catch Statistics

Landings data 'as provided'
Details to support 'adjustments'
Final total annual landings, Number and Weight
Landings by sector (i.e., comm and rec)
Landings by month
Landings by gear/sector
Landings by state/jurisdiction/sector
Discards, discard losses, release mortality, by sector/gear

Catch mean weights, by sector/gear Length distributions, by sector/gear/year, season
Biological sampling details - N samples, trips, lengths, weights, ages, % trips sampled
Economic Information (price per pound, etc)

Dependent Surveys and Effort

Total effort measures, by fishery, gear, jurisdiction, month
Associated landings (esp. if differ from basic stats due to adjustments)
Survey CPUE time series, nominal and modeled

Independent Surveys

Survey Effort
Survey Coverage - geo (maps) and spatial
Survey length/age distribution
Survey CPUE, Catch
Survey CPUE time series as input to model

ASSESSMENT INFORMATION (Assessment Workshop Report)

MODEL INPUTS

Actual model inputs:

- Total catch and discard (at age, by area, gear, etc.)
- Survey CPUEs (at age, etc)
- Age Distributions
- Length Distributions
- Maturity, fecundity, sex ratio schedules
- And any other relevant inputs required by the model

Model specifications

- Complete list of input specifications and parameters required for the model
e.g., fitting methods, min/max limits, ages for averaging, assumptions
- List of all parameters estimated
- List of model equations if a 'custom' model; provide reference otherwise

Measures of precision and fit

- Error components, contribution to total error
- Sums of squares, variances, CV's, and other statistical measures for est. values
- Error weighting values
- Residuals (plotted)
- Time series of observed and predicted values for fitting/tuning criteria (plotted)

Population Estimates

- Total annual abundance
- Abundance at age
- Recruitment
- Biomass, annual and by age
- Spawner abundance and biomass, annual and by age
- Fecundity, total annual and by age

Exploitation

- Fishing mortality, instantaneous and annual, "Fully recruited" and by age
- Selectivity or partial recruitment
- Estimated landings and discards, and by age/length if appropriate

PROJECTIONS AND BENCHMARKS TABLES

Inputs

- Catch or exploitation assumptions
- Starting population values
- Fishery characteristics – selectivity, limits, weights
- Stock-recruit model or assumption, reproductive info

Projection Results

- Population abundance
- Recruitment
- Biomass
- Catch
- Exploitation

Benchmark Results

- SFA criteria values, confidence intervals
F_{msy}, MSST, MFMT, B_{msy}, Generation time estimate