Index Report Cards

Indices Working Group

SEDAR 42-DW-19

17 December 2014

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Evaluation of Abundance Indices:
Red Grouper Abundance Indices from SEAMAP Groundfish Surveys in the Northern Gulf of Mexico (SEDAR42-DW-05)

DESCRIPTION OF THE DATA SOURCE

1. Fishery Independent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the survey design (e.g. fixed sampling sites, random stratified sampling), location, seasons/months and years of sampling.				✔
B. Describe sampling methodology (e.g. gear, vessel, soak time etc.)				✔
C. Describe any changes in sampling methodology (e.g. gear, vessel, sample design etc.)				✔
D. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).				✔
E. What species or species assemblages are targeted by this survey (e.g. red snapper, reef fish, pelagic).				✔
F. Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.				✔

2. Fishery Dependent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the data source and type of fishery (e.g. commercial handline, commercial longline, recreational hook and line etc.).	✔			
B. Describe any changes to reporting requirements, variables reported, etc.	✔			
C. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).	✔			
D Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.	✔			

METHODS

1. Data Reduction and Exclusions

	Not Applicable	Absent	Incomplete	Complete
A. Describe any data exclusions (e.g. gears, fishing modes, sampling areas etc.). Report the number of records removed and justify removal.				✔
B. Describe data reduction techniques (if any) used to address targeting (e.g. Stephens and MacCall, 2004; gear configuration, species assemblage etc).	✔			
C. Discuss procedures used to identify outliers. How many were identified? Were they excluded?	✔			

Working Group Comments:

	Not Applicable	Absent	Incomplete	Complete
2. Management Regulations (for FD Indices)				
A. Provide (or cite) history of management regulations (e.g. bag limits, size limits, trip limits, closures etc.).	✔			
B. Describe the effects (if any) of management regulations on CPUE	✔			
C. Discuss methods used (if any) to minimize the effects of management measures on the CPUE series.	✔			
3. Describe Analysis Dataset (after exclusions and other treatments)				
A. Provide tables and/or figures of number of observations by factors (including year, area, etc.) and interaction terms.				✔
B. Include tables and/or figures of number of positive observations by factors and interaction terms.				✔
C. Include tables and/or figures of the proportion positive observations by factors and interaction terms.				✔
D. Include tables and/or figures of average (unstandardized) CPUE by factors and interaction terms.				✔
E. Include annual maps of locations of survey sites (or fishing trips) and associated catch rates ***OR*** supply the raw data needed to construct these maps (Observation, Year, Latitude, Longitude (or statistical grid, area), Catch, Effort).				✔
F. Describe the effort variable and the units. If more than one effort variable is present in the dataset, justify selection.				✔
G. What are the units of catch (e.g. numbers or biomass, whole weight, gutted weight, kilograms, pounds).				✔
4. Model Standardization				
A. Describe model structure (e.g. delta-lognormal)				✔
B. Describe construction of GLM components (e.g. forward selection from null etc.)				✔
C. Describe inclusion criteria for factors and interactions terms.				✔
D. Were YEAR*FACTOR interactions included in the model? If so, how (e.g. fixed effect, random effect)? Were random effects tested for significance using a likelihood ratio test?				✔
E. Provide a table summarizing the construction of the GLM components.				✔
F. Summarize model statistics of the mixed model formulation(s) (e.g. log likelihood, AIC, BIC etc.)				✔
G. Report convergence statistics.				✔

Working Group Comments:

4A. Lo et al. method

4G. Available On Demand.

MODEL DIAGNOSTICS

Comment: Other model structures are possible and acceptable. Please provide appropriate diagnostics to the CPUE indices working group.

	Not Applicable	Absent	Incomplete	Complete
1. Binomial Component				
A. Include plots of the chi-square residuals by factor.				✔
B. Include plots of predicted and observed proportion of positive trips by year and factor (e.g. year*area)		✔		
C. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).				✔
2. Lognormal/Gamma Component				
A. Include histogram of log(CPUE) or a histogram of the residuals of the model on CPUE. Overlay the expected distribution.				✔
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.				✔
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.				✔
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.				✔
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.				✔
F. Include plots of the residuals by factor				✔
3. Poisson Component				
A. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.	✔			
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.	✔			
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			
4. Zero-inflated model				
A. Include ROC curve to quantify goodness of fit.	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor).	✔			
C. Include QQ-plot (e.g. Student dev. residuals vs. theoretical quantiles), Overlay expected distribution.	✔			

Working Group Comments:

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete

Working Group Comments:

D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			

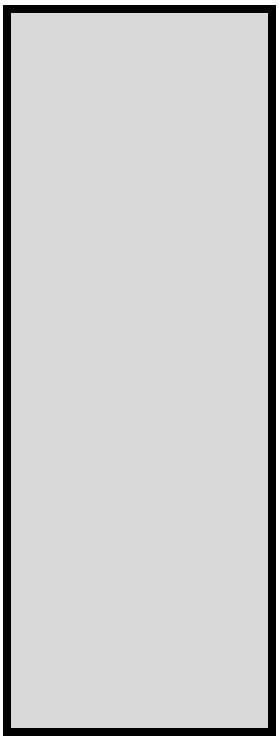
MODEL RESULTS

A. Tables of Nominal CPUE, Standardized CPUE, Observations, Positive Observations, Proportion Positive Observations and Coefficients of Variation (CVs). Other statistics may also be appropriate to report				✔
B. Figure of Nominal and Standardized Indices with measure of variance (i.e. CVs).				✔

IF MULTIPLE MODEL STRUCTURES WERE CONSIDERED:

(***Note: this is always recommended but required when model diagnostics are poor***.)

1. Plot of resulting indices and estimates of variance	✔			
2. Table of model statistics (e.g. AIC criteria)	✔			



	Date Received	*Workshop Recommendation*	*Revision Deadline ****	*Author and Rapporteur Signatures*
First Submission	11/17/2014	Recommended		
Revision				

*The revision deadline is negotiated by the author, the SEDAR coordinator and the CPUE rapporteur. The author **DOES NOT** commit to any **LEGAL OBLIGATION** by agreeing to submit a manuscript before this deadline. The maximum penalty for failure to submit a revised document prior to the submission deadline is rejection of the CPUE series.*

Justification of Working Group Recommendation

The SEAMAP Summer Groundfish Survey index was recommended for use in the stock assessment. This is a fishery independent survey with good spatial coverage of the eastern GOM, although the time series is short (5 years). This survey also covers a portion of the population (2-3 year olds) that is not covered by another fishery independent index.

Reset Fields

Evaluation of Abundance Indices:
Red Grouper Abundance Indices from NMFS Bottom Longline Surveys in the Northern Gulf of Mexico (SEDAR42-DW-06)

DESCRIPTION OF THE DATA SOURCE

1. Fishery Independent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the survey design (e.g. fixed sampling sites, random stratified sampling), location, seasons/months and years of sampling.				✔
B. Describe sampling methodology (e.g. gear, vessel, soak time etc.)				✔
C. Describe any changes in sampling methodology (e.g. gear, vessel, sample design etc.)				✔
D. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).				✔
E. What species or species assemblages are targeted by this survey (e.g. red snapper, reef fish, pelagic).				✔
F. Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.				✔

2. Fishery Dependent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the data source and type of fishery (e.g. commercial handline, commercial longline, recreational hook and line etc.).				
B. Describe any changes to reporting requirements, variables reported, etc.	✔			
C. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).	✔			
D Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.	✔			

METHODS

1. Data Reduction and Exclusions

	Not Applicable	Absent	Incomplete	Complete
A. Describe any data exclusions (e.g. gears, fishing modes, sampling areas etc.). Report the number of records removed and justify removal.				✔
B. Describe data reduction techniques (if any) used to address targeting (e.g. Stephens and MacCall, 2004; gear configuration, species assemblage etc).	✔			
C. Discuss procedures used to identify outliers. How many were identified? Were they excluded?	✔			

Working Group Comments:

	Not Applicable	Absent	Incomplete	Complete
2. Management Regulations (for FD Indices)				
A. Provide (or cite) history of management regulations (e.g. bag limits, size limits, trip limits, closures etc.).	✔			
B. Describe the effects (if any) of management regulations on CPUE	✔			
C. Discuss methods used (if any) to minimize the effects of management measures on the CPUE series.	✔			
3. Describe Analysis Dataset (after exclusions and other treatments)				
A. Provide tables and/or figures of number of observations by factors (including year, area, etc.) and interaction terms.				✔
B. Include tables and/or figures of number of positive observations by factors and interaction terms.				✔
C. Include tables and/or figures of the proportion positive observations by factors and interaction terms.				✔
D. Include tables and/or figures of average (unstandardized) CPUE by factors and interaction terms.				✔
E. Include annual maps of locations of survey sites (or fishing trips) and associated catch rates ***OR*** supply the raw data needed to construct these maps (Observation, Year, Latitude, Longitude (or statistical grid, area), Catch, Effort).				✔
F. Describe the effort variable and the units. If more than one effort variable is present in the dataset, justify selection.				✔
G. What are the units of catch (e.g. numbers or biomass, whole weight, gutted weight, kilograms, pounds).				✔
4. Model Standardization				
A. Describe model structure (e.g. delta-lognormal)				✔
B. Describe construction of GLM components (e.g. forward selection from null etc.)				✔
C. Describe inclusion criteria for factors and interactions terms.				✔
D. Were YEAR*FACTOR interactions included in the model? If so, how (e.g. fixed effect, random effect)? Were random effects tested for significance using a likelihood ratio test?				✔
E. Provide a table summarizing the construction of the GLM components.				✔
F. Summarize model statistics of the mixed model formulation(s) (e.g. log likelihood, AIC, BIC etc.)				✔
G. Report convergence statistics.				✔

Working Group Comments:

4A. Lo et al. method

4G. Available On Demand.

MODEL DIAGNOSTICS

Comment: Other model structures are possible and acceptable. Please provide appropriate diagnostics to the CPUE indices working group.

	Not Applicable	Absent	Incomplete	Complete
1. Binomial Component				
A. Include plots of the chi-square residuals by factor.				✔
B. Include plots of predicted and observed proportion of positive trips by year and factor (e.g. year*area)		✔		
C. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).				✔
2. Lognormal/Gamma Component				
A. Include histogram of log(CPUE) or a histogram of the residuals of the model on CPUE. Overlay the expected distribution.				✔
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.				✔
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.				✔
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.				✔
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.				✔
F. Include plots of the residuals by factor				✔
3. Poisson Component				
A. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.	✔			
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.	✔			
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			
4. Zero-inflated model				
A. Include ROC curve to quantify goodness of fit.	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor).	✔			
C. Include QQ-plot (e.g. Student dev. residuals vs. theoretical quantiles), Overlay expected distribution.	✔			

Working Group Comments:

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete

Working Group Comments:

D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			

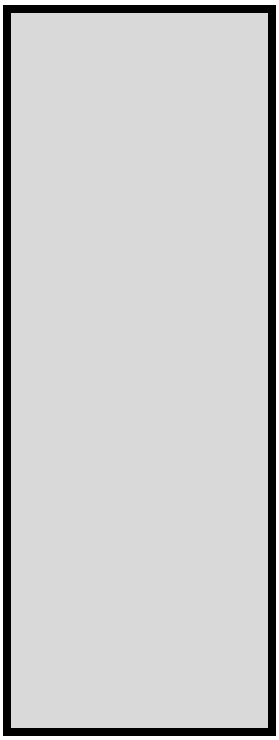
MODEL RESULTS

A. Tables of Nominal CPUE, Standardized CPUE, Observations, Positive Observations, Proportion Positive Observations and Coefficients of Variation (CVs). Other statistics may also be appropriate to report				✔
B. Figure of Nominal and Standardized Indices with measure of variance (i.e. CVs).				✔

IF MULTIPLE MODEL STRUCTURES WERE CONSIDERED:

(***Note: this is always recommended but required when model diagnostics are poor***.)

1. Plot of resulting indices and estimates of variance	✔			
2. Table of model statistics (e.g. AIC criteria)	✔			



	Date Received	*Workshop Recommendation*	*Revision Deadline ****	*Author and Rapporteur Signatures*
First Submission	11/17/2014	Accept		
Revision				

*The revision deadline is negotiated by the author, the SEDAR coordinator and the CPUE rapporteur. The author **DOES NOT** commit to any **LEGAL OBLIGATION** by agreeing to submit a manuscript before this deadline. The maximum penalty for failure to submit a revised document prior to the submission deadline is rejection of the CPUE series.*

Justification of Working Group Recommendation

The Indices Working Group recommended that the NMFS Bottom Longline Index be used in the base run of the model. The pros of this index are: it is a fishery independent survey with good spatial and temporal coverage. It also covers the entire depth range of red grouper.

Reset Fields

Evaluation of Abundance Indices:
Red Grouper Epinephelus morio Findings from the NMFS Panama City Laboratory Trap & Camera Fishery-Independent Survey – 2004-2014 (SEDAR42-DW-15)

DESCRIPTION OF THE DATA SOURCE

1. Fishery Independent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the survey design (e.g. fixed sampling sites, random stratified sampling), location, seasons/months and years of sampling.				✔
B. Describe sampling methodology (e.g. gear, vessel, soak time etc.)				✔
C. Describe any changes in sampling methodology (e.g. gear, vessel, sample design etc.)				✔
D. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).				✔
E. What species or species assemblages are targeted by this survey (e.g. red snapper, reef fish, pelagic).				✔
F. Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.				✔

2. Fishery Dependent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the data source and type of fishery (e.g. commercial handline, commercial longline, recreational hook and line etc.).	✔			
B. Describe any changes to reporting requirements, variables reported, etc.	✔			
C. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).	✔			
D Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.	✔			

METHODS

1. Data Reduction and Exclusions

	Not Applicable	Absent	Incomplete	Complete
A. Describe any data exclusions (e.g. gears, fishing modes, sampling areas etc.). Report the number of records removed and justify removal.				✔
B. Describe data reduction techniques (if any) used to address targeting (e.g. Stephens and MacCall, 2004; gear configuration, species assemblage etc).	✔			
C. Discuss procedures used to identify outliers. How many were identified? Were they excluded?	✔			

Working Group Comments:

	Not Applicable	Absent	Incomplete	Complete
2. Management Regulations (for FD Indices)				
A. Provide (or cite) history of management regulations (e.g. bag limits, size limits, trip limits, closures etc.).	✔			
B. Describe the effects (if any) of management regulations on CPUE	✔			
C. Discuss methods used (if any) to minimize the effects of management measures on the CPUE series.	✔			
3. Describe Analysis Dataset (after exclusions and other treatments)				
A. Provide tables and/or figures of number of observations by factors (including year, area, etc.) and interaction terms.				✔
B. Include tables and/or figures of number of positive observations by factors and interaction terms.				✔
C. Include tables and/or figures of the proportion positive observations by factors and interaction terms.				✔
D. Include tables and/or figures of average (unstandardized) CPUE by factors and interaction terms.				✔
E. Include annual maps of locations of survey sites (or fishing trips) and associated catch rates ***OR*** supply the raw data needed to construct these maps (Observation, Year, Latitude, Longitude (or statistical grid, area), Catch, Effort).				✔
F. Describe the effort variable and the units. If more than one effort variable is present in the dataset, justify selection.				✔
G. What are the units of catch (e.g. numbers or biomass, whole weight, gutted weight, kilograms, pounds).				✔
4. Model Standardization				
A. Describe model structure (e.g. delta-lognormal)				✔
B. Describe construction of GLM components (e.g. forward selection from null etc.)				✔
C. Describe inclusion criteria for factors and interactions terms.				✔
D. Were YEAR*FACTOR interactions included in the model? If so, how (e.g. fixed effect, random effect)? Were random effects tested for significance using a likelihood ratio test?				✔
E. Provide a table summarizing the construction of the GLM components.				✔
F. Summarize model statistics of the mixed model formulation(s) (e.g. log likelihood, AIC, BIC etc.)				✔
G. Report convergence statistics.				✔

Working Group Comments:

4A. Lo et al. method

4G. Available On Demand.

MODEL DIAGNOSTICS

Comment: Other model structures are possible and acceptable. Please provide appropriate diagnostics to the CPUE indices working group.

	Not Applicable	Absent	Incomplete	Complete
1. Binomial Component				
A. Include plots of the chi-square residuals by factor.				✔
B. Include plots of predicted and observed proportion of positive trips by year and factor (e.g. year*area)		✔		
C. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).				✔
2. Lognormal/Gamma Component				
A. Include histogram of log(CPUE) or a histogram of the residuals of the model on CPUE. Overlay the expected distribution.				✔
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.				✔
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.				✔
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.				✔
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.				✔
F. Include plots of the residuals by factor				✔
3. Poisson Component				
A. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.	✔			
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.	✔			
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			
4. Zero-inflated model				
A. Include ROC curve to quantify goodness of fit.	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor).	✔			
C. Include QQ-plot (e.g. Student dev. residuals vs. theoretical quantiles), Overlay expected distribution.	✔			

Working Group Comments:

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete

Working Group Comments:

D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			

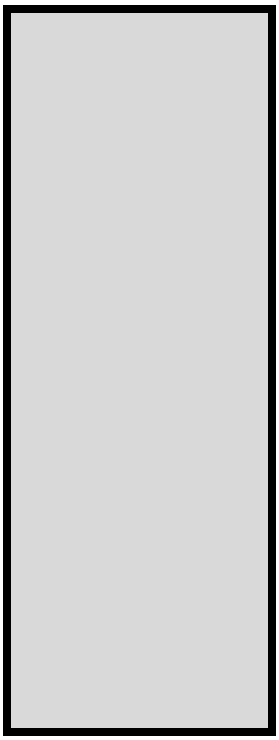
MODEL RESULTS

A. Tables of Nominal CPUE, Standardized CPUE, Observations, Positive Observations, Proportion Positive Observations and Coefficients of Variation (CVs). Other statistics may also be appropriate to report				✔
B. Figure of Nominal and Standardized Indices with measure of variance (i.e. CVs).				✔

IF MULTIPLE MODEL STRUCTURES WERE CONSIDERED:

(***Note: this is always recommended but required when model diagnostics are poor***.)

1. Plot of resulting indices and estimates of variance	✔			
2. Table of model statistics (e.g. AIC criteria)	✔			



	Date Received	*Workshop Recommendation*	*Revision Deadline ****	*Author and Rapporteur Signatures*
First Submission	11/17/2014	Recommended		
Revision				

*The revision deadline is negotiated by the author, the SEDAR coordinator and the CPUE rapporteur. The author **DOES NOT** commit to any **LEGAL OBLIGATION** by agreeing to submit a manuscript before this deadline. The maximum penalty for failure to submit a revised document prior to the submission deadline is rejection of the CPUE series.*

Justification of Working Group Recommendation

The Panama City trap survey was carefully considered by the index working group. Though it showed very similar trends in proportions of positive samples and CPUE with the concurrent Panama City video survey, the index group decided not to recommend it for inclusion in the assessment because 1) it covered the same area and time period as the latter and less area and a shorter time period than the combined SEAMAP, Panama City, and FWRI video index, 2) the trap data was more variable than the video data, and 3) traps were more selective than video gear.

Reset Fields

Evaluation of Abundance Indices:

IIndices of abundance for Red Grouper (Epinephelus morio) from the Florida Fish and Wildlife Research Institute (FWRI) chevron trap survey on the West Florida Shelf. (SEDAR42-DW-09)

DESCRIPTION OF THE DATA SOURCE

1. Fishery Independent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the survey design (e.g. fixed sampling sites, random stratified sampling), location, seasons/months and years of sampling.				✔
B. Describe sampling methodology (e.g. gear, vessel, soak time etc.)				✔
C. Describe any changes in sampling methodology (e.g. gear, vessel, sample design etc.)				✔
D. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).				✔
E. What species or species assemblages are targeted by this survey (e.g. red snapper, reef fish, pelagic).				✔
F. Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.				✔

2. Fishery Dependent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the data source and type of fishery (e.g. commercial handline, commercial longline, recreational hook and line etc.).	✔			
B. Describe any changes to reporting requirements, variables reported, etc.	✔			
C. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).	✔			
D Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.	✔			

METHODS

1. Data Reduction and Exclusions

	Not Applicable	Absent	Incomplete	Complete
A. Describe any data exclusions (e.g. gears, fishing modes, sampling areas etc.). Report the number of records removed and justify removal.				✔
B. Describe data reduction techniques (if any) used to address targeting (e.g. Stephens and MacCall, 2004; gear configuration, species assemblage etc).				✔
C. Discuss procedures used to identify outliers. How many were identified? Were they excluded?	✔			

Working Group Comments:

	Not Applicable	Absent	Incomplete	Complete
2. Management Regulations (for FD Indices)				
A. Provide (or cite) history of management regulations (e.g. bag limits, size limits, trip limits, closures etc.).	✔			
B. Describe the effects (if any) of management regulations on CPUE	✔			
C. Discuss methods used (if any) to minimize the effects of management measures on the CPUE series.	✔			
3. Describe Analysis Dataset (after exclusions and other treatments)				
A. Provide tables and/or figures of number of observations by factors (including year, area, etc.) and interaction terms.				✔
B. Include tables and/or figures of number of positive observations by factors and interaction terms.				✔
C. Include tables and/or figures of the proportion positive observations by factors and interaction terms.				✔
D. Include tables and/or figures of average (unstandardized) CPUE by factors and interaction terms.				✔
E. Include annual maps of locations of survey sites (or fishing trips) and associated catch rates ***OR*** supply the raw data needed to construct these maps (Observation, Year, Latitude, Longitude (or statistical grid, area), Catch, Effort).				✔
F. Describe the effort variable and the units. If more than one effort variable is present in the dataset, justify selection.				✔
G. What are the units of catch (e.g. numbers or biomass, whole weight, gutted weight, kilograms, pounds).				✔
4. Model Standardization				
A. Describe model structure (e.g. delta-lognormal)				✔
B. Describe construction of GLM components (e.g. forward selection from null etc.)				✔
C. Describe inclusion criteria for factors and interactions terms.				✔
D. Were YEAR*FACTOR interactions included in the model? If so, how (e.g. fixed effect, random effect)? Were random effects tested for significance using a likelihood ratio test?	✔			
E. Provide a table summarizing the construction of the GLM components.				✔
F. Summarize model statistics of the mixed model formulation(s) (e.g. log likelihood, AIC, BIC etc.)				✔
G. Report convergence statistics.		✔		

Working Group Comments:

MODEL DIAGNOSTICS

Comment: Other model structures are possible and acceptable. Please provide appropriate diagnostics to the CPUE indices working group.

	Not Applicable	Absent	Incomplete	Complete
1. Binomial Component				
A. Include plots of the chi-square residuals by factor.				✔
B. Include plots of predicted and observed proportion of positive trips by year and factor (e.g. year*area)				✔
C. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).				✔
2. Lognormal/Gamma Component				
A. Include histogram of log(CPUE) or a histogram of the residuals of the model on CPUE. Overlay the expected distribution.	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.	✔			
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.	✔			
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			
F. Include plots of the residuals by factor	✔			
3. Poisson Component				
A. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.	✔			
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.	✔			
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			
4. Zero-inflated model				
A. Include ROC curve to quantify goodness of fit.		✔		
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor).				✔
C. Include QQ-plot (e.g. Student dev. residuals vs. theoretical quantiles), Overlay expected distribution.		✔		

Working Group Comments:

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

	Not Applicable	Absent	Incomplete	Complete

Working Group Comments:

D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.				✔
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.				✔

MODEL RESULTS

A. Tables of Nominal CPUE, Standardized CPUE, Observations, Positive Observations, Proportion Positive Observations and Coefficients of Variation (CVs). Other statistics may also be appropriate to report				✔
B. Figure of Nominal and Standardized Indices with measure of variance (i.e. CVs).				✔

IF MULTIPLE MODEL STRUCTURES WERE CONSIDERED:

(***Note: this is always recommended but required when model diagnostics are poor***.)

1. Plot of resulting indices and estimates of variance		✔		
2. Table of model statistics (e.g. AIC criteria)				✔

	Date Received	*Workshop Recommendation*	*Revision Deadline ****	*Author and Rapporteur Signatures*
First Submission				
Revision				

*The revision deadline is negotiated by the author, the SEDAR coordinator and the CPUE rapporteur. The author **DOES NOT** commit to any **LEGAL OBLIGATION** by agreeing to submit a manuscript before this deadline. The maximum penalty for failure to submit a revised document prior to the submission deadline is rejection of the CPUE series.*

Justification of Working Group Recommendation

The index working group expressed some concerns with the low proportion positives due to difficulties in identifying reef habitat during the early years, especially 2008. However, the high proportion positives in the later years of the survey, combined with the fact that the spatial footprint was within the heart of Red Grouper distribution, indicated that the index warranted further consideration. However, because the working group felt that the proportion of the population covered in this survey was also covered by other video surveys, and that traps were more selective than video gear, this index was not recommended for inclusion in the assessment.

Evaluation of Abundance Indices:
Combined Video Survey Index

DESCRIPTION OF THE DATA SOURCE

1. Fishery Independent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the survey design (e.g. fixed sampling sites, random stratified sampling), location, seasons/months and years of sampling.				✔
B. Describe sampling methodology (e.g. gear, vessel, soak time etc.)				✔
C. Describe any changes in sampling methodology (e.g. gear, vessel, sample design etc.)				✔
D. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).				✔
E. What species or species assemblages are targeted by this survey (e.g. red snapper, reef fish, pelagic).				✔
F. Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.				✔

2. Fishery Dependent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the data source and type of fishery (e.g. commercial handline, commercial longline, recreational hook and line etc.).	✔			
B. Describe any changes to reporting requirements, variables reported, etc.	✔			
C. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).	✔			
D Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.	✔			

METHODS

1. Data Reduction and Exclusions

	Not Applicable	Absent	Incomplete	Complete
A. Describe any data exclusions (e.g. gears, fishing modes, sampling areas etc.). Report the number of records removed and justify removal.				✔
B. Describe data reduction techniques (if any) used to address targeting (e.g. Stephens and MacCall, 2004; gear configuration, species assemblage etc).				✔
C. Discuss procedures used to identify outliers. How many were identified? Were they excluded?	✔			

Working Group Comments:

This index covers data from NMFS-Pascagoula, NMFS-Panama City and FWRI (working documents 8, 11 and 15)

	Not Applicable	Absent	Incomplete	Complete
2. Management Regulations (for FD Indices)				
A. Provide (or cite) history of management regulations (e.g. bag limits, size limits, trip limits, closures etc.).	✔			
B. Describe the effects (if any) of management regulations on CPUE	✔			
C. Discuss methods used (if any) to minimize the effects of management measures on the CPUE series.	✔			
3. Describe Analysis Dataset (after exclusions and other treatments)				
A. Provide tables and/or figures of number of observations by factors (including year, area, etc.) and interaction terms.				✔
B. Include tables and/or figures of number of positive observations by factors and interaction terms.				✔
C. Include tables and/or figures of the proportion positive observations by factors and interaction terms.				✔
D. Include tables and/or figures of average (unstandardized) CPUE by factors and interaction terms.				✔
E. Include annual maps of locations of survey sites (or fishing trips) and associated catch rates ***OR*** supply the raw data needed to construct these maps (Observation, Year, Latitude, Longitude (or statistical grid, area), Catch, Effort).				✔
F. Describe the effort variable and the units. If more than one effort variable is present in the dataset, justify selection.				✔
G. What are the units of catch (e.g. numbers or biomass, whole weight, gutted weight, kilograms, pounds).				✔
4. Model Standardization				
A. Describe model structure (e.g. delta-lognormal)				✔
B. Describe construction of GLM components (e.g. forward selection from null etc.)				✔
C. Describe inclusion criteria for factors and interactions terms.				✔
D. Were YEAR*FACTOR interactions included in the model? If so, how (e.g. fixed effect, random effect)? Were random effects tested for significance using a likelihood ratio test?	✔			
E. Provide a table summarizing the construction of the GLM components.				✔
F. Summarize model statistics of the mixed model formulation(s) (e.g. log likelihood, AIC, BIC etc.)				✔
G. Report convergence statistics.		✔		

Working Group Comments:

MODEL DIAGNOSTICS

Comment: Other model structures are possible and acceptable. Please provide appropriate diagnostics to the CPUE indices working group.

	Not Applicable	Absent	Incomplete	Complete
1. Binomial Component				
A. Include plots of the chi-square residuals by factor.				✔
B. Include plots of predicted and observed proportion of positive trips by year and factor (e.g. year*area)				✔
C. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).				✔
2. Lognormal/Gamma Component				
A. Include histogram of log(CPUE) or a histogram of the residuals of the model on CPUE. Overlay the expected distribution.	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.	✔			
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.	✔			
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			
F. Include plots of the residuals by factor	✔			
3. Poisson Component				
A. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).				✔
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.				✔
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.				✔
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.				✔
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.				✔
4. Zero-inflated model				
A. Include ROC curve to quantify goodness of fit.	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor).	✔			
C. Include QQ-plot (e.g. Student dev. residuals vs. theoretical quantiles), Overlay expected distribution.	✔			

Working Group Comments:

1. A-C Available upon request.

3. A-G Available upon request.

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete

Working Group Comments:

D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			

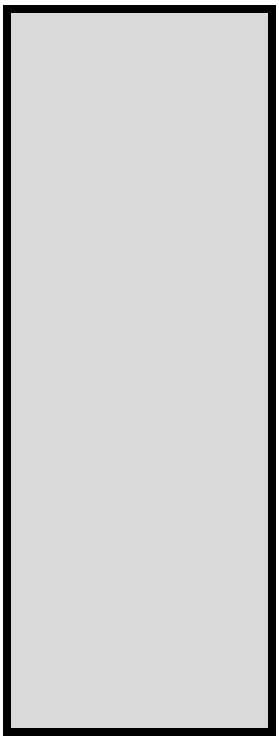
MODEL RESULTS

A. Tables of Nominal CPUE, Standardized CPUE, Observations, Positive Observations, Proportion Positive Observations and Coefficients of Variation (CVs). Other statistics may also be appropriate to report				✔
B. Figure of Nominal and Standardized Indices with measure of variance (i.e. CVs).				✔

IF MULTIPLE MODEL STRUCTURES WERE CONSIDERED:

(***Note: this is always recommended but required when model diagnostics are poor***.)

1. Plot of resulting indices and estimates of variance	✔			
2. Table of model statistics (e.g. AIC criteria)	✔			



	Date Received	*Workshop Recommendation*	*Revision Deadline ****	*Author and Rapporteur Signatures*
First Submission	11/20/2014	Recommend of use.		
Revision				

*The revision deadline is negotiated by the author, the SEDAR coordinator and the CPUE rapporteur. The author **DOES NOT** commit to any **LEGAL OBLIGATION** by agreeing to submit a manuscript before this deadline. The maximum penalty for failure to submit a revised document prior to the submission deadline is rejection of the CPUE series.*

Justification of Working Group Recommendation

The Indices Working Group thought it most appropriate to combine all the video survey data from the three mentioned sources, due to the identical sampling methodologies. This index of abundance shows similar trends from other indices in the later years; and being the longest fishery-independent index, the Indices Working Group recommends its use in the base model.

Evaluation of Abundance Indices:
Headboat Index

DESCRIPTION OF THE DATA SOURCE

1. Fishery Independent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the survey design (e.g. fixed sampling sites, random stratified sampling), location, seasons/months and years of sampling.	✔			
B. Describe sampling methodology (e.g. gear, vessel, soak time etc.)	✔			
C. Describe any changes in sampling methodology (e.g. gear, vessel, sample design etc.)	✔			
D. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).	✔			
E. What species or species assemblages are targeted by this survey (e.g. red snapper, reef fish, pelagic).	✔			
F. Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.	✔			

2. Fishery Dependent Indices

A. Describe the data source and type of fishery (e.g. commercial handline, commercial longline, recreational hook and line etc.).				✔
B. Describe any changes to reporting requirements, variables reported, etc.				✔
C. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).				✔
D Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.				✔

METHODS

1. Data Reduction and Exclusions

A. Describe any data exclusions (e.g. gears, fishing modes, sampling areas etc.). Report the number of records removed and justify removal.				✔
B. Describe data reduction techniques (if any) used to address targeting (e.g. Stephens and MacCall, 2004; gear configuration, species assemblage etc).				✔
C. Discuss procedures used to identify outliers. How many were identified? Were they excluded?				✔

Working Group Comments:

	Not Applicable	Absent	Incomplete	Complete
2. Management Regulations (for FD Indices)				
A. Provide (or cite) history of management regulations (e.g. bag limits, size limits, trip limits, closures etc.).				✔
B. Describe the effects (if any) of management regulations on CPUE				✔
C. Discuss methods used (if any) to minimize the effects of management measures on the CPUE series.				✔
3. Describe Analysis Dataset (after exclusions and other treatments)				
A. Provide tables and/or figures of number of observations by factors (including year, area, etc.) and interaction terms.				✔
B. Include tables and/or figures of number of positive observations by factors and interaction terms.				✔
C. Include tables and/or figures of the proportion positive observations by factors and interaction terms.				✔
D. Include tables and/or figures of average (unstandardized) CPUE by factors and interaction terms.				✔
E. Include annual maps of locations of survey sites (or fishing trips) and associated catch rates ***OR*** supply the raw data needed to construct these maps (Observation, Year, Latitude, Longitude (or statistical grid, area), Catch, Effort).				✔
F. Describe the effort variable and the units. If more than one effort variable is present in the dataset, justify selection.				✔
G. What are the units of catch (e.g. numbers or biomass, whole weight, gutted weight, kilograms, pounds).				✔
4. Model Standardization				
A. Describe model structure (e.g. delta-lognormal)				✔
B. Describe construction of GLM components (e.g. forward selection from null etc.)				✔
C. Describe inclusion criteria for factors and interactions terms.				✔
D. Were YEAR*FACTOR interactions included in the model? If so, how (e.g. fixed effect, random effect)? Were random effects tested for significance using a likelihood ratio test?				✔
E. Provide a table summarizing the construction of the GLM components.				✔
F. Summarize model statistics of the mixed model formulation(s) (e.g. log likelihood, AIC, BIC etc.)				✔
G. Report convergence statistics.				✔

Working Group Comments:

MODEL DIAGNOSTICS

Comment: Other model structures are possible and acceptable. Please provide appropriate diagnostics to the CPUE indices working group.

	Not Applicable	Absent	Incomplete	Complete
1. Binomial Component				
A. Include plots of the chi-square residuals by factor.				✔
B. Include plots of predicted and observed proportion of positive trips by year and factor (e.g. year*area)				✔
C. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).				✔
2. Lognormal/Gamma Component				
A. Include histogram of log(CPUE) or a histogram of the residuals of the model on CPUE. Overlay the expected distribution.				✔
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.				✔
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.				✔
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.				✔
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.				✔
F. Include plots of the residuals by factor				✔
3. Poisson Component				
A. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.	✔			
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.	✔			
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			
4. Zero-inflated model				
A. Include ROC curve to quantify goodness of fit.	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor).	✔			
C. Include QQ-plot (e.g. Student dev. residuals vs. theoretical quantiles), Overlay expected distribution.	✔			

Working Group Comments:

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete

Working Group Comments:

D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			

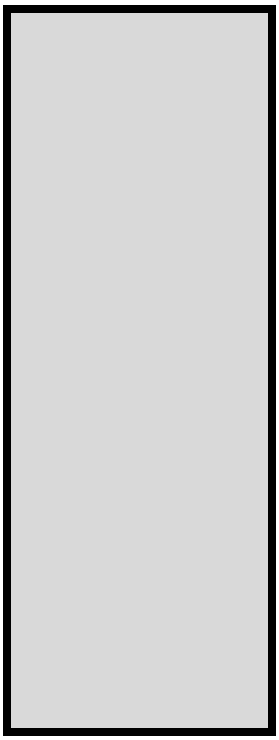
MODEL RESULTS

A. Tables of Nominal CPUE, Standardized CPUE, Observations, Positive Observations, Proportion Positive Observations and Coefficients of Variation (CVs). Other statistics may also be appropriate to report				✔
B. Figure of Nominal and Standardized Indices with measure of variance (i.e. CVs).				✔

IF MULTIPLE MODEL STRUCTURES WERE CONSIDERED:

(***Note: this is always recommended but required when model diagnostics are poor***.)

1. Plot of resulting indices and estimates of variance	✔			
2. Table of model statistics (e.g. AIC criteria)	✔			



	Date Received	*Workshop Recommendation*	*Revision Deadline ****	*Author and Rapporteur Signatures*
First Submission	11/19/2014	Recommend	12/12/2014	
Revision	12/12/2014	Recommend		

*The revision deadline is negotiated by the author, the SEDAR coordinator and the CPUE rapporteur. The author **DOES NOT** commit to any **LEGAL OBLIGATION** by agreeing to submit a manuscript before this deadline. The maximum penalty for failure to submit a revised document prior to the submission deadline is rejection of the CPUE series.*

Justification of Working Group Recommendation

The headboat index was deemed adequate for use in the assessment by the index working group. This decision was based on the long time series and large spatial coverage associated with the Headboat Survey. The group noted that the Headboat index is associated with high variability and recommended that future investigations should address how to most appropriately model interactions among factors and how to most appropriately calculate the variance associated with the index.

Evaluation of Abundance Indices:
MRFSS Index

DESCRIPTION OF THE DATA SOURCE

1. Fishery Independent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the survey design (e.g. fixed sampling sites, random stratified sampling), location, seasons/months and years of sampling.	✔			
B. Describe sampling methodology (e.g. gear, vessel, soak time etc.)	✔			
C. Describe any changes in sampling methodology (e.g. gear, vessel, sample design etc.)	✔			
D. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).	✔			
E. What species or species assemblages are targeted by this survey (e.g. red snapper, reef fish, pelagic).	✔			
F. Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.	✔			

2. Fishery Dependent Indices

A. Describe the data source and type of fishery (e.g. commercial handline, commercial longline, recreational hook and line etc.).				✔
B. Describe any changes to reporting requirements, variables reported, etc.				✔
C. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).				✔
D Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.				✔

METHODS

1. Data Reduction and Exclusions

A. Describe any data exclusions (e.g. gears, fishing modes, sampling areas etc.). Report the number of records removed and justify removal.				✔
B. Describe data reduction techniques (if any) used to address targeting (e.g. Stephens and MacCall, 2004; gear configuration, species assemblage etc).				✔
C. Discuss procedures used to identify outliers. How many were identified? Were they excluded?				✔

Working Group Comments:

	Not Applicable	Absent	Incomplete	Complete
2. Management Regulations (for FD Indices)				
A. Provide (or cite) history of management regulations (e.g. bag limits, size limits, trip limits, closures etc.).				✔
B. Describe the effects (if any) of management regulations on CPUE				✔
C. Discuss methods used (if any) to minimize the effects of management measures on the CPUE series.				✔
3. Describe Analysis Dataset (after exclusions and other treatments)				
A. Provide tables and/or figures of number of observations by factors (including year, area, etc.) and interaction terms.				✔
B. Include tables and/or figures of number of positive observations by factors and interaction terms.				✔
C. Include tables and/or figures of the proportion positive observations by factors and interaction terms.				✔
D. Include tables and/or figures of average (unstandardized) CPUE by factors and interaction terms.				✔
E. Include annual maps of locations of survey sites (or fishing trips) and associated catch rates ***OR*** supply the raw data needed to construct these maps (Observation, Year, Latitude, Longitude (or statistical grid, area), Catch, Effort).				✔
F. Describe the effort variable and the units. If more than one effort variable is present in the dataset, justify selection.				✔
G. What are the units of catch (e.g. numbers or biomass, whole weight, gutted weight, kilograms, pounds).				✔
4. Model Standardization				
A. Describe model structure (e.g. delta-lognormal)				✔
B. Describe construction of GLM components (e.g. forward selection from null etc.)				✔
C. Describe inclusion criteria for factors and interactions terms.				✔
D. Were YEAR*FACTOR interactions included in the model? If so, how (e.g. fixed effect, random effect)? Were random effects tested for significance using a likelihood ratio test?				✔
E. Provide a table summarizing the construction of the GLM components.				✔
F. Summarize model statistics of the mixed model formulation(s) (e.g. log likelihood, AIC, BIC etc.)				✔
G. Report convergence statistics.				✔

Working Group Comments:

MODEL DIAGNOSTICS

Comment: Other model structures are possible and acceptable. Please provide appropriate diagnostics to the CPUE indices working group.

	Not Applicable	Absent	Incomplete	Complete
1. Binomial Component				
A. Include plots of the chi-square residuals by factor.				✔
B. Include plots of predicted and observed proportion of positive trips by year and factor (e.g. year*area)				✔
C. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).				✔
2. Lognormal/Gamma Component				
A. Include histogram of log(CPUE) or a histogram of the residuals of the model on CPUE. Overlay the expected distribution.				✔
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.				✔
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.				✔
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.				✔
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.				✔
F. Include plots of the residuals by factor				✔
3. Poisson Component				
A. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.	✔			
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.	✔			
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			
4. Zero-inflated model				
A. Include ROC curve to quantify goodness of fit.	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor).	✔			
C. Include QQ-plot (e.g. Student dev. residuals vs. theoretical quantiles), Overlay expected distribution.	✔			

Working Group Comments:

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete

Working Group Comments:

D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			

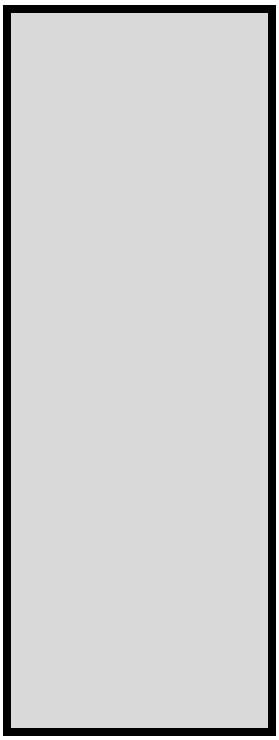
MODEL RESULTS

A. Tables of Nominal CPUE, Standardized CPUE, Observations, Positive Observations, Proportion Positive Observations and Coefficients of Variation (CVs). Other statistics may also be appropriate to report				✔
B. Figure of Nominal and Standardized Indices with measure of variance (i.e. CVs).				✔

IF MULTIPLE MODEL STRUCTURES WERE CONSIDERED:

(***Note: this is always recommended but required when model diagnostics are poor***.)

1. Plot of resulting indices and estimates of variance	✔			
2. Table of model statistics (e.g. AIC criteria)	✔			



	Date Received	*Workshop Recommendation*	*Revision Deadline ****	*Author and Rapporteur Signatures*
First Submission	11/19/2014	Recommend	12/12/2014	
Revision	12/12/2014	Recommend		

*The revision deadline is negotiated by the author, the SEDAR coordinator and the CPUE rapporteur. The author **DOES NOT** commit to any **LEGAL OBLIGATION** by agreeing to submit a manuscript before this deadline. The maximum penalty for failure to submit a revised document prior to the submission deadline is rejection of the CPUE series.*

Justification of Working Group Recommendation

The MRFSS index was deemed adequate for use in the assessment by the index working group. This decision was based on the long time series and large spatial coverage associated with the MRFSS angler intercept data. The group noted that the MRFSS index is associated with high variability and recommended that future investigations should address how to most appropriately model interactions among factors and how to most appropriately calculate the variance associated with the index. An additional research recommendation related to the MRFSS dataset is to explore an index where catch and effort data are summarized for individual trips, as individual trips can be associated with multiple interviews.

Evaluation of Abundance Indices:
Commercial Longline Index

	Not Applicable	Absent	Incomplete	Complete
DESCRIPTION OF THE DATA SOURCE				
1. Fishery Independent Indices				
A. Describe the survey design (e.g. fixed sampling sites, random stratified sampling), location, seasons/months and years of sampling.	✔			
B. Describe sampling methodology (e.g. gear, vessel, soak time etc.)	✔			
C. Describe any changes in sampling methodology (e.g. gear, vessel, sample design etc.)	✔			
D. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).	✔			
E. What species or species assemblages are targeted by this survey (e.g. red snapper, reef fish, pelagic).	✔			
F. Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.	✔			
2. Fishery Dependent Indices				
A. Describe the data source and type of fishery (e.g. commercial handline, commercial longline, recreational hook and line etc.).				✔
B. Describe any changes to reporting requirements, variables reported, etc.				✔
C. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).				✔
D Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.				✔
METHODS				
1. Data Reduction and Exclusions				
A. Describe any data exclusions (e.g. gears, fishing modes, sampling areas etc.). Report the number of records removed and justify removal.				✔
B. Describe data reduction techniques (if any) used to address targeting (e.g. Stephens and MacCall, 2004; gear configuration, species assemblage etc).				✔
C. Discuss procedures used to identify outliers. How many were identified? Were they excluded?				✔

Working Group Comments:

	Not Applicable	Absent	Incomplete	Complete
2. Management Regulations (for FD Indices)				
A. Provide (or cite) history of management regulations (e.g. bag limits, size limits, trip limits, closures etc.).				✔
B. Describe the effects (if any) of management regulations on CPUE				✔
C. Discuss methods used (if any) to minimize the effects of management measures on the CPUE series.				✔
3. Describe Analysis Dataset (after exclusions and other treatments)				
A. Provide tables and/or figures of number of observations by factors (including year, area, etc.) and interaction terms.				✔
B. Include tables and/or figures of number of positive observations by factors and interaction terms.				✔
C. Include tables and/or figures of the proportion positive observations by factors and interaction terms.				✔
D. Include tables and/or figures of average (unstandardized) CPUE by factors and interaction terms.				✔
E. Include annual maps of locations of survey sites (or fishing trips) and associated catch rates ***OR*** supply the raw data needed to construct these maps (Observation, Year, Latitude, Longitude (or statistical grid, area), Catch, Effort).		✔		
F. Describe the effort variable and the units. If more than one effort variable is present in the dataset, justify selection.				✔
G. What are the units of catch (e.g. numbers or biomass, whole weight, gutted weight, kilograms, pounds).				✔
4. Model Standardization				
A. Describe model structure (e.g. delta-lognormal)				✔
B. Describe construction of GLM components (e.g. forward selection from null etc.)				✔
C. Describe inclusion criteria for factors and interactions terms.				✔
D. Were YEAR*FACTOR interactions included in the model? If so, how (e.g. fixed effect, random effect)? Were random effects tested for significance using a likelihood ratio test?				✔
E. Provide a table summarizing the construction of the GLM components.				✔
F. Summarize model statistics of the mixed model formulation(s) (e.g. log likelihood, AIC, BIC etc.)				✔
G. Report convergence statistics.				✔

Working Group Comments:

MODEL DIAGNOSTICS

Comment: Other model structures are possible and acceptable. Please provide appropriate diagnostics to the CPUE indices working group.

	Not Applicable	Absent	Incomplete	Complete
1. Binomial Component				
A. Include plots of the chi-square residuals by factor.	✔			
B. Include plots of predicted and observed proportion of positive trips by year and factor (e.g. year*area)	✔			
C. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).	✔			
2. Lognormal/Gamma Component				
A. Include histogram of log(CPUE) or a histogram of the residuals of the model on CPUE. Overlay the expected distribution.				✔
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.				✔
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.				✔
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.				✔
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.				✔
F. Include plots of the residuals by factor				✔
3. Poisson Component				
A. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.	✔			
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.	✔			
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			
4. Zero-inflated model				
A. Include ROC curve to quantify goodness of fit.	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor).	✔			
C. Include QQ-plot (e.g. Student dev. residuals vs. theoretical quantiles), Overlay expected distribution.	✔			

Working Group Comments:

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete

Working Group Comments:

D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			

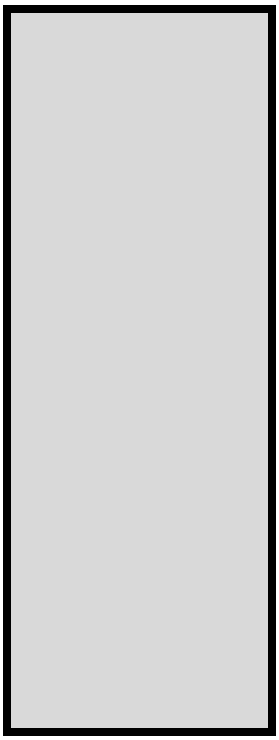
MODEL RESULTS

A. Tables of Nominal CPUE, Standardized CPUE, Observations, Positive Observations, Proportion Positive Observations and Coefficients of Variation (CVs). Other statistics may also be appropriate to report				✔
B. Figure of Nominal and Standardized Indices with measure of variance (i.e. CVs).				✔

IF MULTIPLE MODEL STRUCTURES WERE CONSIDERED:

(***Note: this is always recommended but required when model diagnostics are poor***.)

1. Plot of resulting indices and estimates of variance	✔			
2. Table of model statistics (e.g. AIC criteria)	✔			



	Date Received	*Workshop Recommendation*	*Revision Deadline ****	*Author and Rapporteur Signatures*
First Submission	11/20/2014	Recommend for use.		
Revision				

*The revision deadline is negotiated by the author, the SEDAR coordinator and the CPUE rapporteur. The author **DOES NOT** commit to any **LEGAL OBLIGATION** by agreeing to submit a manuscript before this deadline. The maximum penalty for failure to submit a revised document prior to the submission deadline is rejection of the CPUE series.*

Justification of Working Group Recommendation

The Index Work Group recommended the pre-IFQ index for use in the stock assessment. The IFQ-index was not recommended for use in the stock assessment given that the influence of the IFQ program on fisher behavior is not well understood.

Evaluation of Abundance Indices:
Commercial Vertical Line Index (1993-2009)

DESCRIPTION OF THE DATA SOURCE

1. Fishery Independent Indices

	Not Applicable	Absent	Incomplete	Complete
A. Describe the survey design (e.g. fixed sampling sites, random stratified sampling), location, seasons/months and years of sampling.	✔			
B. Describe sampling methodology (e.g. gear, vessel, soak time etc.)	✔			
C. Describe any changes in sampling methodology (e.g. gear, vessel, sample design etc.)	✔			
D. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).	✔			
E. What species or species assemblages are targeted by this survey (e.g. red snapper, reef fish, pelagic).	✔			
F. Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.	✔			

2. Fishery Dependent Indices

A. Describe the data source and type of fishery (e.g. commercial handline, commercial longline, recreational hook and line etc.).				✔
B. Describe any changes to reporting requirements, variables reported, etc.				✔
C. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).				✔
D Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.		✔		

METHODS

1. Data Reduction and Exclusions

A. Describe any data exclusions (e.g. gears, fishing modes, sampling areas etc.). Report the number of records removed and justify removal.				✔
B. Describe data reduction techniques (if any) used to address targeting (e.g. Stephens and MacCall, 2004; gear configuration, species assemblage etc).				✔
C. Discuss procedures used to identify outliers. How many were identified? Were they excluded?				✔

Working Group Comments:

2 D. No size information is directly available in the commercial coastal logbook data set (reports were in pounds landed); however, size comp presumably matches that provided in TIP data for commercial vertical line landings.

2. Management Regulations (for FD Indices)

	Not Applicable	Absent	Incomplete	Complete
A. Provide (or cite) history of management regulations (e.g. bag limits, size limits, trip limits, closures etc.).				✔
B. Describe the effects (if any) of management regulations on CPUE				✔
C. Discuss methods used (if any) to minimize the effects of management measures on the CPUE series.				✔

3. Describe Analysis Dataset (after exclusions and other treatments)

	Not Applicable	Absent	Incomplete	Complete
A. Provide tables and/or figures of number of observations by factors (including year, area, etc.) and interaction terms.		✔		
B. Include tables and/or figures of number of positive observations by factors and interaction terms.		✔		
C. Include tables and/or figures of the proportion positive observations by factors and interaction terms.		✔		
D. Include tables and/or figures of average (unstandardized) CPUE by factors and interaction terms.		✔		
E. Include annual maps of locations of survey sites (or fishing trips) and associated catch rates ***OR*** supply the raw data needed to construct these maps (Observation, Year, Latitude, Longitude (or statistical grid, area), Catch, Effort).		✔		
F. Describe the effort variable and the units. If more than one effort variable is present in the dataset, justify selection.				✔
G. What are the units of catch (e.g. numbers or biomass, whole weight, gutted weight, kilograms, pounds).				✔

4. Model Standardization

	Not Applicable	Absent	Incomplete	Complete
A. Describe model structure (e.g. delta-lognormal)				✔
B. Describe construction of GLM components (e.g. forward selection from null etc.)				✔
C. Describe inclusion criteria for factors and interactions terms.				✔
D. Were YEAR*FACTOR interactions included in the model? If so, how (e.g. fixed effect, random effect)? Were random effects tested for significance using a likelihood ratio test?				✔
E. Provide a table summarizing the construction of the GLM components.				✔
F. Summarize model statistics of the mixed model formulation(s) (e.g. log likelihood, AIC, BIC etc.)				✔
G. Report convergence statistics.				✔

Working Group Comments:

3 A-E. Available if needed, confidentiality limitations must be checked.

MODEL DIAGNOSTICS

Comment: Other model structures are possible and acceptable. Please provide appropriate diagnostics to the CPUE indices working group.

	Not Applicable	Absent	Incomplete	Complete
1. Binomial Component				
A. Include plots of the chi-square residuals by factor.				✔
B. Include plots of predicted and observed proportion of positive trips by year and factor (e.g. year*area)				✔
C. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).				✔
2. Lognormal/Gamma Component				
A. Include histogram of log(CPUE) or a histogram of the residuals of the model on CPUE. Overlay the expected distribution.				✔
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.		✔		
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.				✔
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.		✔		
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.		✔		
F. Include plots of the residuals by factor				✔
3. Poisson Component				
A. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.	✔			
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.	✔			
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			
4. Zero-inflated model				
A. Include ROC curve to quantify goodness of fit.	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor).	✔			
C. Include QQ-plot (e.g. Student dev. residuals vs. theoretical quantiles), Overlay expected distribution.	✔			

Working Group Comments:

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete

Working Group Comments:

D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			

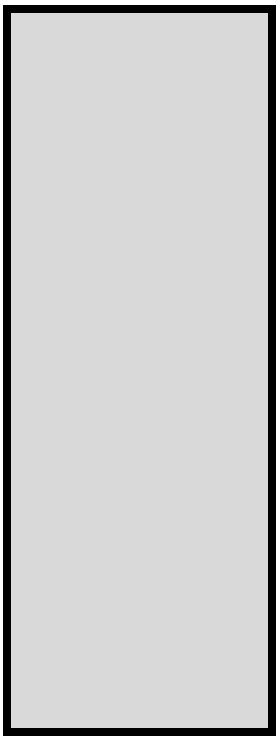
MODEL RESULTS

A. Tables of Nominal CPUE, Standardized CPUE, Observations, Positive Observations, Proportion Positive Observations and Coefficients of Variation (CVs). Other statistics may also be appropriate to report				✔
B. Figure of Nominal and Standardized Indices with measure of variance (i.e. CVs).				✔

IF MULTIPLE MODEL STRUCTURES WERE CONSIDERED:

(***Note: this is always recommended but required when model diagnostics are poor***.)

1. Plot of resulting indices and estimates of variance	✔			
2. Table of model statistics (e.g. AIC criteria)	✔			



	Date Received	*Workshop Recommendation*	*Revision Deadline ****	*Author and Rapporteur Signatures*
First Submission	11/20/14	recommend for use	12/12/14	
Revision	12/12/14	recommend for use		

*The revision deadline is negotiated by the author, the SEDAR coordinator and the CPUE rapporteur. The author **DOES NOT** commit to any **LEGAL OBLIGATION** by agreeing to submit a manuscript before this deadline. The maximum penalty for failure to submit a revised document prior to the submission deadline is rejection of the CPUE series.*

Justification of Working Group Recommendation

The index was properly constructed and was recommended for use. The group also recommended that alternate variance calculation methods, modeling of 'success' rather than 'proportion positive', and use of 'proc glimmix' rather than the 'glimmix macro' be explored. Those tasks/recommendations require more discussion as to the appropriateness of their adoption as standard methods in constructing indices of abundance than could be completed by the data deadline.

Evaluation of Abundance Indices:
Commercial Vertical Line Index (2010-2013)

DESCRIPTION OF THE DATA SOURCE

	Not Applicable	Absent	Incomplete	Complete
1. Fishery Independent Indices				
A. Describe the survey design (e.g. fixed sampling sites, random stratified sampling), location, seasons/months and years of sampling.	✔			
B. Describe sampling methodology (e.g. gear, vessel, soak time etc.)	✔			
C. Describe any changes in sampling methodology (e.g. gear, vessel, sample design etc.)	✔			
D. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).	✔			
E. What species or species assemblages are targeted by this survey (e.g. red snapper, reef fish, pelagic).	✔			
F. Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.	✔			
2. Fishery Dependent Indices				
A. Describe the data source and type of fishery (e.g. commercial handline, commercial longline, recreational hook and line etc.).				✔
B. Describe any changes to reporting requirements, variables reported, etc.				✔
C. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).				✔
D Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.		✔		

METHODS

1. Data Reduction and Exclusions				
A. Describe any data exclusions (e.g. gears, fishing modes, sampling areas etc.). Report the number of records removed and justify removal.				✔
B. Describe data reduction techniques (if any) used to address targeting (e.g. Stephens and MacCall, 2004; gear configuration, species assemblage etc).				✔
C. Discuss procedures used to identify outliers. How many were identified? Were they excluded?				✔

Working Group Comments:

2 D. No size information is directly available in the commercial coastal logbook data set (reports were in pounds landed); however, size comp presumably matches that provided in TIP data for commercial vertical line landings.

2. Management Regulations (for FD Indices)

	Not Applicable	Absent	Incomplete	Complete
A. Provide (or cite) history of management regulations (e.g. bag limits, size limits, trip limits, closures etc.).				✔
B. Describe the effects (if any) of management regulations on CPUE				✔
C. Discuss methods used (if any) to minimize the effects of management measures on the CPUE series.				✔

3. Describe Analysis Dataset (after exclusions and other treatments)

	Not Applicable	Absent	Incomplete	Complete
A. Provide tables and/or figures of number of observations by factors (including year, area, etc.) and interaction terms.		✔		
B. Include tables and/or figures of number of positive observations by factors and interaction terms.		✔		
C. Include tables and/or figures of the proportion positive observations by factors and interaction terms.		✔		
D. Include tables and/or figures of average (unstandardized) CPUE by factors and interaction terms.		✔		
E. Include annual maps of locations of survey sites (or fishing trips) and associated catch rates ***OR*** supply the raw data needed to construct these maps (Observation, Year, Latitude, Longitude (or statistical grid, area), Catch, Effort).		✔		
F. Describe the effort variable and the units. If more than one effort variable is present in the dataset, justify selection.				✔
G. What are the units of catch (e.g. numbers or biomass, whole weight, gutted weight, kilograms, pounds).				✔

4. Model Standardization

	Not Applicable	Absent	Incomplete	Complete
A. Describe model structure (e.g. delta-lognormal)				✔
B. Describe construction of GLM components (e.g. forward selection from null etc.)				✔
C. Describe inclusion criteria for factors and interactions terms.				✔
D. Were YEAR*FACTOR interactions included in the model? If so, how (e.g. fixed effect, random effect)? Were random effects tested for significance using a likelihood ratio test?				✔
E. Provide a table summarizing the construction of the GLM components.				✔
F. Summarize model statistics of the mixed model formulation(s) (e.g. log likelihood, AIC, BIC etc.)				✔
G. Report convergence statistics.				✔

Working Group Comments:

3 A-E. Available if needed, confidentiality limitations must be checked.

MODEL DIAGNOSTICS

Comment: Other model structures are possible and acceptable. Please provide appropriate diagnostics to the CPUE indices working group.

	Not Applicable	Absent	Incomplete	Complete
1. Binomial Component				
A. Include plots of the chi-square residuals by factor.				✔
B. Include plots of predicted and observed proportion of positive trips by year and factor (e.g. year*area)				✔
C. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).				✔
2. Lognormal/Gamma Component				
A. Include histogram of log(CPUE) or a histogram of the residuals of the model on CPUE. Overlay the expected distribution.				✔
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.		✔		
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.				✔
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.		✔		
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.		✔		
F. Include plots of the residuals by factor				✔
3. Poisson Component				
A. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.	✔			
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.	✔			
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			
4. Zero-inflated model				
A. Include ROC curve to quantify goodness of fit.	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor).	✔			
C. Include QQ-plot (e.g. Student dev. residuals vs. theoretical quantiles), Overlay expected distribution.	✔			

Working Group Comments:

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete

Working Group Comments:

D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			

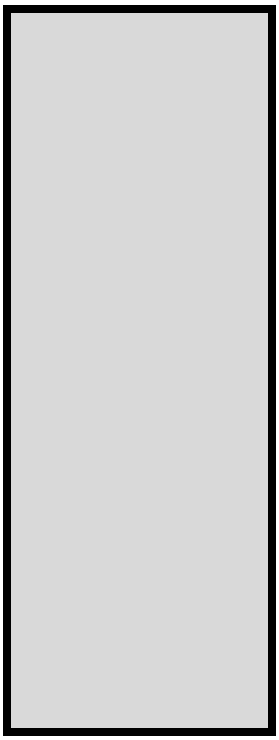
MODEL RESULTS

A. Tables of Nominal CPUE, Standardized CPUE, Observations, Positive Observations, Proportion Positive Observations and Coefficients of Variation (CVs). Other statistics may also be appropriate to report				✔
B. Figure of Nominal and Standardized Indices with measure of variance (i.e. CVs).				✔

IF MULTIPLE MODEL STRUCTURES WERE CONSIDERED:

(***Note: this is always recommended but required when model diagnostics are poor***.)

1. Plot of resulting indices and estimates of variance	✔			
2. Table of model statistics (e.g. AIC criteria)	✔			



	Date Received	*Workshop Recommendation*	*Revision Deadline ****	*Author and Rapporteur Signatures*
First Submission	11/20/14	not recommended	none	
Revision				

*The revision deadline is negotiated by the author, the SEDAR coordinator and the CPUE rapporteur. The author **DOES NOT** commit to any **LEGAL OBLIGATION** by agreeing to submit a manuscript before this deadline. The maximum penalty for failure to submit a revised document prior to the submission deadline is rejection of the CPUE series.*

Justification of Working Group Recommendation

The index was properly constructed; however, log CPUE was not normally distributed and, therefore, violates an assumption of the analysis. Further, distribution of log CPUE varied by the amount of allocation available to vessels, suggesting changes in fishing behavior on trips with higher or lower amounts of allocation. The working group did not recommend use of this index in the assessment model(s).

Evaluation of Abundance Indices:

Red Grouper Size Distribution and Standardized CPUE Observed in For-Hire Recreational Fisheries in the Gulf of Mexico (SEDAR42-DW-14)

	Not Applicable	Absent	Incomplete	Complete
DESCRIPTION OF THE DATA SOURCE				
1. Fishery Independent Indices				
A. Describe the survey design (e.g. fixed sampling sites, random stratified sampling), location, seasons/months and years of sampling.	✔			
B. Describe sampling methodology (e.g. gear, vessel, soak time etc.)	✔			
C. Describe any changes in sampling methodology (e.g. gear, vessel, sample design etc.)	✔			
D. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).	✔			
E. What species or species assemblages are targeted by this survey (e.g. red snapper, reef fish, pelagic).	✔			
F. Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.	✔			
2. Fishery Dependent Indices				
A. Describe the data source and type of fishery (e.g. commercial handline, commercial longline, recreational hook and line etc.).				✔
B. Describe any changes to reporting requirements, variables reported, etc.				✔
C. Describe the variables reported in the data set (e.g. location, time, temperature, catch, effort etc.).				✔
D Describe the size/age range that the index applies to. Include supporting figures (e.g. size comp) if available.				✔
METHODS				
1. Data Reduction and Exclusions				
A. Describe any data exclusions (e.g. gears, fishing modes, sampling areas etc.). Report the number of records removed and justify removal.				✔
B. Describe data reduction techniques (if any) used to address targeting (e.g. Stephens and MacCall, 2004; gear configuration, species assemblage etc).				✔
C. Discuss procedures used to identify outliers. How many were identified? Were they excluded?	✔			

Working Group Comments:

	Not Applicable	Absent	Incomplete	Complete
2. Management Regulations (for FD Indices)				
A. Provide (or cite) history of management regulations (e.g. bag limits, size limits, trip limits, closures etc.).	✔			
B. Describe the effects (if any) of management regulations on CPUE	✔			
C. Discuss methods used (if any) to minimize the effects of management measures on the CPUE series.	✔			
3. Describe Analysis Dataset (after exclusions and other treatments)				
A. Provide tables and/or figures of number of observations by factors (including year, area, etc.) and interaction terms.				✔
B. Include tables and/or figures of number of positive observations by factors and interaction terms.				✔
C. Include tables and/or figures of the proportion positive observations by factors and interaction terms.				✔
D. Include tables and/or figures of average (unstandardized) CPUE by factors and interaction terms.				✔
E. Include annual maps of locations of survey sites (or fishing trips) and associated catch rates ***OR*** supply the raw data needed to construct these maps (Observation, Year, Latitude, Longitude (or statistical grid, area), Catch, Effort).				✔
F. Describe the effort variable and the units. If more than one effort variable is present in the dataset, justify selection.				✔
G. What are the units of catch (e.g. numbers or biomass, whole weight, gutted weight, kilograms, pounds).				✔
4. Model Standardization				
A. Describe model structure (e.g. delta-lognormal)				✔
B. Describe construction of GLM components (e.g. forward selection from null etc.)				✔
C. Describe inclusion criteria for factors and interactions terms.				✔
D. Were YEAR*FACTOR interactions included in the model? If so, how (e.g. fixed effect, random effect)? Were random effects tested for significance using a likelihood ratio test?		✔		
E. Provide a table summarizing the construction of the GLM components.				✔
F. Summarize model statistics of the mixed model formulation(s) (e.g. log likelihood, AIC, BIC etc.)				✔
G. Report convergence statistics.				✔

Working Group Comments:

MODEL DIAGNOSTICS

Comment: Other model structures are possible and acceptable. Please provide appropriate diagnostics to the CPUE indices working group.

	Not Applicable	Absent	Incomplete	Complete
1. Binomial Component				
A. Include plots of the chi-square residuals by factor.				✔
B. Include plots of predicted and observed proportion of positive trips by year and factor (e.g. year*area)				✔
C. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).				✔
2. Lognormal/Gamma Component				
A. Include histogram of log(CPUE) or a histogram of the residuals of the model on CPUE. Overlay the expected distribution.				✔
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.				✔
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.				✔
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.				✔
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.				✔
F. Include plots of the residuals by factor				✔
3. Poisson Component				
A. Report overdispersion parameter and other fit statistics (e.g. chi-square / degrees of freedom).	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor.	✔			
C. Include QQ-plot – (e.g. Student deviance residuals vs. theoretical quantiles), Overlay expected distribution.	✔			
D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			
4. Zero-inflated model				
A. Include ROC curve to quantify goodness of fit.	✔			
B. Include plots describing error distribution (e.g. Studentized residuals vs. linear predictor).	✔			
C. Include QQ-plot (e.g. Student dev. residuals vs. theoretical quantiles), Overlay expected distribution.	✔			

Working Group Comments:

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete

Working Group Comments:

D. Include diagnostic plot for variance function (e.g. square root of std residuals vs. fitted values). Overlay expected distribution.	✔			
E. Include diagnostic plot for link function (e.g. linear response variable vs. linear predictor). Overlay expected distribution.	✔			

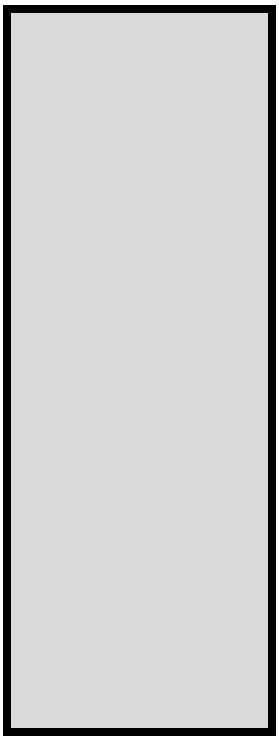
MODEL RESULTS

A. Tables of Nominal CPUE, Standardized CPUE, Observations, Positive Observations, Proportion Positive Observations and Coefficients of Variation (CVs). Other statistics may also be appropriate to report				✔
B. Figure of Nominal and Standardized Indices with measure of variance (i.e. CVs).				✔

IF MULTIPLE MODEL STRUCTURES WERE CONSIDERED:

(***Note: this is always recommended but required when model diagnostics are poor***.)

1. Plot of resulting indices and estimates of variance	✔			
2. Table of model statistics (e.g. AIC criteria)	✔			



	Date Received	*Workshop Recommendation*	*Revision Deadline ****	*Author and Rapporteur Signatures*
First Submission	11/20/2014	Not recommended.		
Revision				

*The revision deadline is negotiated by the author, the SEDAR coordinator and the CPUE rapporteur. The author **DOES NOT** commit to any **LEGAL OBLIGATION** by agreeing to submit a manuscript before this deadline. The maximum penalty for failure to submit a revised document prior to the submission deadline is rejection of the CPUE series.*

Justification of Working Group Recommendation

The workgroup felt this was a viable index for pre-harvest recruits but did not recommend for use in the assessment. The size ranges of fish observed in this survey overlap with the combined NMFS and FWC video index, and the geographic range and length of the time series is smaller for this index. If only one fishery-dependent index may be used in the assessment model to represent the headboat fleet, the workgroup favored use of the headboat logbook index (Southeast Headboat Survey) over this index. It should be noted that this index only measures CPUE for sub-legal sized fish and does not overlap with the headboat logbook index, which only measures CPUE for harvested red grouper.