UM Independent System for Peer Reviews
Consultant Report on:

8th South East Data, Assessment, and Review (SEDAR) for Caribbean Yellowtail, Caribbean Spiny Lobster, and SE US Spiny Lobster Stock Assessments

16-20th May 2005, San Juan, PR

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Executive Summary

Generally, the standardisation procedure for the Caribbean yellowtail and spiny lobster abundance indices was well conducted and, based upon what was presented, the analyses appear to be sound. However, some improvements in the approach were recommended.

- Statistical criteria should not be the sole basis for determining terms in the GLM, but terms need to refer to some theoretical justification.
- Year interaction terms to remove random effects should be avoided if possible, as they could make the standardised index worse.
- Some factors would be better treated as covariates rather than factors, thereby reducing the number of parameters.
- The analysis needs to explore alternative treatments for missing data, rather than having a missing data category.

There were inadequate data to carry out a stock assessment for yellowtail snapper. As a result, the required reference points and population projections could not be generated. However, the available data were treated appropriately and the general modelling approach appeared to be reasonable.

The fishery independent survey was not useful for yellowtail as too few are caught. The main fishery dependent index was based on the trip interview program (TIP) data, which unfortunately misses most yellowtail targeted trips as landings occur outside normal interview times, which indicating adjustments were necessary. It would also be desirable to estimate total catches, which could be done through a sample-based approach. Other suggestions for data collection were a CPUE abundance index based on logbooks, visual survey data based on habitat strata, mark-recapture experiments and samples to obtain age composition from hard parts.

The Caribbean spiny lobster assessment was closer to completion than the yellowtail snapper, mainly as it had more and better data available for the assessment, but was still inadequate for stock assessment. There was little evidence of abundance change in the CPUE data available from commercial landings and the trip interview program. As a result, required reference points and population projections could not be generated.

Future modelling approaches should move away from the surplus production and age structure production models presented as the population is very unlikely to be predominantly self-recruiting. Instead recruitment indices need to be developed for the adult populations, which could be subsequently linked to parent spawning stocks in future.

The south-east US spiny lobster assessment made good use of extensive data available and produced a reliable assessment. The data and analyses were scientifically sound. However, the assessment results critically depend upon the selectivity curve which would benefit from some independent verification.

Spiny lobster is widely considered to be a stock shared among countries in the Caribbean region, making relevant SSB estimates unavailable. As a result, the lack of a stock-recruitment relationship limits the ability to define suitable spawning stock reference points and carry out the stock projections requested. While supporting the

development of a regional capability to assess this species, this assessment could be used to develop interim SSB_{MSY} reference points based on a quantitative risk assessment.

Background

South East Data, Assessment, and Review (SEDAR) is a joint process for stock assessment and review of the South Atlantic, Gulf of Mexico, and Caribbean Fishery Management Councils; NOAA Fisheries, SEFSC and SERO; and the Atlantic and Gulf States Marine Fisheries Commissions. SEDAR is organized around separate data, assessment, and review workshops. Input data are compiled during the data workshop, population models are developed during the assessment workshop, and an independent peer review of the data and assessment models is provided by the review workshop. SEDAR documents include a data report produced by the data workshop, a stock assessment report and summary produced by the assessment workshop, a review panel report evaluating the assessment (drafted during the review panel workshop), and collected stock assessment documents considered in the SEDAR process.

The peer review panel was composed of stock assessment experts, other scientists, and representatives of councils, fishing industries, and non-governmental conservation organizations. Two assessment scientists were provided from the CIE: one to serve as Chair and myself to serve as a technical reviewer for the SEDAR 8 Review Panel. No consensus opinion between the CIE panelists was required.

The SEDAR 8 Review considered assessments for Caribbean yellowtail snapper, Caribbean spiny lobster, and South Atlantic and Gulf of Mexico spiny lobster. These species fall within the jurisdictions of the Caribbean, South Atlantic, and Gulf of Mexico Fishery Management Councils and respective southeastern states and Caribbean territories.

The Review Panel produced a consensus report. The following are personal observations on future improvements in the assessments and are not necessarily shared by the other panel members. This report does not repeat issues that were raised in the SEDAR 8 Panel report, but does add some detail to recommendations.

Description of Review Activities

Documents were supplied by email and two compact disks received at least one week before the start of the workshop. I read these documents to familiarise myself with the data and assessments before the workshop began.

The review workshop for SEDAR 8 took place at the Hilton Caribe, San Juan, Puerto Rico, from 1:00 p.m. Monday 16 May 2005 to 12:00 p.m. Friday 20 May 2005. Presentations were made summarising the data and assessments for each species and identifying important areas of concern. The Panel discussed each assessment in detail with the scientists concerned and among themselves, and a consensus report was produced during the meeting. This report was produced after the meeting and covers a smaller set of issues but in more detail (see Annex II Statement of Work).

Caribbean Standardisation of Abundance Indices

Summary of Findings

The following consist of comments on the CPUE standardisation procedure using generalized linear models, and applies to yellowtail and Caribbean spiny lobster only.

Generally, the standardisation procedure was well conducted and, based upon what was presented, the analyses appear to be sound. The following are recommendations to improve the analysis and presentation. The indices of abundance will be important to any future stock assessment analyses, and therefore it is worth the investment in time to try to improve them.

Standardisation is a useful technique to correct for sampling bias, particularly in fishery-dependent indices where there is a tendency for CPUE to increase over time as fishing becomes more proficient. However, there is also a danger, particularly with small scale fisheries where investment and innovation may be slow, to remove signals in data which actually represent changes in abundance.

Full information on exactly how indices were corrected was not provided. It appears that the corrections were applied through adjusting the original data rather than using parameter estimates. This would provide maximum protection against poor parameter estimates and is probably the most robust way to generate an index as it uses the fewest parameters possible. However, the assessment report needed to present more detailed evidence on the procedure to ensure the standardisation can be reviewed fully. In particular, more details on how the abundance indices are calculated from the model and some additional diagnostics such as residual vs. expected plots where appropriate should be provided.

Determining terms in the model based purely on statistical criteria, as was done, can lead to bias in the index. The assessment workshop needs to reconsider how the various factors might affect an abundance index, and choose to test GLM terms accordingly. In practice, the application of the statistical criteria seems to have led to reasonable models and the resulting adjusted CPUE index appears to be reasonable.

Factors and covariates should be justified on how they might affect catchability. Appropriate factors affecting catchability would be those used, namely gear type, month or season (representing seasonality) and effort within a trip (as hours fishing or traps pulled). Other terms which were tested were less clear on how they affect catchability, notably district of landing or area fished. District may represent separate populations rather than changes in catchability. Automatic correction for spatial changes in catch rates could introduce hyper-stability into the index.

Changes in fishing activities should generally increase catchability, and this can be checked through the diagnostic procedures. For example, a new gear adopted by fishermen should either increase catch rates relative to population size or be justified through some other means as fishermen will not generally choose which their income. Similarly, seasonality in catch rates should generally agree with what fishermen report. In general, standardisation should tend to increase the negative slope in abundance indices.

It is always useful to check and present the parameter correlation matrix. The parameter correlation matrix can be very useful for diagnostics. For unbalanced

designs and random effects, aliasing can be a significant problem producing very poor parameter estimates even where the expected y-variable is accurate.

Some models contained year interaction terms to remove random effects. Generally it is best to avoid time interaction terms in these sorts of models. If significant, they could indicate conflicting changes in abundance. If they are included, they need justification and it must be ensured they are not affecting time series trends which the analysis is supposed to draw out rather than suppress.

Targeting should have a considerable effect on catchability, and therefore any reliable abundance index is likely to need to account for this in a multispecies fishery. Considerable work has clearly gone into identifying trip target species based on species composition. Identifying target species could be better solved at the data collection level during trip interviews, although new data on targeting could make an inconsistent time series unless the old and new series could be run concurrently for a number of years.

Conclusions and Recommendations

The indices appear to have been soundly treated given the limitations of the data. In some cases, it is not clear that the resulting indices are related to abundance, and some thought needs to be given to improving data collection to try to address this.

Some factors could be treated as covariates reducing the number of parameters. Within-trips log(effort) and log(Depth) could both be appropriate covariates. The parameter estimates for the discrete factors may indicate whether log or other functional form is appropriate. Use of covariates may reduce problems with aliasing and produce more reliable results.

The analysis should explore alternative treatments for missing data. The analysis presented specified categorical data missing for a trip as a separate factor. This can create statistical problems. In these cases, the dispersion within the missing data category is likely to be higher than for other categories. There are a few alternative, but usually more complex ways, of dealing with the missing data.

- Weights could be used to adjust the fit to account for over-dispersion for missing data categories.
- Trips with missing categories could be excluded. This may produce only a small data set and would discard considerable amounts of information, which may be considered unacceptable. However, the resulting models could be used to compare with the treatment of missing data and ensure such treatment is improving the indices.
- Replace each missing category variable by its mean or similar approach. This might be most reliably done by adjusting the Hessian (X^2 or information matrix) based on observed data raising terms to account for missing X variables while keeping a constant variance/covariance.
- Impute each category variable using the EM-algorithm, or similar approach. The most sophisticated method would probably make the best use of the data and give the most accurate parameter estimates and hence results.

In the treatment of zero catch trip observations, single likelihoods incorporating zeros such as the Poisson or negative binomial, rather than binomial - log-normal would be more parsimonious. The data need to be over-dispersed and ideally bimodal for the

binomial log-normal approach to be appropriate. In this case, diagnostics suggested that the use of the log-normal was not unreasonable, but simpler alternative models do not appear to have been tested for comparison.

Caribbean Yellowtail Snapper

Summary of Findings

The assessment of yellowtail snapper was clearly incomplete. Although the data were treated appropriately, there were inadequate data to carry out a stock assessment. As a result, the required reference points and population projections could not be generated.

Given the limitations of the data, the presented assessment was exploratory only. The modelling approach seems reasonable, and adequate data could produce the necessary results in future.

Data

The fishery independent survey was not useful for yellowtail as too few are caught. Clearly, the catchability of yellowtail for the survey was too low and a yellowtail specific survey may be required to produce a fishery independent index. The fishing index was not well spatially distributed, being limited to the south western side of Puerto Rico. It is also possible that a GLM standardisation approach for fishery independent surveys could allow better use of all data, avoiding sparse series being discarded. However, given the cost of such a fishery independent index, it would probably be more worthwhile using the resources to improve the fishery dependent data collection rather trying to develop a new independent index.

The main fishery dependent index was based on the trip interview program (TIP) data. These were standardised to remove unwanted effects from the indices that would not be related to abundance. It does not appear that the final standardisation models introduced significantly indices to the nominal CPUE. While this suggests the standardisation procedure was not causing any problems, it was probably not improving the assessment much either.

The trip interview program probably misses most yellowtail targeting trips as landings occur outside normal interview times. Development of a reliable abundance index from CPUE data would require changes to the trip interview sampling.

The “St. Thomas Fishermen’s Association index” is based upon historical effort reconstructed from discussions with fishermen. It is based on who was actively fishing in each year and adjusted for major events, such as hurricanes. The index was matched with catch over same period to get a CPUE index. Pre-1989 effort was assumed to be constant, although the index adjusted for hurricanes. The index does not appear to be is informative as it does not appear to capture variations in effort between years and therefore just follows fluctuations in catch. So, while the exercise was useful to encourage involvement of fishers in the stock assessment, the index in this case is probably not useful for the assessment.

Fishery dependent data maybe affected by catch mis-reporting due to changes in legislation and enforcement. It was suggested by some panel members that reported could have been affected by drug interdiction activities and changes in taxation. There was no obvious discrete change in the indices, but this could be checked statistically.

Catch Free Model

The "catch free" model was used on the basis that total catches were unavailable. It was presented as an exploratory analysis, and there were clearly some problems with the model. Most notably, the results were sensitive to how historical effort was measured and there was an inconsistency between the historical effort time series and the recent abundance indices which would need to be resolved.

The model residuals did not have mean of zero, which, in general, indicates a bias and a poor fit. It was not clear whether this was a result of problems with the model or problems with the way the residuals were calculated. In some cases, residuals may need to be rescaled or adjusted for proper use as a diagnostic tool, and it may be that this adjustment would be required in this case.

The model was able to generate plausible scenarios which explained the available data, but it was not possible to choose between scenarios based on the data alone. This was demonstrated by the sensitivity to the choice of effort measure used. The model needs new information to discriminate between scenarios and choose between them.

The "catch free" model could be a useful approach if total catches cannot be obtained. Although the model does not require total catch, it still depends upon a complete time series of effort and good abundance indices. The primary reason for using this model is to allow estimation of unexploited resource state, required to calculate MSY as a reference point. It cannot be used to calculate absolute biomass.

It was not clear from the presentations what the costs are from using a "catch free" model approach as oppose to trying to estimate catches. If further use of this model is proposed, it would be useful to conduct studies demonstrating the strengths and weaknesses of the model.

Conclusions and Recommendations

It was concluded that the data were inadequate for the required standard of assessment of yellowtail snapper. Given this, none of the issues raised on the stock assessment modelling were critical, but can be addressed as the assessment develops.

The trip interview program data presented were inadequate for stock assessment of this species. It is likely that the time of sampling of landings interviews will have adjusted to capture trips targeting yellowtail. Sampling could also improve through better co-operation with fishers.

It would be desirable to estimate total catches. Catches could be estimated through a sample-based approach[1] and verified, if necessary, with a consumption survey. Average CPUE can be estimated using trip interview data and raised to total catch using total fishing effort. With an up-to-date vessel register and licensing system, it should be possible to provide a good sample frame on which to base trip interviews, although additional information on vessel activity would have to be collected to obtain total fishing effort. Estimates of total catch would allow a greater range of stock assessment models to be applied.

If estimates of catches cannot be obtained, the "catch free" model could continue to be used, but would require further testing. Testing of the model should be conducted

[1] An approach to estimating total catches through sample-based fishery surveys is outlined in Stamatopoulos, C. (2002) Sample-based fishery surveys. FAO Fisheries Technical Paper 425.

on a fishery where both total catch and effort are available, to see how well it performs relative a stock assessment making use of total catch information.

There was some evidence that indices based on earlier years might be less reliable, notably the outlying 1984 Puerto Rico trap CPUE data point could not represent any underlying biomass change. In this case, it would make sense to start the CPUE series in 1985. It is quite common for sampling to need a “burning in” period before they become reliable, and the early series may need to be down-weighted. Weights might be set through interviews with the original data collectors. The TIP indices will also improve with planned data addition and correction.

Fishermen should be approached to obtain information from their logbooks to generate an index. This would provide a more reliable information source than the St. Thomas Fishermen’s Association index, and still involve fishermen in the assessment. Logbooks may prove to be the most useful source of historical data.

Visual survey data based on habitat strata would provide a useful abundance index. Some data may already be available from various research activities and should be identified, although often these data turn out to be inappropriate for stock assessment. A limitation on visual census would be its inability to cover deeper water, and therefore the feasibility of visual surveys to cover the most significant proportion of the stock needs to be assessed. Habitat models could also be used to get the expected unexploited state of the stock from density in lightly fished areas and extrapolate to areas that are heavily fished, providing a fishery independent reference point for biomass.

Yellowtail snapper would also be amenable to mark-recapture experiments and to periodically obtaining age composition from hard parts. Both these techniques should be considered, as they may provide a way to build reliable stock assessments within the data limitations for this species.

Caribbean Spiny Lobster

Summary of Findings

The spiny lobster assessment was closer to completion than the yellowtail snapper, mainly as it had more and better data available for the assessment. Considerable work has been conducted in reviewing length frequency data and building maturity schedules. However, the data still had gaps, and there was no measurable depletion on which to fit a population model. As a result, required reference points and population projections could not be generated.

Data

More data were available for spiny lobster than yellowtail snapper. CPUE data were available from commercial landings and the trip interview program. There was little evidence of abundance change and the trends identified did not appear to be consistent. The TIP data set, in particular, is clearly complex and contains many inconsistencies and problems, making generation of abundance indices from this source difficult. There also appear to be no seasonal changes in catch rates, which have been used in developing population models in other countries in the region.

There appeared to be a difference between the indices based on commercial landings and the trip interview program. These data series are not independent and ultimately

have the same source. It should be possible to link each TIP record to a commercial trip record to check the data and identify why differences might exist.

Model

Future modelling approaches should move away from surplus production and age structure production models presented. In contrast to yellowtail snapper, spiny lobster has a long pelagic larval stage (9 months versus 3 weeks) and the assumption that local populations are self-recruiting is unlikely to hold. Based upon genetic studies, it is generally believed that there is a regional Caribbean stock of spiny lobster. As recruitment patterns are generally inferred from currents and are therefore unreliable, it is possible that the majority of recruits are derived locally, or from "upstream" populations or any mix of the two. However, predominant local recruitment, as assumed by production models, such as the "catch free" model presented, is premature without supporting evidence. The production model tested for the SE US spiny lobster stock assessment was rejected as it failed to explain population changes.

In general, spiny lobster can be modelled well with a recruitment index. Unfortunately the US Caribbean populations have no recruitment index or currently any easy way to generate one. It is likely that no adequate assessment will be possible until a suitable recruitment index is developed.

Conclusions and Recommendations

Although better data were available than for yellowtail snapper, they could still not support a stock assessment. Therefore the most important recommendations mainly deal with improvements in data collection. Many of the recommendations made for yellowtail could probably be applied to spiny lobster, and yellowtail recommendations should be reviewed with this in mind.

The specific problem for spiny lobster is to develop a recruitment index. Stock assessment models of spiny lobster in the Caribbean and elsewhere work well where recruitment can be monitored, either at the post-larval, juvenile or fishery recruitment stage. A puerulus collector system or juvenile "casita" based system should be able to provide fishery independent indices of stages prior to recruitment to the fishery. However, these require significant resources to develop and a significant time series may be needed before they become useful.

There is a strong argument to introduce a closed season for lobster in line with most other Caribbean countries and Florida, which among other things, could produce a recruitment index. The closed season is usually designated between April and September and is intended to reduce the catch of undersize lobster and of spawning females. Peak spawning and movement of juvenile lobster into fishing grounds occurs at about the same time during the year. A fishery dependent index might be obtained through introducing a closed season. Catches and CPUE at the beginning of the fishing season could be used to generate a reliable recruitment index, which could begin to be estimated within a few years.

SE US Spiny Lobster

Summary of Findings

The south-east US spiny lobster assessment made good use of extensive data available and produced a reliable assessment. The data and analyses were rigorous, clear and

scientifically sound. Extensive sensitivity analyses were presented supporting the conclusions.

The assessment results critically depend upon the selectivity curve. The dome shaped selectivity estimated by the integrated catch-at-age analysis (ICA) explains the absence of larger lobster as being less catchability rather than that they are being removed through mortality. When selectivity was kept constant, fishing mortality estimates were greatly increased. The domed shaped selectivity was considered plausibly as larger lobsters may be less likely to enter traps or they escape to less heavily fished areas.

Although an interesting and innovative way to measure age, the lipofuscin growth estimates are probably relatively inaccurate. The parameter estimates were outside others based on more direct methods. The tagging model produced results consistent with other models from elsewhere in the region, but suffered from the lack of data on growth rates of larger lobsters.

The assessment depended on some past data collection programmes which have not been repeated or were discontinued. The observer programme would be very useful for monitoring catches of sub-legal and to discriminate lower juvenile recruitment from changes settlement rates, important for assessing the impact of disease mortality on the population. The tagging data is now relatively old, yet was critical for conversion of size to age for the ICA model.

Spiny lobster is widely considered to be a stock shared among countries in the Caribbean region. It is probably not possible for the US to meet its policy objectives alone, but a common approach would have to be developed with other countries in the region, including Latin America and the Northern Caribbean. The scientific assessment can be improved, but improvements are unlikely to yield significant changes in results until the stock-recruitment relationship is addressed. The lack of a stock-recruitment relationship severely limits the ability to define suitable spawning stock reference points and carry out the stock projections requested.

Conclusions and Recommendations

It would be valuable to have evidence that the domed-shaped selectivity is consistent with observations. Primary supporting evidence would be fishery independent assessment of the older lobster showing that the abundance predicted by the model exists.

Larger lobsters should be tagged and their growth monitored. Tag data are absent for larger lobster, greatly increasing the uncertainty in growth parameter estimates. The model growth estimates could be greatly enhanced from tagging larger animals and monitoring their growth.

Some improvement in the fit of the model might be obtained through use of the catch equation[2] rather than linear catch-effort relationship. The catch equation captures diminishing returns on effort within a season, if effort is assumed to be proportional to fishing mortality and total effort is available. With the overcapacity evident in Florida, an approach adjusting for decreased catchability within season could improve abundance indices. The catch equation can be used in a GLM context (complimentary log-log link function) to standardise effort with respect to catchability, but works

[2] $C_t = B_t\left(1 - e^{-qf_t}\right)$

particularly well if integrated with the population model. Integration with the population model would be a simple procedure in the recruitment index model case.

The Florida source of recruits needs to be identified. In the shorter term, recruitment relationships might be identified using correlations between the estimating spawning output from different countries in the Caribbean region and recruitment in the US. In the longer term, this might be done through genetic studies or using advanced tagging techniques.

The stock assessment would benefit from regional assessments and regional working group initiatives. US assessment scientists should be involved in and support regional meetings on spiny lobster. The growth and population models, in particular, could prove very useful if made available to other countries, such as the Bahamas, for the analysis of their own data.

Despite the need for a regional assessment for setting spawning stock biomass levels, the US could lead the way by developing some, at least theoretical, base for SSB_{MSY} based on a quantitative risk assessment. It appears that reference points for SSB could be developed based on the past performance of the fishery. Monte Carlo simulations were requested by the panel to test F20% and F30% threshold and target reference points against various performance criteria. The simulations explicitly considered various stock-recruitment relationship scenarios. While the approach showed promise, there was inadequate time to explore the scenarios sufficiently to provide substantive comment during the meeting. The stock assessment workshop could develop this approach by developing various scenarios covering the range of hypotheses concerning recruitment and changes in gear selectivity and suitable performance indicators including catch and measures of SSB. Risks in the performance indicators associated with applying the threshold and target should be generated for future review.

Annex I Bibliography

Considerable supporting material was provided for the review, covering background information on data, models and scientific papers used in the data and assessment workshops. The following documents are the main review documents and summaries, although documents referenced within these main reports were also provided. These main reports formed the basis for the presentations made to the panel during the review workshop.

Caribbean Yellowtail Snapper Stock Assessment Report 1 Section I Introduction. S8 SAR1_YTS_DWdraft2.pdf

Caribbean Yellowtail Snapper Stock Assessment Report 1 Section II. Data Workshop Report. Prepared by the SEDAR 8 Data Workshop Panel. Edited by Nancie Cummings, SEFSC. (Draft). March, 2005. S8 SAR1_YTS_DWdraft2.pdf

Caribbean Yellowtail Snapper *Ocyurus chrysurus* Section III. Stock Assessment Workshop Report. Developed by the Assessment Workshop Panel. Edited by Joshua Sladek Nowlis, Southeast Fisheries Science Center, Miami, FL. March 2005. SEDAR8-AW-Report 1 YTS FINAL.pdf

SEDAR 8 Stock Assessment Report 2 Caribbean Spiny Lobster. Section II. Data Workshop. Edited by Nancie Cummings, SEFSC. March, 2005. S8_SAR2_SIIv1_Lobster.pdf

Caribbean Spiny Lobster Panulirus argus Section III. Stock Assessment Workshop Report. Developed by the Assessment Workshop Panel. Edited by Joshua Sladek Nowlis, Southeast Fisheries Science Center, Miami, FL. March 2005. SEDAR8-AW-Report 2 SL FINAL.pdf

Assessment of spiny lobster, *Panulirus argus*, in the Southeast United States Stock Assessment Report. Prepared by SEDAR 08 U.S. Stock Assessment Panel. 29 April 2005. SE US Spiny Lobster Stock Assessment Report.pdf

Stock Assessment Summary Report for Southeast United States Spiny Lobster. SEDAR 08 Stock Assessment Panel. 2 May 2005. SE US Spiny Lobster Stock Assessment Summary Report.pdf

Annex II Statement of Work

Consulting Agreement Between the University of Miami and Dr. Paul Medley

March 17th, 2005

South East Data, Assessment, and Review (SEDAR) is a joint process for stock assessment and review of the South Atlantic, Gulf of Mexico, and Caribbean Fishery Management Councils; NOAA Fisheries, SEFSC and SERO; and the Atlantic and Gulf States Marine Fisheries Commissions. SEDAR is organized around three workshops: data, assessment, and review. Input data are compiled during the data workshop, population models are developed during the assessment workshop, and an independent peer review of the data and assessment models is provided by the review workshop. SEDAR documents include a data report produced by the data workshop, a stock assessment report and summary produced by the assessment workshop, a review panel report evaluating the assessment (drafted during the review panel workshop), and collected stock assessment documents considered in the SEDAR process.

The peer review panel is composed of stock assessment experts, other scientists, and representatives of councils, fishing industries, and non-governmental conservation organizations. For each assessment considered during the review workshop a panel member will be chosen to serve as review leader whose responsibilities include ensuring that panel comments regarding the assessment are accurately documented in the consensus report and assisting the chair in drafting the report during the workshop.

NMFS-SEFSC requests the assistance of two assessment scientists from the CIE: one to serve as Chair and one to serve as a technical reviewer for the SEDAR 8 Review Panel that will consider assessments for Caribbean yellowtail snapper, Caribbean spiny lobster, and South Atlantic and Gulf of Mexico spiny lobster. No consensus opinion between the two CIE panelists is sought.

These species fall within the jurisdictions of the Caribbean, South Atlantic, and Gulf of Mexico Fishery Management Councils and respective southeastern states and Caribbean territories.

The review workshop for SEDAR 8 will take place at the Best Western San Juan Airport, in San Juan, Puerto Rico, from 1:00 p.m. on Monday, May 16, 2005 through 12:00 p.m. on Friday, May 20, 2005.

Meeting materials will be forwarded electronically and in hard copy. Please contact John Carmichael (SEDAR Coordinator; 843-571-4366 or John.Carmichael@safmc.net) for additional details.

Hotel arrangements:

Best Western San Juan Airport (*later changed to Caribe Hilton*)
Luis Munoz Marin International Airport, 2nd Floor
Carolina, Puerto Rico 00981
Phone: 1-800-981-1701 or 787-791-1700; Fax: 1-787-791-1248
Group rate of $109 including tax guaranteed through May 2, 2005.

SEDAR Assessment Review Panel Tasks:

The SEDAR Assessment Review Panel will evaluate the Caribbean yellowtail snapper and spiny lobster and the South Atlantic – Gulf of Mexico spiny lobster stock assessments, including input data, assessment methods, and model results as put forward in stock assessment reports. The Assessment Review Panel will:

1. Evaluate whether data used in the analyses are treated appropriately and are adequate for assessing the stocks; state whether or not the input data are scientifically sound.
2. Evaluate the adequacy, appropriateness, and application of the methods used to assess the populations; state whether or not the methods are scientifically sound.
3. Recommend appropriate or best estimated values of population parameters such as abundance, biomass, and exploitation.
4. Evaluate the adequacy, appropriateness, and application of the methods used to estimate stock status criteria (population benchmarks such as MSY, Fmsy, Bmsy, MSST, MFMT). State whether or not the methods are scientifically sound.
5. Recommend appropriate values for stock status criteria.
6. Evaluate the adequacy, appropriateness, and application of the methods used to project future population status and, if appropriate, evaluate stock rebuilding; state whether or not the methods are scientifically sound.
7. Recommend probable values for future population condition and status.
8. Ensure that all desired and necessary assessment results (*as listed in the SEDAR Stock Assessment Report Outline*) are clearly and accurately presented in the Stock Assessment Report and that such results are consistent with the Review Panel's consensus regarding adequacy, appropriateness, and application of the data and methods.
9. Evaluate the Data and Assessment Workshops with regard to fulfilling their respective Terms of Reference and state whether or not the Terms of Reference for previous workshops are adequately addressed in the Data Workshop and Stock Assessment Report sections;
10. Develop recommendations for future research for improving data collection and stock assessment.
11. Prepare a Consensus Report summarizing the peer review panel's evaluation of the reviewed stock assessments and addressing these Terms of Reference. (Drafted during the Review Workshop with a final report due two weeks after the workshop ends.)

The Assessment Review Panel's primary duty is to review the assessments as presented. The Chair may request a reasonable number of sensitivity runs, additional details regarding the existing assessment, or similar items from technical staff. However, conducting an alternative assessment is beyond the scope of the review panel and the technical staff present at the workshop. If the review panel finds that either the input data or the stock assessment are not adequate and reliable, the panel shall outline in its report the remedial measures necessary to correct the shortcomings.

Statement of Tasks for Technical Reviewer:

The CIE designee shall serve as a technical reviewer for a SEDAR Stock Assessment Review Panel workshop to be held May 16 - 20, 2005, in San Juan Puerto Rico (See attached agenda.). The workshop panel shall review stock assessments for Caribbean yellowtail snapper and Caribbean spiny lobster in the jurisdiction of the Caribbean Fishery Management Council and applicable territories, and South Atlantic – Gulf of Mexico spiny lobster in the jurisdiction of the South Atlantic and Gulf of Mexico Fishery Management Councils and associated states. Roles and responsibilities of the technical reviewer include:

1. Prior to the meeting the CIE reviewer shall be provided with the stock assessment reports and associated documents. The reviewer shall read these documents to gain an in-depth understanding of the stock assessment and the resources and information considered in the assessment.

2. During the Review Panel meeting, the reviewer shall participate, as a peer, in panel discussions on assessment validity, results, recommendations, and conclusions. The reviewer also shall participate in the development of the Consensus Report.

3. Following the Review Panel meeting, the reviewer shall review and provide comments to the Panel Chair on the Consensus Report.

4. No later than June 3, 2005, the reviewer shall submit a written CIE Reviewer Report[3] consisting of the findings, analysis, and conclusions, addressed to the "University of Miami Independent System for Peer Review," and sent to Dr. David Sampson, via email to David.Sampson@oregonstate.edu, and to Mr. Manoj Shivlani, via email to mshivlani@rsmas.miami.edu. See Annex II for details on the report outline.

It is estimated that the Review Panelist duties will occupy a maximum of 14 workdays; several days prior to the meeting for document review; five days at the SEDAR meeting, and several days following the meeting to ensure that final review comments on documents are provided to the Chair and to complete a CIE review report.

[3] The written Reviewer report will undergo an internal CIE review before it is considered final. After completion, the CIE will create a PDF version of the Reviewer report that will be submitted to NMFS and the consultant.

Workshop Final Reports:

The Chair shall send final review workshop reports to the University of Miami Independent System for Peer Review, Dr. David Die via email to ddie@rsmas.miami.edu.

Final workshop reports (in Word or WordPerfect format and in hardcopy) shall also be sent to:

Nancy Thompson, NMFS Southeast Fisheries Science Center, 75 Virginia Beach Drive, Miami, FL 33149 (email, Nancy.Thompson@NOAA.gov)

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For Additional Information or Emergency:

SEDAR contact: John Carmichael, One Southpark Circle, Suite 306, Charleston, SC 29407. Phone: 843-571-4366; cell phone (843) 224-4559. Email: John.Carmichael@safmc.net.

Draft Agenda

SEDAR 8: Spiny Lobster and Yellowtail Snapper

Monday, May 16, 2005

1:00 p.m.	**Convene**
1:00 – 1:30	**Introductions and Opening Remarks** **John Carmichael** *- Agenda Review, Task Assignments*
1:30 – 3:30	**Caribbean Yellowtail Assessment Presentation** **TBD**
3:30 – 3:45	**Break**
3:45 – 6:00	**Caribbean Yellowtail Discussion** **Chair** *- Data, Methods, Results Evaluation* *- identify additional analyses, sensitivities, corrections*
6:00 – 8:00	**Dinner Break**
8:00 – 10:00	**Evening session if necessary** **Chair** *- Continue deliberations or work session*

Tuesday, May 17, 2005

8:00 a.m. – 12:00 p.m.	**Caribbean Yellowtail Assessment Discussion** **Chair** *- Review additional analyses, sensitivities* *- Initial recommendations and comments*
12:00 p.m. – 2:00 p.m.	**Lunch Break**
2:00 p.m. – 4:00 p.m.	**Caribbean Spiny Lobster Assessment Presentation** **Chair** *- Data, Methods, Results Evaluation* *- identify additional analyses, sensitivities, corrections*
4:00 p.m. – 4:15 p.m.	**Break**
4:15 p.m. – 6:15 p.m.	**Caribbean Spiny Lobster Discussion** **Chair** *- Data, Methods, Results Evaluation* *- identify additional analyses, sensitivities, corrections*
6:15 – 8:00	**Dinner Break**
8:00 – 10:00	**Evening session if necessary** **Chair** *- Continue deliberations or work session*

Wednesday, May 18, 2005

8:00 a.m. – 12:00 p.m.	**Caribbean Spiny Lobster Discussion** **Chair** *- Review additional analyses, sensitivities* *- Initial recommendations and comments*
12:00 p.m. – 2:00 p.m.	**Lunch Break**
2:00 p.m. – 4:00 p.m.	**SA-GOM Spiny Lobster Assessment Presentation** **Chair** *- Data, Methods, Results Evaluation* *- identify additional analyses, sensitivities, corrections*
4:00 p.m. – 4:15 p.m.	**Break**
4:15 p.m. – 6:15 p.m.	**SA-GOM Spiny Lobster Discussion** **Chair** *- Data, Methods, Results Evaluation* *- identify additional analyses, sensitivities, corrections*
6:15 – 8:00	**Dinner Break**
8:00 – 10:00	**Evening session if necessary** **Chair** *- Continue deliberations or work session*

Thursday, May 19, 2005

8:00 a.m. – 12:00 p.m.	**SA-GOM Spiny Lobster Discussion** **Chair** *- Review additional analyses, sensitivities* *- Initial recommendations and comments*
12:00 p.m. – 2:00 p.m.	**Lunch Break**
2:00 p.m. – 4:00 p.m.	**Review Workshop Terms of Reference** **Chair** *- Review TORs and draft consensus statements*
4:00 p.m. – 4:15 p.m.	**Break**
4:15 p.m. – 6:15 p.m.	**Continue TOR review** **Chair**
6:15 – 8:00	**Dinner Break**
8:00 – 10:00	**Evening session if necessary** **Chair** *- Continue deliberations or work session*

Friday, May 20, 2005

8:00 a.m. – 12:00 p.m.	**Final Review of Panel Documents** **Chair**

- *Yellowtail snapper Consensus Summary*
- *Caribbean Spiny Lobster Consensus Summary*
- *SA-GOM Spiny Lobster Consensus Summary*

12:00 p.m. **ADJOURN**