SOUTH ATLANTIC FISHERY MANAGMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

Wreckfish Assessment Workshop

Meeting Report

November 12 - 14, 2013

Hilton Garden Inn
North Charleston, SC

VERSION
FINAL

Attendance

ad hoc SSC Panel

Anne Lange, SSC Member
Marcel Reichert, SSC Member
George Sedberry, SSC Member
Doug Vaughan, SSC Member
Doug Butterworth, Univ. of Cape Town
Rebecca Rademeyer*, Univ. of Cape Town
Adam Lytton, SC DNR MARMAP

Other Attendees

Joey Ballenger, SC DNR MARMAP
Frank Blum, SC Seafood Alliance
Angela Boehm*
Scott Crosson*, SAFMC SSC
Zaida Hager, College of Charleston
Rusty Hudson*, Directed Sustainable Fisheries
Julie Neer*, SAFMC
Paul Reiss, Wreckfish fisherman
David Wyanski, SC DNR MARMAP
Tracy Yandle*, SAFMC SSC

Staff

John Carmichael
Mike Errigo

* Denotes Participation via Webinar

Documents

A1	Proposal for consideration of updated assessment of US South Atlantic wreckfish
A2	Report of the SSC meeting to review the wreckfish assessment proposal
A3	SAFMC Peer Review Process
A4	An Application of Statistical Catch-at-Age Assessment Methodology to Assess US South Atlantic Wreckfish. October 2012
A5	Further SCAA runs to Assess US South Atlantic Wreckfish, October 2012
A6	SAFMC ABC Control Rule
A7	Further SCAA runs of US South Atlantic Wreckfish, October 2013
A8	Sensitivity Analyses Reviewed during the Wreckfish Workshop
A9	Growth Model Options
A10	Wreckfish Landings Trend
A11	Growth Variation
A12	Wyanski Age and Growth
A13	Wreckfish Maturity
R1	Wreckfish fishery SAFE Report, 1999.
R2	Assessment of the Wreckfish Fishery on the Blake Plateau. 2001.
R3	Data summary of southeastern U.S. Atlantic wreckfish stock for fishing years 1988-2003
R4	Amendment 3 to the Snapper Grouper FMP.
R5	Amendment 5 to the Snapper Grouper FMP.
R6	Description and Evaluation of the Wreckfish Fishery under Individual Transferable Quotas. 1994.
R7	Age and growth of southwestern Atlantic wreckfish *Polyprion americanus*
R8	Wreckfish Fishery Overview, Presentation made at the 2009 SAFMC SSC Wreckfish Fishery Workshop
R9	South Atlantic Wreckfish ITQ Update
R10	Depletion-Corrected Average Catch Estimates for U.S. South Atlantic Wreckfish
R11	Further results for An Application of Statistical Catch-at-Age Assessment Methodology to Assess US South Atlantic Wreckfish. November 2013
R12	Analytical Report on the Sex Ratio, Maturity, Reproductive Seasonality, and Annual Fecundity of Wreckfish, Polyprion americanus, off the Southeastern United States
R13	Reproductive biology of southwestern Atlantic wreckfish, *Polyprion americanus* (Teleostei: Polyprionidae)

Overview

The South Atlantic Council convened a workshop of an ad hoc Scientific and Statistical Committee (SSC) working group to consider assessment data and model configuration of a wreckfish assessment submitted in accordance with the SAFMC peer review guidelines. The workshop was supported in response to a request in the assessment proposal to provide a venue for the analysts to meet with experts knowledgeable in the fishery and South Atlantic Region to assist in obtaining the most up-to-date information and developing an appropriate base configuration and uncertainty evaluations. During the workshop, the ad hoc SSC working group reviewed various model configurations and sensitivity analyses and provided recommendations for consideration by the analysts. The results of these discussions and preliminary recommendations are summarized in this report.

Peer Review Schedule

Submission of Final Assessment Report to SAFMC.....February 18, 2014
SSC Peer Review.....TBD, March 10-21, 2014
Post-Peer Review revisions due to SAFMC.....April 11, 2014
SSC Review and Consideration.....April 29 - May 1, 2014
SSC Report to SAFMC.....June 9 - 13, 2014

Recommendations and Findings of the ad hoc SAFMC SSC Wreckfish Working Group

I. "Reference Case" Model Considerations

This reflects both changes to the Reference case as implemented in Butterworth and Rademeyer (2013), together with re-confirmation on some aspects that came under discussion but ended unchanged.

1) Estimate M (probably – otherwise 0.04)
2) Fix h = 0.75, but check RAM Legacy and other databases for values for wreckfish-like species (Doug Vaughan will advise on information from other data bases)
3) Existing CPUE series (fisher learning was over before this series started, it is based only on the best fishermen, and no major technological developments occurred over the duration of the series, Paul Reiss, pers. comm.)
4) Lytton growth curve (the freely estimated version)
5) The std devn of length at age will be set constant
6) Input maturity-at-length information (Marcel Reichert to advise on an updated relationship for female maturity)
7) Flat selectivity at length at large lengths
8) Retrospective analysis to be conducted for this Reference case only

There was discussion over whether the Reference case model should disaggregate sexes, given that catch-at-length (CAL) data are used in fitting the model and that females are known to grow somewhat larger than males. However only very few sex-disaggregated data are currently available on age and growth, and even less on the split-by-sex of the catch; further, extending the model in this way would introduce additional complexities through the possibilities of differences by sex in natural mortality and selectivity. It was considered premature to make this step at this stage, given the paucity of data, and noting also that the absence of large changes over time in the CAL data probably means that the approximation of a sex-aggregated model will not introduce any serious bias into results.

Collaboration with industry would assist in gathering the data needed to consider this in further model developments in the future.

II. Sensitivities

These will be implemented as single factor variations on the Reference case.

1) Alternative fixed *h* values (0.6, 0.9)
2) Alternative fixed *M* values (0.025, 0.055, 0.07?)
3) Increasing *M* at larger ages (no need to consider increased *M* at low ages as wreckfish are not caught that young)
4) CPUE: (a detailed reconsideration of the raw (pre-standardised) data was not considered necessary at this time)

   a) Use the Vaughan *et al.* (2001) numbers per day series for the initial 1991-1998 period, renormalizing this for the same average as the Reference case series over that period, and appending the Reference case series thereafter

   b) 1% pa increase in catchability
5) Catch: Vaughan trend variant over 2001-2008 (it was not considered necessary to consider possible bias for all or part of the time series of catches)
6) Selectivity-at-length:
   a) Include dome (fixed or estimated?) following information from Paul Reiss that bigger fish tend to leave the region of the fishery over certain months (monthly variation in CAL could perhaps be attempted to try to estimate the magnitude of this doming independently, but this was considered premature at this stage)
   b) Alternative shapes for the increasing limb of the selectivity function
7) Maturity: no sensitivity given the decision to rather use maturity-at-length data to specify this for the Reference case
8) Down-weight CAL in –lnL by 0.6, 0.3 and 0.1 multiplier
9) Change –lnL form for CAL to SQRT(proportion) as a multinomial surrogate

10) Alternatives to Lytton growth curve, which reflect changes only over younger ages to give lower mean lengths over those ages (Adam Lytton and Joey Ballenger to advise)
11) SSB = 0.8K at the start of the fishery
12) Ricker S/R curve
13) Alternatives to std devn constant for length-at-age distribution– some increase with length to be considered
14) Alternative stock structure (Reference case corresponds to closed population)
    a) h=1, corresponding to an external source for the bulk of the recruits
    b) Recruitment depends on time (linear decrease) rather than on SSB to mimic effect of other fisheries on stock as a whole (previous attempts to estimate catch series for the whole North Atlantic have not been successful)
15) Deliberately, as the data are considered inadequate for this, **not** extend to:
    a) Stochastic in place of deterministic recruitment
    b) Annual variability in selectivity-at-length

III. Alternative Methods

These are to provide a link to the 2011 NMFS assessment (Anon. 2011) and forms of simple consistency checks for the SCAA results.

1) DCAC – effect of change to Lytton growth curve on one or two NMFS examples closest to the Reference case to be considered here
2) Dynamic Production model (e.g. Schaefer) fitted to catch and CPUE data only

IV. Advice

This is to aid in the selection of outputs to tabulate and to plot to best aid the development of management advice.

1) Show as impact of constant future catch on spawning biomass. For the years 2011 to 2013, catches would be assumed to equal the current ABC (235 thousand pounds). From 2014 onwards, fixed catch levels will be chosen over a range from zero to a typical MSY:
    - 0,

- current ABC (235 thousand pounds),
- simple constant additions to that ABC up to a representative MSY value

2) Show outputs as consequence/risk analysis plots for spawning biomass and *F* over 10 years for:
   a) Statistical uncertainty about the Reference case (use a Bayesian MCMC to get this)
   b) Sets of sensitivities which are compared to the Reference case
3) Key tabular outputs:
   a) K, SSB(current), F(current)
   b) SSBmsy, Fmsy, MSY
   c) SSB(current)/SSBmsy, SSB(current)/(0.75SSBmsy),, F(current)/Fmsy

V. References

Anon. 2011. Depletion-corrected Average Catch Estimates for U.S. South Atlantic Wreckfish. NOAA Fisheries Service. December 2011. SERO-LAPP-2011-07. 21pp.

Butterworth, D.S. and Rademeyer, R.A. 2013. Further results for an application of statistical catch-at-age assessment methodology to assess US South Atlantic Wreckfish. November, 2013. 11pp.

Vaughan, D.S., Manooch III, C.S. and Potts, J.C. 2001. Assessment of the wreckfish fishery on the Blake plateau. Pgs 105-122 in G.R. Sedberry, ed. Island in the stream: oceanography and fisheries of the Charlestown Bump. AFS, Symposium 25, Bethesda, MD.