

NOAA Education Partnerships 2013 Portfolio Review Executive Summary

August 2014

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EXECUTIVE SUMMARY

This Partnerships Working Group (PWG) study responds to recommendations from the National Research Council's (NRC) NOAA's Education Program: Review and Critique (2010) for NOAA to better understand how NOAA Education partnerships are formed, fostered, sustained, and evaluated. The NRC report noted that while partnerships were mentioned as a means of achieving NOAA Education strategic goals and objectives, "there is limited evidence that current evaluations conducted by NOAA account for the influence of partnerships in achieving outcomes and impacts. In addition, most evaluations do not attempt to observe the underlying partnership or explore this as a factor in assessment" (p. 124). The goal of this study is to provide information and recommendations for the NOAA Education Council (Council) and NOAA Education community to use in making strategic decisions regarding NOAA Education partnerships.

The PWG was formed to conduct a Partnerships Portfolio Review (PPR). The PWG was charged with reviewing and evaluating a portfolio of NOAA Education partnerships. To carry out this charge, the PWG reviewed existing documents, revised and implemented a survey, and developed case studies. From this analysis, the group identified important elements of successful partnerships that can be used to evaluate existing partnerships and inform the development of future partnerships. The lessons learned from this review inform a set of actionable recommendations for the Council to consider.

The PWG conducted the evaluation study from January 2013 to February 2014. The evaluation approach was a participatory process, focusing on the involvement of staff from multiple programs in the evaluation of NOAA Education partnerships with the support of professional evaluators. Members of the PWG examined peer-reviewed documents and white papers regarding partnerships, revised and implemented a survey, analyzed survey data, prepared case studies, and developed actionable recommendations.

METHODS

Research questions were developed by the PWG and evaluation leads at an initial meeting in January 2013 and reviewed by the PWG:

1. How can NOAA partners help complete our mission?
2. In what ways does NOAA maximize its Education partnerships?
3. What commonalities are shared by NOAA Education high-return partnerships?
4. What tools and strategies are needed to foster an effective NOAA Education partnership portfolio?

Based on the research questions, the PWG leads and evaluation leads outlined a sequential, mixed-methods design to help answer the research questions. The results of the quantitative component (e.g., survey) would provide a broad view of the portfolio. The qualitative component (e.g., case studies) would examine partnerships by analyzing mechanisms and outcomes related to success.

NOAA EDUCATION PARTNERSHIP SURVEY

Based on previous work, the PWG reviewed an existing NOAA Education Partnership draft survey and then defined the partnerships and assessment criteria. The NOAA Education Partnership Survey was distributed to members of the Council and their education networks in late spring/early summer 2013 with a close date of July 1, 2013. A total of 67

partnerships were identified in the survey responses. It is important to note that this was not a comprehensive survey, and some programs did not respond to the survey at all. Each Council member could provide up to five examples of high-return partnerships.

Fourteen analysis questions were developed by evaluation leads to help guide working group members in analyzing the survey data. The questions were developed based on the Partnership Survey items, survey responses and evaluation questions. The answers provided a broader understanding of who NOAA Education partners with, the strategies for partnering, and the resulting outcomes of the partnership. The 14 questions were:

1. With whom does NOAA Education partner?
2. What types of institutions are represented in NOAA Education partnerships?
3. How does NOAA Education formalize partnerships?
4. What is the current status of NOAA Education partnerships?
5. How long have NOAA Education partnerships been in place?
6. Where are NOAA Education partners?
7. How much funding has NOAA contributed to the partnership?
8. How much staff time has NOAA contributed to the partnership?
9. Does the partner share NOAA Education goals and objectives?
10. Does the partner align with NOAA Education output measures?
11. Does the partnership allow NOAA to reach new audiences?
12. Does the partnership provide access to expertise, facilities and technology NOAA does not have?
13. Does the partnership allow NOAA to provide unique expertise and/or opportunities?
14. Could the outputs and activities be achieved in the absence of the partnership?

DEVELOPMENT OF CASE STUDIES

The PWG identified case studies that represented broad categories of partners identified in the survey data and to which working group members could easily access data. The PWG had limited time and needed to rely on the working group to document partnership case studies (i.e., convenience sampling). With examples of case study partnerships selected, three broad categories were identified as core models based on the type of partner: 1) informal education institutions; 2) nonprofit organizations; and 3) partnerships with a local focus.

Core Model 1: Partnerships with Informal Education Institutions

NOAA Education programs have numerous partnerships with informal education institutions (e.g., zoos, aquariums, museums). Respondents to the NOAA Education Partnerships survey indicated 32% of partnerships reported were of this type. Partnerships with informal education institutions help NOAA: 1) increase access and reach to broader audiences and diverse populations; 2) better distribute NOAA science, data, technology and issues important to NOAA (e.g., via exhibits, websites); and 3) facilitate broader impacts of NOAA science and scientists. A key component of successful high-return partnerships with informal education institutions is communication between specific points of contact for each partner. The contacts are committed to sustaining the partnership, and may or may not have been integral to the formation of the partnership. The mutual points of contact can also facilitate opportunistic collaborations to capitalize on the capabilities each partner

brings to the relationship. Examples of NOAA Education high-return partnerships with informal education institutions are noted below.

- Case Study 1A: NOAA and the Exploratorium
- Case Study 1B: NOAA Office of National Marine Sanctuaries (ONMS) and the Oakland Museum of California (OMCA)
- Case Study 1C: NOAA and Science on a Sphere® (SOS)

Core Model 2: Partnerships with Nonprofit Institutions

Partnerships with nonprofit institutions were indicated in 25% of the responses to the NOAA Education Partnerships survey. NOAA Education partnerships with nonprofit organizations are generally more targeted than partnerships with informal education institutions in terms of audience (e.g., inservice teachers, children) and content (e.g., atmospheric and ocean science; surviving severe weather events). For NOAA Education, such specific endeavors have resulted in 1) long-term involvement of partners and participants; 2) a product that has been leverageable for additional support (funding and/or in kind) from other federal agencies and partners; and 3) involvement of highly recognized celebrities in the support and promotion of projects. Key components to success include meaningful evaluation and support from program leadership. Two exemplary case studies are noted below.

- Case Study 2A: NOAA and the American Meteorological Society (AMS)
- Case Study 2B: National Weather Service (NWS) and PLAN!T NOW

Core Model 3: Partnerships with a Focus on Local Issues

Given the geographic and content diversity (e.g., ocean, coast, Great Lakes, atmosphere, weather) of NOAA Education programs as well as the individual education mandates within specific programs, forging partnerships with a focus on local issues is a unique strength of NOAA. Partnerships with a local focus highlight the reach of NOAA, and survey respondents indicated that 61% of the partnerships take place at the local or state level (40% local, 21% state). Such partnerships allow NOAA to: 1) capitalize on interest in local issues directly connected to agency mission and goals; 2) encourage local and often sustainable collaboration among scientists, educators, volunteers and others on common community issues; and 3) leverage local and/or regional funding and resources (e.g., volunteers). Key components for success include established personal relationships - the “people factor” - between key individuals knowledgeable about the local issues and the leveraging of in-kind support of resources. The following two case studies demonstrate the capacity and effectiveness of partnerships focused on local issues.

- Case Study 3A: EPA Great Lakes National Program Office (GLNPO) and the Center for Great Lakes Literacy (CGLL)
- Case Study 3B: Channel Islands National Marine Sanctuary (CINMS) and Channel Islands National Park (CINP)

DISCUSSION

Evaluation activities were conducted to clarify the definition of NOAA Education high-return partnerships, identify partnership activities, and identify case studies to understand the mechanisms that operate within a high-return partnership. This section

summarizes the findings based on the research questions and data collected.

Research Question 1: How can NOAA partners help meet our mission?

Partners can help complete the NOAA mission by extending the reach of programs, and by increasing program efficiency and effectiveness. These outcomes cannot be achieved by NOAA alone, and therefore partners are critical in meeting NOAA’s mission.

Reach

NOAA cannot hope to engage the entire Nation in terms of education and outreach. Partnerships expand NOAA’s reach, leveraging partners’ own relationships with audiences. Understanding the audience of the partner and the kind of relationship they have with them is an important part of partnership formation. A heretofore unacknowledged benefit is that an education partnership can move beyond education to extend NOAA’s operational reach. Reach can also be considered geographically. NOAA’s mission covers the entire United States, U.S. territories, its oceans and coasts, and the mission differs in each region.

Efficiency

NOAA must make the most its resources, funding, and staff. NOAA Education cannot expect additional resources in order to reach and educate the Nation in our mission. Partnerships increase efficiency of allocated resources. By combining forces with partners that may also be resource-limited, NOAA and its partners can work together on a shared mission. The characteristics of NOAA and the partner must be complementary and symbiotic. Authority and organizational characteristics can be critical to success when they complement each other.

Effectiveness

NOAA is not an expert in everything and cannot expect to hire and bring experts for everything it needs to accomplish. Partnerships improve program effectiveness by leveraging a partner’s expertise. The core business of a partner might be to develop interactive science exhibits. This will never be the core business of a federal agency, yet NOAA can partner with others and bring its expertise in science content, which is NOAA’s core business. Leveraging the strengths of each partner should result in a more effective program, experience or engagement with the target audience than if each partner were to go it alone.

Research Question 2: How does NOAA maximize NOAA Education partnerships?

Maximizing partnerships can occur in a variety of ways, by providing funding and staff time, leveraging resources, increasing reach or maximizing personal relationships (i.e., the “people factor”). Not all partnerships bring in funding, but many partnerships provide reach beyond what could be accomplished in the absence of the partnership. A clear and significant finding of this study is the important role that human and social capital plays in maximizing NOAA Education high-return partnerships. This is echoed by the NRC (2010) report which noted that “people are NOAA’s most valuable assets” (p. 149). Another key finding of this study is the importance of the maturity of the partnership. While not necessarily merely measurable in years, a mature NOAA Education high-return partnership provides significant returns, often with minimal but necessary maintenance.

Research Question 3: What qualities are shared by NOAA Education high-return partnerships?

Several characteristics are common among NOAA Education high-return partnerships. The case studies illustrate many of these characteristics, and commonalities were further categorized into performance or organizational aspects.

Performance aspects, or how the partnership is formed, staffed, and extended, indicative of a high-return partnership include:

- Partners leverage NOAA dollars to secure funding and in-kind support from other sources;
- Staff time invested by partners is equal to or greater than NOAA staff time;
- Partnership as networks a large number of multiple partners;
- Partnership opens the doors to new partners;
- NOAA resources are used in new and different ways; and
- Opportunities are capitalized on as they arise.

Organizational aspects, or how the partners work together and manage the partnership, indicative of a high-return partnership include:

- Successfully forging gaps between different organizations (i.e., NOAA and partner);
- Partner learns about NOAA and the capabilities of the agency;
- Partner successfully navigates NOAA bureaucracy and increases connectivity to different parts of NOAA; and
- Communication occurs through primary representatives from each partner.

Research Question 4: What tools and strategies are needed for an effective NOAA Education partnership portfolio?

A variety of tools and strategies are necessary for an effective partnership portfolio. The following NOAA Education partnership-specific strategies were identified based on this study:

NOAA Education partnerships are most effective when there is:

- Regular, ongoing communication between NOAA and the partner(s);
- An emphasis on meaningful evaluation;
- Support from both NOAA and partner leadership; and
- A cultivation of critical personal relationships.

When forming a new or transitioning an existing NOAA Education partnership, the following should be reviewed:

- Partnership definition and criteria;
- Partnership mechanisms for both formation and dissolution; and
- Programming goals and resources.

The following are essential for an effective NOAA Education partnership portfolio:

- Involving NOAA General Counsel when providing resources or support beyond normal duties;
- Determining whether a MOU or MOA is the best to use and knowing that

- mechanisms can change over time; and
- Establishing a point of contact in each NOAA line office to facilitate partnership formation.

RESPONSE TO NRC RECOMMENDATIONS

Part of the context and rationale of this study was to address the recommendations from the National Research Council's (NRC) NOAA's Education Program: Review and Critique (2010) to better understand how NOAA Education partnerships are formed, fostered, sustained, and evaluated. As the report notes, "[p]artnerships will be critical if NOAA is to reach the ambitious goals identified in the strategic plan, because the agency does not have the resources to achieve its goals on its own" (p.60). Accordingly, a stated goal of this report was to provide information and recommendations to the NOAA Education Council and NOAA Education community to use in making strategic decisions regarding NOAA Education partnerships.

The NRC report covered an array of topics regarding NOAA Education. A subset of recommendations relevant to partnerships were selected from the report subtopics of NOAA's role in education, education goals and outcomes, and education evaluation practices. The pertinent recommendations are outlined below, along with a response based on information collected and analyzed for this study.

NRC Recommendation I.1

NOAA should fulfill its role in education through the use of...partnerships with local and state education infrastructure, academic institutions, government agencies, business and industry, and private-sector and nonprofit organizations; and the agency's global science and international partnerships.

The results of this study indicate that NOAA Education staff have been and continue to forge partnerships with a variety of local, state, regional and national institutions and agencies. Sixty-seven partnerships were identified in this study, some spanning greater than 20 years.

As noted in the NRC report (2010), "the resources [NOAA] manages provide vast and important education opportunities, and management of of these environments provides the agency with connections to the surrounding communities and organizations" (Conclusion I.4, p.135). Indeed, the NRC report further articulates "NOAA's ability to make good use of its education resources and assets to engage a substantial number of education activities is impressive. Most partnerships with educational organizations, other agencies, and institutions with complementary STEM expertise have enhanced the reach and impact of NOAA's education efforts. These partnerships have often yielded additional expertise, educational tools, mechanisms for dissemination, and matching funds" (p. 148). Nearly every case study outlined in this study provided specific examples of such partnerships. The additional data from this study can support implementation of this recommendation, as NOAA Education now has a road map to foster and facilitate efficient and effective education partnerships across line offices and on multiple scales (i.e., local, state, regional, federal and international).

NRC Recommendation I.3:

Within the constraints of NOAA's mandates in education, the agency should continually evaluate where it leads, collaborates, follows or declines to participate in partnerships with others. These decisions should be guided by consideration of the agency's role, assets, resources, and priorities in education and the strengths and missions of other agencies, institutions, and organizations engaged in education.

As candidly recognized by the NRC Committee, “the Education Council does not have budgetary or institutional control over the education efforts of NOAA line and program offices”, and several have individual education mandates within their legislation, often with “local components with local control” (p.143).

Because there is no common data collection and the NOAA Education partnership portfolio is not under one authority, it is difficult to shape the portfolio as recommended. This study is the first attempt to examining the NOAA Education Partnership portfolio. The working group's recommendations in this study are based on how the NOAA Education community operates, and therefore include providing training and guidance as needed and to individuals.

NOAA Education can focus on assuring that partnerships have clear, mutually agreed upon goals, make wise use of NOAA resources, and provide a reach that NOAA would not have in the absence of the partnership. Additionally, the NRC Committee (2010) concluded that “NOAA can play a supporting role in state and local education” and should “focus on productive partnerships to support local and state education systems while promoting NOAA's education and stewardship mission.” Furthermore, the report notes “education efforts are more likely to be productive if they align with national and local education needs” and “make better use of assets and programs that already exist” (Conclusion I.7, p. 136). Data from this study support these conclusions, and that NOAA Education has case studies as examples from which to draw to further implement this recommendation on a larger scale.

NRC Recommendation II.2

To reach NOAA's environmental literacy goal, the Education Council should develop its implementation plan and future revisions of the education strategic plan to... articulate how NOAA education programs will draw on the scientific, engineering, research, and other expertise accessible within the agency as well as in the broader community.

A component of this recommendation focuses on partnerships internal to NOAA and was considered beyond the scope of this study. However, data from NOAA Education Partnership Survey and case studies included in this report would provide an excellent foundation upon which to further explore these important contributions as related to the broader community.

NRC Recommendation IV.1

The Education Council should continue to improve the evaluation expertise of its education program managers, contract with external evaluators for summative evaluation, and require the incorporation of the most appropriate and rigorous evaluation strategies during program development to guide design, continual improvement, and delivery of its education programs.

While not directly related to the scope of this study, improving the evaluation expertise of members of the PWG was a goal for the Evaluation leads. In developing the collaborative effort between program staff and evaluators to collect data regarding NOAA Education partnerships, members of the PWG were tasked with developing research question(s), logic model, scope of the study, data inventory, data collection and analysis, and actionable recommendations for the NOAA Education Council. While this was a small step toward improving evaluation expertise among program staff, the experience provided a foundation for developing an understanding of the complexities and intricacies involved in the evaluation process. The Evaluation leads believe this will assist members of the PWG in understanding what is required to better evaluate, design, improve and deliver NOAA Education programs.

NRC Recommendation IV.4

Education programs should evaluate internal collaboration among line offices and between education and operational and scientific staff, as well as the quality of external partnerships with other agencies, institutions, organizations, and the broader STEM communities.

As stated previously, partnerships internal to NOAA were considered beyond the scope of the Portfolio Review study. In terms of examining the quality of external partnerships, the PWG directly addressed this component of the recommendation. Accordingly, a recommendation of the PWG will be included to address this via annual completion of the NOAA Education Partnership Survey by NOAA educators.

RECOMMENDATIONS

Actionable recommendations are the most important part of the Portfolio Review process and drove the inquiry of this study from the start. The recommendations developed by the PWG are intended to be actionable by the NOAA Education Council. Education Council should take on the following tasks:

PWG Recommendation 1. Develop a guidance manual for establishing new partnerships or transitioning existing ones.

The audience for this guidance manual would be NOAA educators both in the field and at the headquarters level. The guidance would provide checklists of items that should be addressed, as well as procedural instructions for those tasks that need to be completed step-by-step. The manual would provide general guidance regarding key questions that should be considered. Use the partnership definition and criteria as a starting point and this report for case studies for the manual.

PWG Recommendation 2. Disseminate the guidance manual and a collection of MOUs as resources for partnership development.

The working group should consider how such information and guidance would best support NOAA educators seeking partnerships. Making the resources available on a website will be important part of the dissemination strategy.

PWG Recommendation 3. Provide training for NOAA educators in forming new partnerships and transitioning existing partnerships.

Although providing a one-time webinar will likely be ineffective, just-in-time and context-appropriate support at the right time would make this guidance most effective.

Additionally, general education of all NOAA Educators would make them aware of when they should seek this information.

PWG Recommendation 4. Conduct a cost-benefit analysis of partnerships.

As noted in the Discussion section, conducting a cost-benefit analysis will more definitively answer questions about how partnerships are maximized.

PWG Recommendation 5. Conduct a gap analysis based on the existing dataset of NOAA Education partnerships.

The authors of this report recognize that there are gaps in the data collected, as not all of the NOAA Education community reported partnership data into the survey. In the future, a review comparing the survey results with the entire NOAA Education community could identify gaps. Questions and figures used in this study could serve as a guide to this analysis. For example, identifying geographic gaps by comparing partners locations with NOAA locations as shown in Figure 17.

The Education Council's Monitoring and Evaluation Working Group should take on the following tasks:

PWG Recommendation 6. Develop partnership performance measures, track the total number of partnerships, goals, money, leverage and who is involved.

The M&E Working Group should consider taking on the task of monitoring partnerships on an annual basis. Measures would be developed for Council member to report into on an annual basis. This would include the total number of partnerships, partnership goals, the level of funding and personnel involved.

PWG Recommendation 7. Review and revise the NOAA Education Partnership Survey.

If the M&E Working Group takes on the task of monitoring partnerships annually, the NOAA Education Partnership Survey can be adapted as the primary data collection instrument. Additionally, if a gap analysis is conducted and data is collected regarding partnerships not previously reported, the Survey can be improved to better collect data to align with the analysis. Working groups can propose changes to Survey to better assess the return on partnership.

PWG Recommendation 8. Explore the role that partnerships contribute to existing performance measures.

As displayed in the results of Analysis Question 9, partners share the NOAA mission and performance measures in terms of reaching similar audiences, educators, K-12 students and postsecondary students. The M&E Working Group should consider collecting the contribution of partners in helping NOAA meet our mission and how partners contribute to our common performance measures to demonstrate a collective impact. Communication between NOAA and partners will help determine the documentation process so both entities receive proper credit for their efforts.