Research Priorities and Recommendations to Support Interjurisdictional Fisheries Management

SCUP

Modeling / Quantitative Priorities

- Evaluation of indicators of potential changes in stock status that could provide signs to management of potential reductions of stock productivity in the future would be helpful.[1]
- A management strategy evaluation of alternative approaches to setting quotas would be helpful.
- Current research trawl surveys are likely adequate to index the abundance of scup at ages 0 to 2. However, the implementation of new standardized research surveys that focus on accurately indexing the abundance of older scup (ages 3 and older) would likely improve the accuracy of the stock assessment.[2]
- Continuation of at least the current levels of at-sea and port sampling of the commercial and recreational fisheries in which scup are landed and discarded is critical to adequately characterize the quantity, length and age composition of the fishery catches.[3]
- Quantification of the biases in the catch and discards, including non-compliance, would help confirm the weightings used in the model. Additional studies would be required to address this issue.
- The commercial discard mortality rate was assumed to be 100% in this assessment. Experimental work to better characterize the discard mortality rate of scup captured by different commercial gear types should be conducted to more accurately quantify the magnitude of scup discard mortality.

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[1] The WG noted that some progress in SSC work on 'rumble strip' analysis – used in 2013. The 2015 assessment explored the potential use of the Conn (2010) hierarchical method to combine indices across time and space; more developmental work is needed.

[2] The WG noted that the RI Industry Cooperative Trap survey was implemented during 2005-2012. This survey had a higher catch rate for larger and older fish of age 3+ than the bottom trawl surveys. A peer review indicated that some of the design elements should be modified and this advice was followed; however, funding was halted after 2012.

[3] The WG noted that adequate sampling has been maintained (see assessment tables and figures).

- Refine and update the Manderson et al.[4] availability analysis when/if a new ocean model is available (need additional support). Explore alternative niche model parameterizations including laboratory experiments on thermal preference and tolerance.
- Explore the Study fleet data in general for information that could provide additional context and/or input for the assessment.
- Explore additional sources of length/age data from fisheries and surveys in the early parts of the time series to provide additional context for model results.

Fishery-Dependent Priorities
- Improve estimates of discards and discard mortality for commercial and recreational fisheries SBRM estimates of commercial fishery discards, which exhibit a less variable time series pattern and improved precision compared to previous estimates, were developed and accepted for this assessment.
- A standardized fishery-dependent CPUE of scup targeted tows, from either NEFOP observer samples or the commercial study fleet, might be considered as an additional index of abundance to complement survey indices in future benchmark assessments.

Fishery-Independent Priorities
- Evaluate indices of stock abundance from new surveys.[5]
- Explore experiments to estimate the catchability of scup in NEFSC and other research trawl surveys (side-by-side, camera, gear mensuration, acoustics, etc.).
- A scientifically designed survey to sample larger and older scup would likely prove useful in improving knowledge of the relative abundance of large fish.

Life History, Biological, and Habitat Priorities
- Quantify the pattern of predation on scup.[6]

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[4] Manderson JP, Schmidt A, Palamara L, Richardson D, Kohut J, Bonzek C. MS 2015. TOR 3: Describe the thermal habitat and its influence on the distribution and abundance of scup, and attempt to integrate the results into the stock assessment. 2015 SAW 60 Scup Working Group Working Paper A11. 52 p.

[5] The WG noted that the RI Cooperative Trap (ended in 2012), NEAMAP spring and fall surveys, indices at age from the RIDFW spring and fall surveys, and indices at age from the NYDEC survey are now included in the assessment documentation.

[6] The WG noted that the limited NEFSC survey food habits data for scup were reviewed and it is not possible to calculate absolute estimates of consumption of scup by predators due to sample size considerations (~500 identifiable scup in the ~40 year time series).

Previous Research Recommendations

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Fishery-Dependent Priorities

- Continue current level of sea and port sampling of the various fisheries in which scup are landed and discarded to adequately characterize the length composition of both landings and discards. Expanded age sampling of scup from commercial and recreational catches would be beneficial, with special emphasis on the acquisition of large specimens.[7]
- Commercial discard mortality had previously been assumed to be 100% for all gear types. Studies need to be conducted to better characterize the mortality of scup in different gear types to more accurately assess discard mortality.
- Additional information on compliance with regulations (e.g., length limits) and hooking mortality is needed to interpret recreational discard data and confirm weightings used in stock assessment model.

Fishery-Independent Priorities

- Fund, support, and expand the spatial coverage of the ventless trap-based Scup and Black Sea Bass Survey of Hard Bottom Areas.
- Collect total and fork lengths from individual scup in a standardized manner throughout their size and geographic range and across gear types to improve upon the length conversion equation currently cited in the FMP (Hamer, 1979).

Modeling / Quantitative Priorities

- Continue exploration of relative biomass and relative exploitation calculations based on CPUE data from fishery-dependent data (e.g., observer, commercial, P/C VTR, MRIP, etc).
- Evaluate the current biomass reference point and consider alternative proxy reference points such as B_{MAX} (the relative biomass associated with F_{MAX}).
- Explore other approaches for analyzing survey data, including bootstrap resampling methods to generate approximate confidence intervals around the survey index point estimates.[8]
- Evaluate indicators of potential changes in stock status that could provide signs to management of potential reductions of stock productivity in the future.

Life History, Biological, and Habitat Priorities

- Conduct an ageing comparison workshop to (1) compare otoliths and scales and (2) compare state age-length keys.[9]

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[7] Improved sampling intensity of landings and increased funding for the observer program since 2004 have improved discard sampling in the directed and bycatch fisheries for scup.

[8] Completed for the NEFSC surveys, could be applied to state survey data.

[9] Contact and inform Eric Robillard of NEFSC Population Biology Branch.

- Conduct biological studies to investigate factors affecting annual availability of scup to research surveys and maturity schedules.

Management, Law Enforcement, and Socioeconomic Priorities
- A Management Strategy Evaluation of alternative approaches to setting quotas, with attention paid to compliance related to minimum size, would be helpful.