

**COMMENTS AND RECOMMENDATIONS
ON THE
NOAA RESTORE ACT SCIENCE PROGRAM'S**

PERFORMANCE METRICS PLAN

AND

COORDINATION PLAN

Draft report submitted to:

**Science Advisory Board
National Oceanic and Atmospheric Administration**

Draft report submitted by:

**Gulf Coast Ecosystem Restoration Science Program
Advisory Working Group**

Date submitted:

1 September 2015

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Introduction and Charge to Working Group

The Gulf Coast Ecosystem Restoration Science Program Advisory Working Group (RSPA WG or Working Group) is one of six Working Groups charged with advising the NOAA Science Advisory Board (SAB).

The RSPA WG Terms of Reference

(http://www.sab.noaa.gov/Working_Groups/standing/docs/2013/RSPA WGTermsOfReference_Final_SABapprovedJul2013.pdf) stipulate “the RSPA WG will function to provide informed regional advice to the NOAA RESTORE Act Science Program (Program) on Gulf of Mexico RESTORE---related ecosystem science and monitoring. It shall also formally coordinate between the multiple organizations conducting RESTORE---related science as prescribed by the RESTORE Act.”

The charge to the RSPA WG was to review the draft NOAA RESTORE Act Science Program’s *Performance Metrics Plan* and *Coordination Plan* and to submit initial review comments and recommendations to the NOAA SAB. In a three---day, in---person meeting at NOAA’s National Marine Fisheries Service (NMFS) Southeast Regional Office in St. Petersburg, FL, the RSPA WG reviewed the *Performance Metrics Plan* and the *Coordination Plan* drafted by NOAA. To evaluate the two documents, the Working Group spent approximately one day reviewing and assessing the *Performance Metrics Plan* and one day reviewing and assessing the *Coordination Plan*. With support from the NOAA SAB and the RESTORE Act Science Program staff, all meeting discussions were recorded. The Working Group Co---chairs were tasked to review all comments and recommendations from the meeting. The Working Group Co---chairs drafted an initial version of this report and vetted the findings and initial recommendations with the Working Group. Developed and reviewed by the Working Group membership, this report to the NOAA Science Advisory Board represents a summary of the comments and recommendations related to the *Performance Metrics Plan* and the *Coordination Plan*.

Comments and Recommendations

Four overarching comments of the RSPA WG are:

- It is critical to define how NOAA is to measure the performance of RESTORE Act activities as a precursor to planning coordination and collaboration within NOAA and with NOAA’s external RESTORE Act partners.
- The *Performance Metrics Plan (PMM)* must be revised to include both quantitative and qualitative metrics assessing the magnitude, quality and impact of long---term outcomes (e.g. restoration of healthy ecosystems) of the Program.

- The *Coordination Plan (CP)* must address coordination and integration efforts both within NOAA and among NOAA’s external RESTORE Act partners.
- The two plans must be strongly and clearly integrated to ensure that performance assessment and coordination promote the best available science and development of decision---support tools for a broad range of end users to support both the RESTORE Act’s vision for “the long---term sustainability of the Gulf of Mexico ecosystem and the communities that depend on it” and its mission “to carry out research, observation, and monitoring to support, to the maximum extent practicable, the long---term sustainability of the ecosystem, fish stocks, fish habitat, and the recreational, commercial, and charter---fishing industry in the Gulf of Mexico”.

Performance Metrics Plan

The legislative requirements of the RESTORE Act stipulate that the NOAA Restore Science Program will support science and coordination necessary for better understanding and management of the Gulf of Mexico (GoM) ecosystem, leading to *healthy, diverse, sustainable, and resilient estuarine, coastal and marine habitats and living resources (including wildlife and fisheries); and resilient and adaptive coastal communities*. The Program anticipates that by accomplishing this goal two outcomes will be achieved: the GoM ecosystem will be understood in an integrative, holistic manner; and the management of, and restoration activities within, the GoM ecosystem will be guided by this ecosystem understanding.

The purpose of Restore Science Program performance metrics is to assess progress toward the integrative, holistic understanding and management of, and restoration activities within the GoM ecosystem. The plan establishes ten (10) long---term research priorities, which will guide how the Program invests its funds. The Plan’s long---term research priorities and the integrated metrics suggested by the NOAA Restore Science Program Office are:

- [Comprehensive understanding of ecosystem services, resilience, and vulnerabilities of coupled social and ecological systems](#)
 - number of resource management or restoration decisions that consider results from Program sponsored research
 - number of Gulf of Mexico habitats with completed inventory of ecosystem services the habitat provides
 - number of peer---reviewed publications
 - performance review rating of “satisfactory” or higher
- [Construct management---ready and accessible ecosystem models](#)
 - number of resource management or restoration decisions that consider results from Program sponsored research
 - number of decision support tools/information products that translate research outputs into ready---to---use information for resource managers

- number of Gulf of Mexico modeling advancements
- number of peer-reviewed publications
- performance review rating of “satisfactory” or higher
- [Improve monitoring, modeling, and forecasting of climate change and weather effects on the sustainability and resiliency of the ecosystem](#)
 - number of resource management or restoration decisions that consider results from Program sponsored research
 - number of decision support tools/information products that translate research outputs into ready-to-use information for resource managers
 - number of improvements to the characterization of living coastal and marine resource distribution and habitat use
 - number of Gulf of Mexico modeling advancements
 - number of peer-reviewed publications
 - performance review rating of “satisfactory” or higher
- [Comprehensive understanding of freshwater, sediment, and nutrient flows and impacts on coastal ecology and habitats](#)
 - number of resource management or restoration decisions that consider results from Program sponsored research
 - number of Gulf of Mexico modeling advancements
 - number of improvements in our understanding of the distribution, movement and impact of freshwater, sediment and nutrients in the Gulf of Mexico
 - number of peer-reviewed publications
 - performance review rating of “satisfactory” or higher
- [Comprehensive understanding of living coastal and marine resources, food web dynamics, habitat utilization, protected areas, and carbon flow](#)
 - number of improvements to the characterization of living coastal and marine resource distribution and habitat use
 - number of synthesis studies focused on the Gulf of Mexico
 - number of peer-reviewed publications
 - performance review rating of “satisfactory” or higher
- [Develop long-term trend and variability information on the status and health of the ecosystem, including humans](#)
 - number of resource management or restoration decisions that consider results from Program sponsored research
 - number of improvements to observing and monitoring in the Gulf of Mexico, including management of observing and monitoring data
 - number of synthesis studies focused on the Gulf of Mexico
 - number of peer-reviewed publications

- performance review rating of “satisfactory” or higher
- [Develop, identify, and validate system---wide indicators of environmental and socioeconomic conditions](#)
 - number of resource management or restoration decisions that consider results from Program sponsored research
 - number of decision support tools/information products that translate research outputs into ready---to---use information for resource managers
 - number of peer---reviewed publications
 - performance review rating of “satisfactory” or higher
- [Develop decision---support tools to assist resource managers with management decisions planned to sustain habitats, living coastal and marine resources, and wildlife](#)
 - number of resource management or restoration decisions that consider results from Program sponsored research
 - number of decision support tools/information products that translate research outputs into ready---to---use information for resource managers
 - number of improvements to the characterization of living coastal and marine resource distribution and habitat use
 - number of peer---reviewed publications
 - performance review rating of “satisfactory” or higher
- [Network and integrate existing and planned data and information from monitoring programs](#)
 - number of resource management or restoration decisions that consider results from Program sponsored research
 - number of improvements to observing and monitoring in the Gulf of Mexico, including management of observing and monitoring data
 - number of peer---reviewed publications
 - performance review rating of “satisfactory” or higher
- [Develop and implement advanced technologies to improve monitoring](#)
 - number of resource management or restoration decisions that consider results from Program sponsored research
 - number of improvements to observing and monitoring in the Gulf of Mexico, including management of observing and monitoring data
 - number of peer---reviewed publications
 - performance review rating of “satisfactory” or higher

RSPA WG Assessment of Proposed NOAA Performance Metrics

The RSPA WG concluded that the performance metrics contained in the draft *Performance Metrics Plan*, while a good initial step, were insufficient to guarantee that the investments in science to be

made under the Restore Act umbrella will result in the two desired outcomes. The RSPAWG recognized that the number and breadth of the outputs and outcomes identified in the Restore Act Science Plan is a substantial challenge to developing a clear, concise and coherent list of Performance Measures. The RSPAWG recommends that the final *Performance Metric Plan* should:

- 1) Include both quantitative and qualitative performance measures. Quantitative measures are attractive because they are easy to measure and may provide a clear indication of progress toward objectives. However, the Restore Act goals require fundamental changes in the structure and behavior of the socio---environmental system that relies on the GoM ecosystem. Measuring the required changes in the socio---environmental system will demand qualitative descriptive indices of performance. Only by integrating quantitative and qualitative performance measures can NOAA understand whether progress is being made to achieve the Restore Act goals and outcomes.
- 2) Adapt to reflect the changing nature of specific scientific objectives in future funding opportunities. The specific funding objectives of individual funding opportunities that will be announced under the Restore Act are not yet known. Thus, the performance metrics must provide flexibility to include outputs that are as yet unknown.

To develop a suite of performance metrics that have the two desired attributes identified above the RSPAWG explored and discussed numerous metric models, including the Logic Model framework presented by the program office. The RSPAWG considered other models used in other large organizations and programs also, including snowball metrics (<http://www.snowballmetrics.com/>), altmetrics (<http://support.altmetric.com/knowledgebase/articles/84649---about---altmetric---and---the---altmetric---score>), bibliometrics (<https://en.wikipedia.org/wiki/Bibliometrics>), STAR metrics (https://en.wikipedia.org/wiki/STAR_METRICS), and the U.S. National Science and Technology Council recommended Research Performance Progress Report metrics (RPPR), which are a proposed “universal” or standardized template with mandatory and optional elements for reporting scientific achievements (<http://www.nsf.gov/bfa/dias/policy/rppr/>).

The RSPAWG recommend consideration of an RPPR framework and developed a draft set of metrics to complement the elements. The draft includes: socio---economic metrics to support goals of resilient and adaptive coastal communities; balance of qualitative and quantitative metrics for the narrative and summary; hierarchical structure; language for intended audience; and metrics for social sciences and behavioral impacts.

RSPAWG Proposed Research Performance Progress Report Metrics

The proposed performance metrics outlined below will allow NOAA to assess whether satisfactory

progress has been made across all long-term research priorities during anticipated reporting periods.

ACCOMPLISHMENTS: What was done? What was learned?

- **What are the major goals and objectives?**

List the major goals and objectives as approved by the agency. If milestones/target dates for important activities or phases were approved, identify these milestones/target dates and show actual completion dates or the percentage of completion.

- **What was accomplished under these goals and objectives?**

- 1) *Major activities: List activities.*
- 2) *Publications --- List and enumerate only publication(s) resulting from the work under award including peer-reviewed articles or papers appearing in scientific, technical, professional journals or in periodically published proceedings of a scientific society, a conference, etc..*
- 3) *Other products – list, enumerate and describe observational or monitoring databases, models, physical collections, audio/video products, educational aids, technologies or techniques, etc.*
- 4) *Significant results – list major findings, developments, or conclusions (both positive and negative); and key outcomes or other achievements resulting from the research. Link the key findings to specific publications and products.*
- 5) *Include a discussion of stated goals not met and adaptive management procedures to correct the trajectory.*

- **What collaborating individuals and organizations worked on the project?**

- 1) *What individuals and organizations participated, collaborated or coordinated with the project? Describe partner organizations – academic institutions, nonprofits, industrial or commercial firms, state or local governments, schools or school systems, or other organizations that have been involved with the project and how they contributed or coordinated.*

- **How have the results been disseminated to communities of interest?**

- 1) *List and enumerate the entities to which results were disseminated. Include descriptions of results communicated and methods of communication other than scientific publication (e.g., presentations, print news media, brochures, web sites, public meetings, etc.).*

- **What is the impact?**

Describe distinctive contributions, major accomplishments, innovations, successes, or any change in practice or behavior that has come about as a result of the program relative to:

- 1) *Increasing the body of scientific knowledge and technology;*
- 2) *Improving public knowledge, attitudes, skills, and abilities;*
- 3) *Changing behavior, management practices, decision making, policies (including regulatory policies), or social actions;*
- 4) *Altering social, economic, civic, or environmental conditions.*
- 5) *Enlarging the pool of people trained to develop knowledge and technology or put it to use;*

6) *Improving the physical, institutional, and information resources available to stakeholders.*

- **What do you plan to do during the next reporting period to complete remaining goals and objectives?**

1) *List activities, objectives and timelines for accomplishment*

The research performance progress report metrics proposed by RSPAWG for the NOAA Restore Act Science Program are uniformly applicable to the ten long-term research priorities. The questions are distributed across the entire research workflow needed to address the long-term priorities and should elicit answers that will provide a balance of quantitative and qualitative measures to assess and compare research progress toward the integrative, holistic understanding and management of the GoM ecosystem.

The RSPAWG recognizes that the task of tracking the impact of individual projects after their funding is completed remains a fundamental challenge. However, the RSPAWG strongly encourages NOAA to explore ways in which communication with funded investigators, with NOAA staff and external NOAA partners can be maintained to track the impact of individual projects with regard to changing behaviors within the broader socio-environmental system that relies on the GoM ecosystem.

Coordination Plan

In its review and assessment of the *Coordination Plan (CP)* the RSPAWG identified three critical reasons why effective coordination efforts must be integral to the RESTORE Act Science Program:

- The authorizing language of the RESTORE Act must
 - establish and carry out the Gulf Coast Ecosystem Restoration Science, Observation, Monitoring, and Technology program;
 - avoid duplication of other research and monitoring activities; and
 - coordinate projects and activities between the program and other Federal and State science and technology programs, as well as with the centers of excellence.
- Coordinated activities should
 - minimize duplication of effort;
 - identify and fill gaps in needed science; and
 - facilitate sharing and integrative analyses of science findings and their application to management.
- Effective intermediate-term management outcomes and long-term restoration outcomes require that the Gulf of Mexico (GoM) ecosystem, and connected ecosystems, are understood in an integrative, holistic manner.

Further the RSPAWG supports the assertion of the *CP* that Program coordination efforts must:

- Be more comprehensive and active than a simple awareness of RESTORE Act activities.
- Be inclusive of
 - internal NOAA programs, needs and activities;
 - RESTORE Act established monitoring, science and management activities;
 - external entities with existing and/or planned monitoring, science and management activities in the GoM; and
 - entities with a need for science and decision---support tools for management or restoration of the GoM ecosystem.

Challenges To Coordination Efforts

The RSPAWG concurs with the challenges to coordinating as identified in the *CP* are:

- No singular entity has authority to coordinate across all initiatives.
- Individual program restrictions on what activities can be funded and who can carry out funded activities.
- Logistical limitations on available time and resources to support coordination efforts.
- The need for transparency and avoidance of potential conflicts of interest.

In addition to the above challenges, the RSPAWG identified additional challenges which should be recognized in the *CP*:

- The *CP* must include all the “players” within NOAA, RESTORE Act established activities, and having the need for science and decision---support tools for management or restoration of the GoM ecosystem.
 - While many of these players may sit within federal, state or local agencies, institutions or universities located in the GoM region, many may reside outside of the GoM region.
- The *CP* must tie the all of the individual components, i.e., “little project pieces” together.
 - All established and supported activities and science and management needs are important; therefore, it is as important to keep track of the smaller activities as it is the largest of activities.

Recommendations to Support Coordination Efforts

The RSPAWG support the coordination activities as identified in the *CP*:

- *Ad hoc Coordination Forum* led by the Program.

- Regional Funders Forum
- Restoration Science Program Advisory Working Group
- Support for broad to specialized topical science, management, and science-to-management workshops, conferences and symposia.

In addition to the above coordination activities, the RSPAWG has identified additional recommendations for consideration in support of successful coordination efforts:

- The *Performance Metrics Plan* must include both quantitative and qualitative metrics assessing the magnitude, quality and impact of coordination efforts.
- A crosswalk between RESTORE Act elements 1603, 1604 and 1605 is critical, because there are many programs involved in GoM research and recovery. In addition there are restoration activities funded outside of the RESTORE Act, such as programs funded by criminal fines.
 - A crosswalk would help identify gaps and reduce redundancies that could help to prioritize research.
- Ensure the mechanism for RESTORE Act funding partners to coordinate proposed activities and, if appropriate, share draft Federal Funding Opportunity (FFO) announcements.
 - The development and release of a joint 18 to 24 month schedule of FFO announcements would facilitate planning and collaborations amongst researchers.
- Develop and maintain an information portal containing metadata on all RESTORE Act funded projects regardless of the funding source.
 - Evaluate the utility of the Deepwater Horizon Project Tracker (<http://www.dwhprojecttracker.org/>).
- For all RESTORE Act funded activities encourage consistent protocols for monitoring / observing activities and data management efforts.
 - There are already in place a number of coastal and ocean observing data management activities and data portals supporting GoM monitoring activities (e.g. GOMA, SECOORA, GCOOS, LA SWAMP, TABS) and the utility of these systems should be assessed.
- Utilize existing and well-respected avenues for outreach including NOAA's National Estuarine Research Reserve System and Sea Grant Consortium programs and EPA's National Estuary Programs.

Summary

In summary, the RSPAWG commends the efforts of the NOAA RESTORE Act Science Program to develop a comprehensive set of performance metrics and to ensure coordination of activities within NOAA and external RESTORE Act partners. Specifically, the RSPAWG recommends that:

- the *Performance Metrics Plan* must be revised to include both quantitative and qualitative metrics assessing the magnitude, quality and impact of long-term outcomes (e.g. restoration of healthy ecosystems) of the Program; and
- the *Coordination Plan* must address coordination and integration efforts both within NOAA and among NOAA's external RESTORE Act partners.

The expansion of the performance metrics as proposed by the RSPAWG is intended to address the need for both quantitative and qualitative metrics assessing the magnitude, quality and impact of long-term outcomes (e.g. restoration of healthy ecosystems) of the Program. In its *Coordination Plan*, NOAA has clearly identified the need for, challenges of, and opportunities for the coordination of partners and activities in support of the vision and mission of the RESTORE Act. Recommendations presented by the RSPAWG are intended to complement and enhance coordination efforts as proposed in the *Coordination Plan*.