

Draft Terms of Reference

Gulf of Mexico and South Atlantic Spiny Lobster

Update Assessment Workshop - August 23-25, 2010 (proposed)

1. Update the SEDAR 8 assessment of Southeastern US spiny lobster with data through 2009-2010. Prepare a continuity scenario and consider additional sensitivity runs to address assessment concerns raised since the benchmark.
2. Evaluate any relevant data and parameters to be included into the stock assessment model. This evaluation should be conducted with all relevant scientific input. Include life history, indices of abundance, and fishery data.
3. Evaluate the relative reliability of fishery dependent and independent data sources and adjust model input appropriately.
4. Update the approved SEDAR 8 Southeastern spiny lobster model base configuration with data through 2008-09. Employ the SEDAR 8 SAR 3 statistical catch-at-age model (Integrated Catch-at-Age) as the base and the DeLury model as a check for consistency. The DeLury model used numbers of lobster and effort by fishing year extended back to the 1978-79 fishing year. Both models used fishery-dependent (observer and Biscayne National Park creel survey) and fishery-independent (puerulus and adult monitoring) tuning indices. Sensitivity runs included running the age-structured model with two lipofuscin growth curves and with two alternative natural mortality rates. Retrospective analysis compared patterns in fishing mortality rates, recruitment, and population sizes in terminal years from 1997-98 to 2002-03 to the base run results. Document any changes in assessment methodology incorporated in the update.
5. Document any changes or corrections made to input datasets, all additional data added for the update, and any modifications applied to the additional data. Tabulate complete updated input datasets. Provide tables of commercial and recreational landings and discard in the units used in SEDAR 8, SAR 3. Specify units of measurement in all tables.

6. Estimate and provide complete updated tables of stock parameters.
7. Update measures of uncertainty and provide representative measures of precision for stock parameter estimates.
8. Update estimates of stock status and SFA parameters; provide declarations of stock status relative to current SFA criteria. Provide clear statements of stock status relative to 'overfishing' and 'overfished'.
9. Specify OFL, and may recommend a range of ABC for review by the SSC in compliance with ACL guidelines.
10. Evaluate and project future conditions for eleven years (2009-10 through 2019-20 inclusive) beyond the terminal year of the update (2008-2009). Run these three projection scenarios:
 $F = F_{\text{current}}$, $F = F_{\text{msy}}$, and $F = F_{\text{oy}}$.
11. Review the research recommendations from SEDAR 8 SAR 3 (2005), note any which have been completed, and make any necessary additions or clarifications. Focus on those items which will improve future assessment efforts. Provide details regarding sampling design, sampling strata and sampling intensity under current exploitation allowances that will facilitate collection of data that will resolve identified deficiencies and impediments in the 2005 assessment. Recommend sampling intensity in terms of the number of sampling events and appropriate elements in order to complete the ACCSP sampling design matrix.
12. Develop an update stock assessment workshop report in SEDAR outline to fully document the input data, methods, and results of the stock assessment update. Address these Terms of Reference. Submit the report to SEDAR no later than October 1, 2010. The report shall be provided to the GMFMC and the SAFMC no later than October 18, 2010.

Preliminary Project Schedule

Gulf and South Atlantic Spiny Lobster Assessment Update

- SA Council and SSC approve ToRs December 6-11, 2009
- SA Council approves participants December 6-11, 2009
- Gulf Council approves ToRs February 1-4, 2010
- Gulf SSC approves ToRs December 1-2, 2009
- Gulf Council approves participants February 1-4, 2010
- Data scoping webinar March 16, 2010
- Preliminary data through 2008 compiled by April 22, 2010
- Base run model adjustments developed May 1 to June 18, 2010
- Final data through 2009 compiled by June 1, 2010
- Update Webinar 1 – finalize data; preliminary model discussion June 22, 2010
- Update Webinar 2 July 13, 2010
- Update Webinar 3 July 27, 2010
- Draft update report distributed by teams for review August 11, 2010
- Update Workshop August 23-25, 2010
- Update Webinar 4 September 8, 2010
- Update Workshop report sent to council staff for SSC October 18, 2010
- **Update Review by Gulf SSC** **TBD – joint with SA SSC**
- Update Review by SA SSC January 31-February 4, 2011

SEDAR 8B-South East Spiny Lobster Benchmark Assessment Summary Research Recommendations

DATA WORKSHOP

1. Work to develop an active program for a juvenile tuning index
2. Develop a greater understanding of the interaction between lobsters and traps
3. Develop research partnerships with the fishery
4. Try to reestablish an onboard fishing vessel monitoring program
5. Increase understanding of lobster disease
6. Continue to understand growth
7. Develop future assessments that take into account the role males play in determining fecundity.

ASSESSMENT WORKSHOP

8. Research Recommendations

Tuning indices and lobster growth were the topics discussed during the workshop research needs session. Although specific projects were not developed, the general needs for these topics were discussed and are summarized in this section.

8.1 Tuning Indices

Existing tuning indices are based on a long-term monitoring of postlarvae entering into the Florida Keys; and collection of juvenile surveys conducted as part of research projects; an onboard vessel observer program that ended in 2000; and surveys of lobsters, mostly adults, on the offshore reefs of the keys, again as part of other research efforts. The SAW panel members expressed the need for geographically robust adult and juvenile monitoring programs that could provide tuning indices that can be connected to each other and the fishery. The existing tuning indices do not meet this standard. Broad agreement that this standard is the desired approach was quickly obtained. However, discussion of the details for potentially meeting this need resulted in many ideas and no consensus.

Some discussion occurred regarding the pluses and minuses of fishery dependent vs. fishery independent monitoring and, secondarily, the use of traps vs. dive methods. Each method has its own difficulties; selectivity issues for traps, sampling adequacy for diving, fisherman biases and huge amount of staff effort for an onboard observer program.

We are considering holding a workshop to design possible approaches for developing tuning indices.

ASSESSMENT WORKSHOP (continued)

8.2 Growth

Discussions regarding growth centered around the lack of growth data from larger (>100 mm CL) lobsters and the impact that this lack of data may have on the assessment. The consensus was that developing growth data on larger lobsters is highly desirable, although everyone recognized the difficulty of doing so in this fishery. Two possible directions emerged: one is to develop collaborations with commercial fishers that fish farther from shore, both in the Gulf of Mexico and west of the Dry Tortugas National Park, to complete some tagging studies. The other is to take advantage of the increasing numbers of larger lobsters inside the no-take areas and attempt some localized tag-recapture studies. Any such studies will require refining existing tagging techniques.

REVIEW WORKSHOP

The Review Panel offers the following comments regarding research needs:

- A. Discussion of the ability to estimate the relative stock status with respect to overfished levels focused on the connectivity of the entire Caribbean spiny lobster population and the relative importance of the SA-GOM area in the total. It was noted that catches from the area make up <10% of the catch in the western Atlantic, and that present understanding of oceanographic patterns indicates that it is quite likely that the area receives larvae from other areas. This statement is based on the duration of the larval period and the speed and direction of prevailing currents. Critical information required to evaluate fully whether the stock is overfished include: identifying the source of the larvae settling in the SA-GOM area as well as determining the proportion of larval production from the area that is retained locally. A broad assessment of the Caribbean population would be desirable, but is impractical at this time.
- B. There was support from both stakeholders and scientists at the Panel to reestablish an observer program for the commercial trap fishery. This program could supply useful data to be used directly in the present assessment model including: an index of pre-recruit numbers, adults, and other information that cannot be gained through other methods. Efficient coordination and communication between participants (both industry and scientists) must be a priority in planning this program. The Panel recognized that the program will be most valuable as the duration of the time-series increases, and planning should reflect this.

REVIEW WORKSHOP (continued)

Recommendations for future data collection and research

Data from the commercial fishery

1. Re-establish a commercial fishery observer program (described above).

Fishery-independent indices of abundance

2. Standardize existing data sets that may be used for juvenile and legal-sized indices of abundance
3. Design new monitoring programs to collect systematic, consistent, and statistically rigorous data.

Improved growth information

4. Tagging projects should be initiated to obtain growth-rate data from larger (CL >100 mm) lobsters
5. Activity may need to be focused in areas of reduced exploitation (such as the Tortugas) to allow capture of these larger individuals in appreciable numbers
6. Reconcile growth information from Lipofuscin and tagging data

Modeling

7. Conduct Monte Carlo simulations to test F20% and F30% threshold and target reference points against various performance criteria. The stock assessment workshop for the stock should develop various scenarios covering a range of hypotheses concerning recruitment and changes in gear selectivity, as well as suitable performance indicators, including catch and measures of SSB. Risks in the performance indicators associated with applying the threshold and target should be generated in future assessments.