

Potential Redevelopment of the Research Set Aside Program Final Report to the MAFMC

SSC Economic Working Group

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Background

In December of 2020 the Mid-Atlantic Fishery Management Council (Council) agreed to conduct a collaborative case study led by an Economic Working Group created under its Scientific and Statistical Committee (SSC). The subject, jointly agreed upon after prior consultation, was an economic evaluation of the policy deliberation already underway by the Council's Research Steering Committee (Committee) to consider whether to recommend the Council renew a Research Set Aside (RSA) program. This is the final report of that Economic Working Group on the RSA case study.

The RSA program has been suspended in the Mid-Atlantic region since 2014 due to the purposeful misreporting and overutilization of quota by a number of fishermen engaged in the program.¹ The Council is considering redevelopment of the RSA program, due to the potential to fund priority research on species managed by the Council. There are many economic considerations that would underpin a successful RSA redevelopment and the case study was intended to highlight them for the Council.

Methods

The RSA redevelopment case study was a highly collaborative endeavor between the Economic Work Group, Council staff, and Council Members. In particular, the Economic Work Group focused on providing information, analyses, white papers and support for four stakeholder workshops organized by the Committee on the following topics: Research, Funding, Enforcement, and Final Recommendations. In addition to the four workshops, the Economic Work Group participated in three Research Steering Committee meetings to help inform economic considerations germane to their deliberations.

The initial Economic Working Group plan of providing scientific advice was predicated on the availability and access to economic data to conduct appropriate economic analyses of the prior RSA program and model possible future changes if a program were to be reestablished. Early on it became apparent that economic data that would be needed to assess the benefits and costs of the past program were not routinely collected by federal agencies. What data were collected were held and deemed proprietary by industry, and negotiations to make them

¹ http://www.mafmc.org/s/Tab-06_RSA.pdf

available to SSC economists for this case study were unsuccessful, beyond summary statistics. Thus, simulations and qualitative impacts have been substituted in lieu of empirical analyses from the prior RSA program. This missing data has a profound impact on the utility of the Economic Work Group's output for RSA redesign, and any future topic lacking such data will similarly be impacted. This represents a data gap we recommend the Council should give highest priority to closing.

For example, bids for federally managed public resources such as timber sales², oil gas and offshore wind leases³ are part of the public record, which helps ensure transparency and informs management decision-making. Controls that balance data access for resource management needs with business protections work successfully in many other federally managed natural resources. Any data concerning sales of fishing quota should be viewed as in the public interest and is key to understanding program performance. Bidding data information has the potential to provide ancillary benefits such as understanding relative value across sectors and informing multispecies management, as outlined in the Workshop 2 (Funding) white paper presented in Appendix 1.2. The Economic Work Group suggests that this type of information should be routinely collected when possible, as a relatively direct way of building capacity towards true benefit cost analysis. Benefit-cost analysis is the standard by which the value of alternative policies should be assessed within the economics discipline, and is required by law for any federal rule making.⁴

Results

All the background material developed by the Economic Work Group for these workshops and Committee meetings can be found in the Appendix. In Section 302(g), the Magnuson Stevens Act describes the role of the Scientific and Statistical Committee to provide its Council ongoing scientific advice for fishery management decisions. This final report summarizes the RSA redevelopment case study within the following four subordinate SSC areas of engagement: I) Review; II) Scientific Specifications; III) Focused Analyses; and IV) Scientific Advice for Decision Making.

I. Review

Review is one of the SSC's primary functions as a scientific body, with a recent example being peer review of the Recreational Models in support of the Recreational Harvest Control Rule Framework/Addendum. Beyond peer review, the SSC engages in less formal review of processes and scientific products as a normal component of their meetings, such as the annual review of the State of the Ecosystem report. Although not focused on a specific scientific product, much of the work of the Economic Work Group can be viewed through this Review function. For example, the six one-page white papers developed in support of Workshop 1

²<https://www.fs.usda.gov/resourcedetail/bdnf/landmanagement/resourcemanagement/?cid=FSEPRD977995>

³ <https://www.boem.gov/renewable-energy/state-activities/new-york-bight-results-round-round>

⁴ <https://www.archives.gov/federal-register/executive-orders/pdf/12866.pdf>

(Research), found in Appendix 1.1, present a critical review of the historic RSA program, with a focus on addressing perceived performance deficiencies through program design. Nine take away points were identified and are discussed in the section below.

- 1. Peer review and PI communications: before, during, and after completion of RSA projects.**
- 2. Approved statistical design integrity and risk/adaptability**

Contrary to popular belief, all but two of the 44 projects in the historic RSA programs have final reports that were accepted under peer review by NOAA Fisheries. However, a revised RSA program presents an opportunity to rethink how proposals are evaluated to ensure that they meet the standard of "best scientific information available". The following issues in particular should be addressed explicitly in any redesigned program:

- A. What is the structure of the proposal selection process? Is there a pre-proposal stage? How is reviewing structured? What are the review criteria and are these criteria well-matched to reviewer expertise?
- B. How are requests by Principal Investigators (PI) for changes to proposed research evaluated?
- C. How are project outputs (e.g., final and perhaps interim reports) assessed for their scientific validity and use to guide management? Leave it to the journal peer-review process? Ask the SSC or a subgroup of SSC members to review results? Is there an iterative process of peer-review and response by the PI?

3. Financial integrity: No conflicts of interest

The historic RSA program undermined the public's perception of the science/management nexus, working directly against a major objective of the program itself. Full and transparent accountability should be viewed as a non-negotiable pillar of any RSA redesign to ensure the program leads to credible outcomes. Best practices would suggest extending the Conflict of Interest policy to all aspects of the RSA program, if redeveloped. This would include the preliminary ranking of RSA research priorities, engagement of the SSC as an additional pool of peer review expertise, sale of quota, and other decision points in which less than full transparency could reduce public trust in the RSA program. To a great extent, this extension merely entails codifying practices already used by the MAFMC and other bodies related to RSA administration.

However, it could be important to have a formal process by which the conflict of interests are publicly identified and addressed for transparency. The extent to which third parties such as clearing houses, auctioneers, or other entities facilitating the buying and selling of quota could be held to a conflict of interest policy depends on the exact manner in which that entity is engaged. Nevertheless, it would be important that any entity engaged in such a manner understand that public perception is a key metric by which the success of the RSA program will ultimately be judged, and that public conflict of interest policies, or lack thereof, could play a key role in public perception.

4. Consistency with stated Council plans/objectives & linkages to management goals

The Research Steering Committee already has stated certain kinds of research it wants the new RSA to focus on (e.g., more applied; management focused; short term outcomes). In addition, the Council has endorsed the content and process described in its new 5-year Research Plan in October 2020 relative to their seven strategic research themes, including species-specific priorities. The topic areas of assessment priorities have also been linked to the Research Track Assessments, so there is ample raw material to form a consensus of research criteria to sit alongside the stated management goals (State and federal) for each managed stock that ultimately the Council process would endorse for a new RSA program. These are all reasonable objectives. Whatever final process chosen needs to be open, transparent, inclusive, well documented, and managed for performance over time (via accountability/performance measures).

5. Universal data access and transparency

The previous RSA program was a federal financial grant assistance program. Since 2013, a data sharing and management plan is required for all the federal funded projects (OSTP 2013; OMB 2013; NOAA 2013, 2016; EPA 2016). Historically, data access was not a requirement of RSA-funded projects, and data stewardship plans were not weighed in the peer review and evaluation process.

Data sharing is clearly important for ensuring replicability of results, transparency and trust. It is also value-added to the economic investment made, as the data may be useful in research being conducted by other researchers for both Council and non-Council purposes.

6. Application of Benefit/Cost principles in proposal evaluation

Economists look to the value of a research project to point us in the right direction using benefit-cost analyses, and this is where the past RSA program critics conflated "quality" with "usefulness" of the science. Some of the RSA research may have been statistically well designed and analytically correct in their analysis but did not address a relevant scientific question to resolve an assessment dilemma or management impediment, i.e., it lacked value/benefit or relevance. The lesson learned is to ensure a strong linkage/collaboration/partnership between the RSA researcher and the intended consumer of the research results to make sure the research product will be relevant, useful and at a minimum considered in a direct scientific or management application. Future proposals lacking such linkages would be down-rated.

While making the linkages between conducting research and subsequent management consequences is always difficult, with limited research funds it is key to understanding where the Council should invest their RSA funds. The sort of performance metric that research proposals should be asked to submit are those related to their proposed impacts relative to

reductions in model uncertainty, potential impacts on ABC, relaxation of gear and other fishing restrictions, etc. Tools and analyses, such as MSEs, that could be useful to measure such changes should be incorporated where feasible into the projects such that the Council can evaluate its investments adequately.

7. Social equity implications of RSA awards

There is a proposal on the record of the Research Steering Committee to have funds from a species auction only used for research on that species. This resolves the issue of one fishery subsidizing another. However, fisheries with low ex-vessel values that have critical research needs may never be able to generate sufficient funds to support an RSA on their own. Without further changes, RSA could only be supported in "wealthy" fisheries and "poorer" fisheries would have to find other sources of research funds. This could have a differential negative impact on fishing communities reliant on low margin bait and forage fisheries where research is already scant on these species, scientific uncertainty high, and management approach usually ultra conservative as a result. These smaller scale fisheries and their communities receive less political attention than major fishing ports.

In such a case the Council may need to consider a broader discussion of Council standards/priorities of when to use RSA funds in the larger context of other sources of research funds, i.e. Council programmatic/appropriated funds, State funds, other NOAA/ federal grant funds, etc., to ensure that its complete range of FMP research needs get covered. This could include rotating RSAs across different high-valued fisheries and years, or focus on multispecies/ecosystem research rather than single species research to pool resources and take advantage of economies of scale that benefits the entire Mid-Atlantic.

8. Coordination, Integration with State, other Researchers

It is important that potential researchers are aware of related ongoing or planned research in order to avoid duplication and to foster possible collaboration. A relatively straightforward manner to ensure broad communication of ongoing work is utilizing existing Council groups and coordinating bodies to assess duplication and the possibility of collaborative efforts. These groups include Advisory Panels, Fishery Management Action Teams, and the SSC species leads, among others.

9. Decoupling Allowances and Forage and Ecosystem Species

Decoupling the research data collection from the harvest of the RSA quota has important benefits. It allows for allocation of the RSA quota through a market such as an auction, which maximizes revenues available to fund research, and if efficient allocates quota to individuals who value it most. A market mechanism can provide data on quota value across sectors, which can inform allocation discussions. The auction data would also provide information on the economic value harvesters attached to the regulatory waivers associated with the RSA quota, which can be used to assess the cost restrictions imposed on unexempted vessels. There are auction designs that could help generate funds for forage species. This could be done, for

example, by bundling the quota of forage species with the quota for high value species. The bundle would then be auctioned off as a single unit.

Decoupling the research data collection from the use of the RSA quota could also have (serious) drawbacks, especially if the auction market is poorly designed and implemented. All the benefits associated with a competitive market (i.e., auction) rely on a transparent process for allocating that quota. Without participants' trust in the process (e.g., due to collusion, unclear rules for awarding winners, etc.) the auctions will not be competitive and will not maximize revenue. Likewise, all the information associated with the bidding for the quota that could be used for management is only valuable if it is accurate and readily available to the Council. The market for RSA quota should be run by a third party following clear guidelines specified by the Council. Decoupling the data collection from the harvesting of the RSA quota makes enforcement of quota reporting requirements significantly harder due to an increase in the number of participating vessels/ports and increased monitoring/enforcement complexity. Decoupling the data collection from the harvesting of the RSA quota may also prevent researchers from developing long-term relationships with industry counterparts.

II. Scientific Specifications

The SSC provides the Council Scientific Specifications through tasks such as informing research Terms of Reference, and bounding specific analyses to ensure that the science used in management adequately assesses uncertainty (e.g., model structure, parameterization) through robust statistical and mathematical approaches.

In the RSA redevelopment assessment, the Economic Work Group provided a similar function by highlighting the need to set specific goals and objectives for the RSA program as a key first step to the process. The reason being is that the program should be designed to meet specific goals and objectives to maximize probability of success. Without the goals and objectives in hand, there is no way in which to understand how different program design choices would be expected to impact program performance. The Economic Work Group worked collaboratively with Committee leadership and Council Staff to draft and organize alternative goals and objectives, which were drawn predominantly from documentation of the historical RSA program and discussions during Workshops 1 - 3 and Committee meetings. This work ultimately led to the Committee's development, ranking, and adoption of the goals and objectives, as presented in the Committee's April 27, 2022 meeting report.

Additionally, the Economic Work Group framed the choices of program design within the context of trade-offs across the proposed goals and objectives by developing a decision tree around three main design characteristics: 1) Who is involved in the RSA program, 2) How would you allocate/divide RSA quota, 3) What does an RSA trip look like?⁵ The Economic Work Group illustrated how program design decisions affect the ability to achieve differing goals and objectives. The decision tree was used to frame discussions during Workshop 4 (Final

⁵ https://www.mafmc.org/s/6_Ddecision-Tree-Tables_01_2022.pdf

Recommendations), in order to focus the conversation on the components of the program design which engendered the most concern and/or disagreement.

III. Focused Analyses

Relatively frequently, SSC members help to develop novel analyses to inform Council decision-making, often directly in response to a Council request for information. One example is the work currently underway by the SSC's Ecosystem Working Group and collaborators to understand the potential impact of climate on the performance of alternate control rules.

The Economic Working Group developed an analysis in support of Workshop 2 (Funding), presented in Appendix 1.2. Ultimately, the lack of individual bid data from the original RSA quota auctions precluded the development of specific guidance on how much revenue would be expected to be generated from different market designs for quota, and the Economic Work Group strongly suggests that this information be collected within any redesigned program due to the wealth of information on management performance that it provides, as detailed under Topic 9 of the Review section of this document. Nevertheless, the Economic Work Group was able to access summary statistics by which relative trade-offs across market designs could be demonstrated through simulations.

Importantly, the simulated scenarios provided were **hypothetical** and only intended to illustrate relative performance on revenue generation rather than to estimate dollar amounts raised under each approach. The simulations only explore a few plausible scenarios and do not represent an exhaustive list. Each scenario is replicated 1,000 times. The simulations assessed the performance of sequential English auctions for 40 summer flounder lots of 10,000 lbs of quota against bilateral agreements for the same lots. The auction scenario assumed 150 bidders with a seller reserve price of \$1.50/lb. A total of six scenarios were developed for the workshop. The baseline case represents an auction entry fee of \$100/vessel and 4% of sales to administrative costs with recreational and commercial fishermen allowed to bid on all lots and no collusion in bidding strategy. The Separate Com. & Rec RSA Auctions scenario allows commercial fishermen only to bid against other commercial fishermen and recreational fishermen only to bid against recreational fishermen. The Auction with high Admin/Entry costs changes the fees to \$500 and administration costs of 12.5% of sales. The auction with collusion allows groups of bidders to work together by all bidding the lowest value of the group. The Separate Com. & Rec. RSA Auctions with High Admin/Entry costs scenario separates commercial and recreational lots and imposes the \$500 entry fee and 12.5% administrative fee structure. Results of the simulation are presented in Table 1. The results indicate that, relative to bilateral agreements, the performance of an auction depends critically on its design.

Table 1. Comparison of additional revenue generated from an auction relative to bilateral agreements, under alternate assumptions on market structure.

Scenario	Comparison (Excess Revenue in the Auction)
Baseline Case	28%
Separate Com. & Rec. RSA Auctions	15%
Auction with high Admin/Entry costs	17%
Auction with Collusion	20%
Separate Com. & Rec. RSA Auctions with High Admin/Entry costs	5%

IV. Scientific Advice for Decision Making

Recent work by an ad hoc sub-committee of the SSC on elucidating impacts of alternatives being considered under the Recreational Harvest Control Rule Addendum/Framework presents an example of how the SSC provides Scientific Advice for Decision Making. The Council asked the SSC to answer very specific questions around the relative risk of alternate harvest control rule specifications.

To some extent, the Economic Work group functioned in that capacity in support of RSA Workshop 3 (Monitoring and Enforcement). In the material for that workshop⁶, the Economic Work Group highlighted the incentives underlying the mislabeling that ultimately doomed the original RSA program.

The goal of the Workshop 3 was to identify potential program modifications that could prevent recurrence of previous enforcement issues. The Economic Work Group was asked to outline what role economics could play in identifying effective program modifications. Economic theory can provide guidance through theoretical models of mislabeling. Fishermen will mislabel if the expected loss (probability of being caught, indicted, and convicted multiplied by the penalty once convicted, which could include not only fines but also subjective costs of jail time or loss of social status) is less than the expected benefit from mislabeling (probability of not getting caught multiplied by the profits generated from the additional fish sold). This suggests two main levers by which mislabeling can be curtailed: 1) increasing the probability of being caught, indicted and convicted, 2) Size of the penalty. Neither of these variables are directly under control of the Council or Office of Law Enforcement, which means that in reality only increased monitoring & enforcement effort is an option, limited by budgets as it is.

However, it should be noted that numerous proposals coming out of Workshop 3 would be expected to decrease the cost of program monitoring and enforcement. Although not without

⁶ <https://www.mafmc.org/s/RSA-workshop-3-enforcement-summary-report-Final.pdf>

tradeoffs in program performance, as highlighted in an Economic Work Group Memo to the Committee⁷, changes in program administration which decrease monitoring and enforcement costs are likely warranted given the serious issues exposed by the previous RSA program enforcement actions.

Conclusion

The Economic Work Group's engagement in the Research Set Aside program illustrated how the SSC's expertise can be utilized by the Council to inform management decision-making. The roles of Review, Scientific Specifications, Focused Analyses, and Scientific Advice for Decision Making are traditional for the SSC and should be extended more readily to the economic discipline. The work outlined in this report is not exhaustive of the work undertaken by the Economic Work Group. For example, the Economic Work Group illustrated trade-offs across RSA program goals based on different design decisions heading into Workshop 4 (Final Recommendations)⁸ in something akin to a role as Scientific Advisor. The roles themselves can also be blurred, as most typologies ultimately fail. However, the report highlights major contributions of the Economic Work Group to the RSA redevelopment discussion as an illustrative case study of how economic expertise can be further utilized in the future.

As with any science, the quality of the analyses, recommendations, and ultimate advice that the Economic Work Group provides the Council will depend on the data available. It is important for the Council to begin collecting economic data to further inform management decisions. The SSC has previously submitted recommendations and priorities to the Council for economic data collection, and if the Council decides to act on those recommendations, we would welcome the opportunity to collaborate on a plan of action.

⁷ https://www.mafmc.org/s/5_Memo_to_RSC_RSA-Decision_tree_01_11_22.pdf

⁸ https://www.mafmc.org/s/Memo_SSC_Econ_WG_Workshop_4_Feb_16_2022.pdf