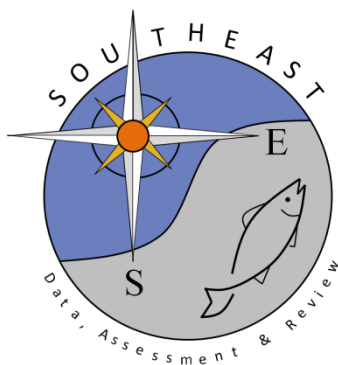


A Summary of Evaluation Worksheets of Abundance Indices for Atlantic Sharpnose Shark and Bonnethead Shark

SEDAR 34 Panel

SEDAR34-WP-39

9 September 2013



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A Summary of Evaluation Worksheets of Abundance Indices for Atlantic Sharpnose Shark and Bonnethead Shark

Summary

In accordance of the SEDAR Abundance Indices Workshop held in 2008, all new abundance indices are initially reviewed based upon the criteria established at the workshop. The data source, index construction methodology, adherence to statistical assumptions, and model diagnostics are examined for each index and scored. Attached are the worksheets from SEDAR34 for all new data series.

SEDAR34-WP-39

Evaluation of Abundance Indices Atlantic Sharpnose & Bonnethead Sharks: (SEDAR34-WP-11)

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.

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓
			✓
			✓
			✓

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. 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.

Not Applicable	Absent	Incomplete	Complete
✓			
✓			
✓			

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.

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).

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓

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
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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).

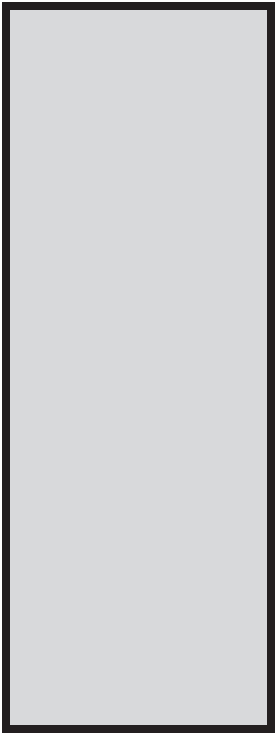
			✓
			✓

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)

✓			
✓			



	<i>Date Received</i>	<i>Workshop Recommendation</i>	<i>Revision Deadline ***</i>	<i>Author and Rapporteur Signatures</i>
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

It was suggested by the panel to remove the Texas data from the index due the short time series and large geographical distance from the three other data sets. It was also suggested to rerun the index with and without the environmental variables (e.g. temperature, salinity, dissolved oxygen) to see how they would influence the trend. Since the trends were very similar, the decision was made to use the entire dataset without the environmental variables and without the Texas data set.

Evaluation of Abundance Indices Atlantic Sharpnose & Bonnethead Sharks: Title (SEDAR34-WP-28)

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.

Not Applicable	Absent	Incomplete	Complete

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. 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.

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓

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.

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).

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓

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.

			✓
			✓

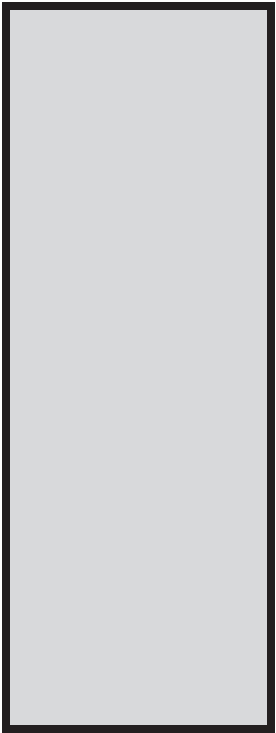
MODEL RESULTS

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)



	<i>Date Received</i>	<i>Workshop Recommendation</i>	<i>Revision Deadline ***</i>	<i>Author and Rapporteur Signatures</i>
First Submission		Sensitivity		
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

Due to limited observations and short time series, work group recommended this data be used for sensitivity.

Evaluation of Abundance Indices Atlantic Sharpnose & Bonnethead Sharks: Title (SEDAR34-WP-29)

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.

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓
			✓
			✓
			✓

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. 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.

Not Applicable	Absent	Incomplete	Complete

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.

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).

Not Applicable	Absent	Incomplete	Complete
			✓
			✓

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
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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

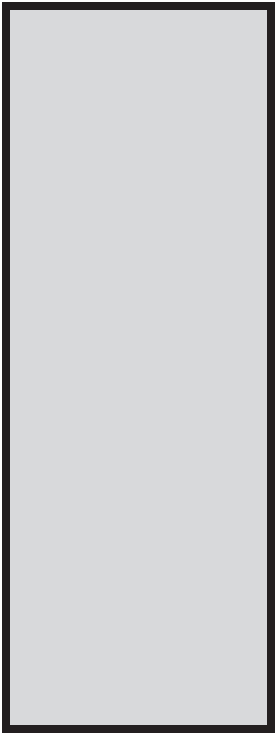
A. Tables of Nominal CPUE, Standardized CPUE, Observations, Positive Observations, Proportion Positive Observations and Coefficients of Variation (CVs). Other statistics may also be appropriate to report

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)



	<i>Date Received</i>	<i>Workshop Recommendation</i>	<i>Revision Deadline ***</i>	<i>Author and Rapporteur Signatures</i>
First Submission		Base		
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

Provides overall analysis of multiple fishery independent gillnet data sources.

Evaluation of Abundance Indices Atlantic Sharpnose & Bonnethead Sharks: Standardized catch rates of bonnethead (*Sphyrna tiburo*) from the SCDNR trammel net survey (SEDAR34-WP-32)

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.

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓
			✓
			✓
			✓

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. 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.

Not Applicable	Absent	Incomplete	Complete
✓			
✓			
✓			

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:

3D. AOD

MODEL DIAGNOSTICS

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

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).

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓

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:

2B,D. AOD

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete
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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).

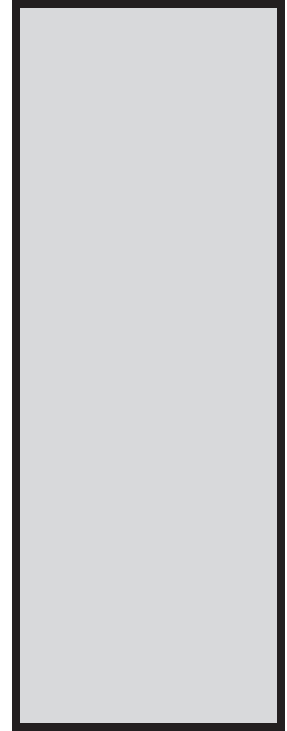
			✓
			✓

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)

✓			
✓			



	<i>Date Received</i>	<i>Workshop Recommendation</i>	<i>Revision Deadline</i> ***	<i>Author and Rapporteur Signatures</i>
First Submission	6/26/2013	base		
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

WP-32 -SCDNR trammel - bonnethead age 1+ sharks - base

The SCDNR trammel net survey is conducted in South Carolina's estuarine waters, including seven different estuarine systems. This is a year round multi-species survey and small coastal shark species are present in the catch from April to November; therefore, the data were subset to this time frame. The indices from this survey for both species were recommended as base due to the time span and seasonal coverage as well as the sampling in areas not covered by other South Carolina surveys that catch bonnetheads.

Year range = 1994-2011

Month range = April-November

Evaluation of Abundance Indices Atlantic Sharpnose & Bonnethead Sharks:

Standardized indices of abundance for Atlantic sharpnose sharks from the GADNR red drum longline survey (SEDAR34-WP-34)

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.

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓
			✓
			✓
			✓

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. 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.

Not Applicable	Absent	Incomplete	Complete
✓			
✓			
✓			

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:

3D. AOD

MODEL DIAGNOSTICS

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

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).

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓

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:

2B,D. AOD

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete
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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).

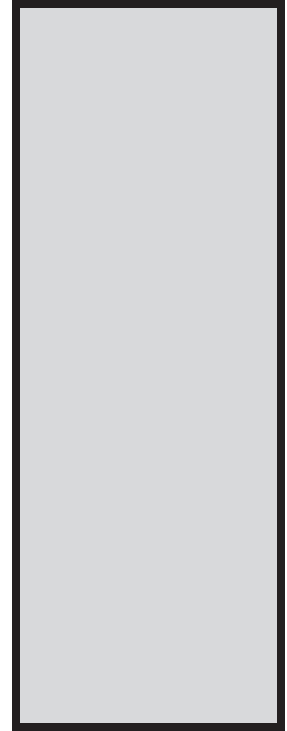
			✓
			✓

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)

✓			
✓			



	<i>Date Received</i>	<i>Workshop Recommendation</i>	<i>Revision Deadline</i> ***	<i>Author and Rapporteur Signatures</i>
First Submission	6/26/2013	combine with SC	6/27/2013	
Revision	6/27/2014	use combined base		

*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

WP-34 -GADNR red drum LL - Atlantic sharpnose shark age 1+ sharks - not recommended

This survey covers waters in the southern half Georgia to northern Florida and is a random stratified survey. Even though this survey was primarily developed to monitor red drum, coastal shark species are well represented in the catch. SCDNR conducts a similar survey. It was recommended to combine the GADNR and SCDNR (WP-36) data and run the same analyses (Addendum to WPs 34 and 36). There was concern about some differences in methodology between states. After comparison of the separate and combined indices, it was decided to not recommend the separate red drum indices and use the combined index for base. The area factor is expected to account for any difference in survey methodology between states and the spatial coverage is an appealing attribute.

Year range = 2007-2011

Month range = April-December

Evaluation of Abundance Indices Atlantic Sharpnose & Bonnethead Sharks: Standardized catch rates for bonnetheads and Atlantic sharpnose sharks from the GADNR Ecological Monitoring Trawl Survey (SEDAR34-WP-35)

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.

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓
			✓
			✓
			✓

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. 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.

Not Applicable	Absent	Incomplete	Complete
✓			
✓			
✓			

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:

3D. AOD

MODEL DIAGNOSTICS

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

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).

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓

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:

2B,D. AOD

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete
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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).

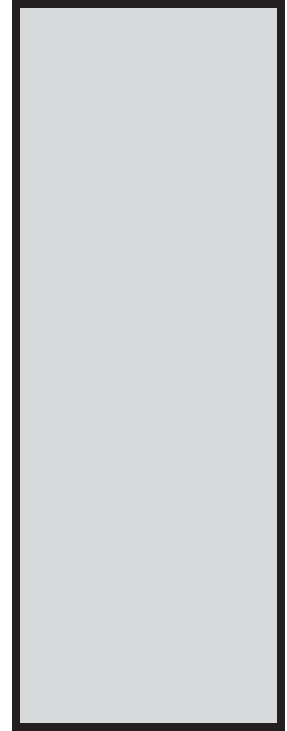
			✓
			✓

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)

✓			
✓			



	<i>Date Received</i>	<i>Workshop Recommendation</i>	<i>Revision Deadline ***</i>	<i>Author and Rapporteur Signatures</i>
First Submission	6/27/2013	base		
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

WP-35 -GADNR trawl - Atlantic sharpnose shark age 1+ sharks - base
 WP-35 -GADNR trawl - bonnethead age 1+ sharks - base

The GADNR trawl survey is conducted in Georgia's estuarine waters, including six of the nine sound systems along Georgia's coast. This is a year round multi-species survey and small coastal shark species are present in the catch from April to November; therefore, the data were subset to this time frame. The indices from this survey for both species were recommended as base due to the time span and seasonal coverage as well as the sampling in areas of Georgia not covered by other surveys.

Year range = 2003-2011
 Month range = April-November

Evaluation of Abundance Indices Atlantic Sharpnose & Bonnethead Sharks:

Standardized indices of abundance for bonnethead and Atlantic sharpnose sharks caught during the SCDNR red drum longline and COASTSPAN gillnet surveys (SEDAR34-WP-36)

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.

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓
			✓
			✓
			✓

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. 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.

Not Applicable	Absent	Incomplete	Complete
✓			
✓			
✓			

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:

3D. AOD

MODEL DIAGNOSTICS

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

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).

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓

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:

2B,D. AOD

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete
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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).

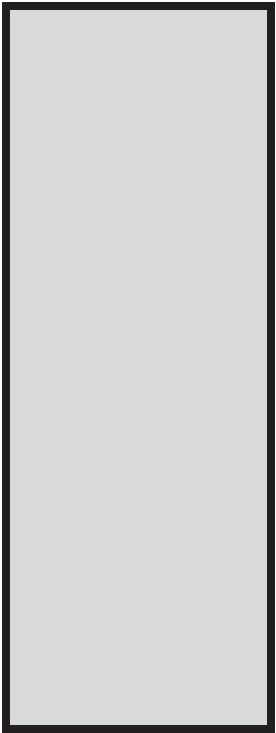
			✓
			✓

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)

✓			
✓			



	<i>Date Received</i>	<i>Workshop Recommendation</i>	<i>Revision Deadline</i> ***	<i>Author and Rapporteur Signatures</i>
First Submission	6/26/2013	run red drum w/GA	6/27/2013	
Revision	6/27/2014	GA not rec alone		

*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

WP-36-SCDNR red drum LL 1998-2006 (Apr-Dec) - total A. sharpnose shark- cont only
 WP-36-SCDNR red drum LL 1998-2006 (Apr-Dec) - age 1+ A. sharpnose shark - base
 WP-36-SCDNR red drum LL 2007-2011 (Apr-Dec) - total A. sharpnose shark- cont only
 WP-36-SCDNR red drum LL 2007-2011 (Apr-Dec) - age 1+ A. sharpnose shark - base
 WP-36-SC COASTSPAN GN 1998-2011 (Apr-Oct) - total A. sharpnose shark - cont
 WP-36-SC COASTSPAN GN 1998-2011 (Apr-Oct) - age 1+ A. sharpnose shark - base
 WP-36-SC COASTSPAN GN 1998-2011 (Apr-Oct) - total bonnethead - continuity only
 WP-36-SC COASTSPAN GN 1998-2011 (Apr-Oct) - age 1+ bonnethead - base

This SCDNR red drum survey 1998-2006 and the COASTSPAN GN survey indices above were used in the 2007 stock assessment for small coastal sharks and are being used for continuity and as base indices during this assessment. The SCDNR red drum survey (2007-2011) is similar to the GADNR red drum survey (WP-34) and it was recommended to combine these two red drum surveys (Addendum to WPs 34 and 36). Even though these surveys were primarily developed to monitor red drum, coastal shark species are well represented in the catch. There was concern about some differences in methodology between states. After comparison of the separate and combined indices, it was decided to not recommend the separate red drum indices and use the combined index for base. The area factor is expected to account for any difference in survey methodology between states and the spatial coverage is an appealing attribute.

Evaluation of Abundance Indices Atlantic Sharpnose & Bonnethead Sharks:

Standardized indices of abundance for bonnethead and Atlantic sharpnose sharks caught during the COASTSPAN longline surveys from South Carolina to northern Florida (SEDAR34-WP-37)

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.

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓
			✓
			✓
			✓

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. 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.

	Not Applicable	Absent	Incomplete	Complete
A.	✓			
B.	✓			
C.	✓			

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:

3D. AOD

MODEL DIAGNOSTICS

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

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).

Not Applicable	Absent	Incomplete	Complete
			✓
			✓
			✓

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:

2B,D. AOD

The feasibility of this diagnostic is still under review.

MODEL DIAGNOSTICS (CONT.)

Not Applicable	Absent	Incomplete	Complete
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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).

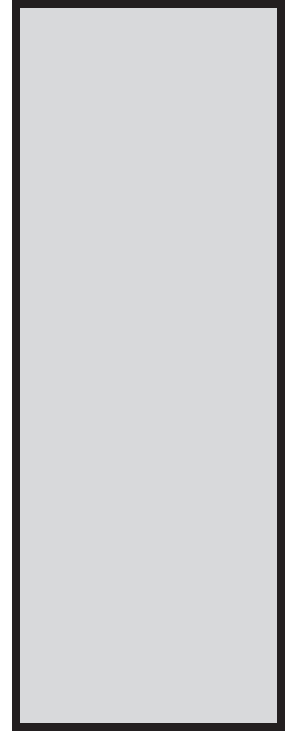
			✓
			✓

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)

✓			
✓			



	<i>Date Received</i>	<i>Workshop Recommendation</i>	<i>Revision Deadline</i> ***	<i>Author and Rapporteur Signatures</i>
First Submission	6/26/2013	look at separately	6/27/2013	
Revision	6/27/2014	combined base		

*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

WP-37 - COASTSPAN LL South Atlantic - age 1+ Atlantic sharpnose sharks - base

WP-37 - COASTSPAN LL South Atlantic - age 1+ bonnetheads - base

This survey covers estuarine and nearshore waters from South Carolina to northern Florida. The survey conducted in each state uses the same gear and methods except that the GA portion of the survey uses squid for bait and in SC and FL, Atlantic mackerel is used. There was concern about the differences in bait between states, especially pertaining to bonnetheads. It was recommended to pull out the SC and GA bonnethead indices and run them separately for comparison. After comparison of the separate and combined indices, it was decided to recommend the combined index for base. The area factor is expected to account for any difference in survey methodology between states and the long time series and spatial coverage are appealing attributes.

Year range = 2000-2011

Month range = April-November