SCIENCE OUTREACH
SEA GRANT PROGRAMS OF THE GULF OF MEXICO

SUCCESSFUL USER ENGAGEMENT THROUGH A NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION AND SEA GRANT PARTNERSHIP

Tara Skelton, *Dani Bailey, Emily Maung-Douglass, Missy Partyka, Stephen Sempier, and Monica Wilson*

The Gulf of Mexico Sea Grant Science Outreach Team has a proven track record of engaging directly with audiences in the region, throughout the U.S., and around the world to share science related to the marine environment. The team's established two-way communication protocol with an extensive network of audiences tied to the blue economy provide a ready platform to share and receive information. A multi-year partnership with NOAA National Centers for Environmental Information (NCEI) has extended NCEI's outreach capacity Gulf-wide, gathering regional user requirements by providing targeted user groups with an interface point to provide feedback on tools, maps, and data collection interfaces undergoing updates. Actionable information provided to NCEI has guided revisions of service delivery points for key NCEI end-user interfaces, including websites, GIS maps, and data access portals. The process offered by this partnership is important because—with increased federal focus on providing information services in response to user-driven requirements—the outcome of the team's work has enabled NCEI to cite the sound methods and valuable results as both guidance and justification for NCEI product revisions.

Attendees at a Sea Grant meeting on harmful algal blooms (HABs) offer input on their data needs to inform the next version of NCEI's Harmful Algal BloomS Observing System tool. (Mississippi-Alabama Sea Grant Consortium/Melissa Schneider)

INTRODUCTION

The partners

The National Oceanic and Atmospheric Administration (NOAA) funds the National Sea Grant College Program to support university-based programs with the mission to enhance the practical use and conservation of coastal

FIGURE 1. The Sea Grant Science Outreach Team, from left to right, is team manager Steve Sempier, extension specialists Missy Partyka, Emily Maung-Douglass, Monica Wilson, and Dani Bailey, and communicator Tara Skelton. (NCEI/K. Larsen)

marine and Great Lake resources in order to create a sustainable economy and environment. Sea Grant works through its 34 nationwide programs, benefiting coastal communities and economies throughout the U.S. and its territories. After the Deepwater Horizon oil spill in 2010, the four Sea Grant programs directly impacted by the spill—Texas, Louisiana, Mississippi-Alabama, and Florida—formed a regional team of professionals dedicated to answering stakeholder questions about potential impacts. Since 2014, the Gulf of Mexico Sea Grant Science Outreach Team has expanded to address science questions from a diverse group of audiences based in the Gulf and beyond, all of whom rely on a healthy coast for work or play (**Figure 1**).

NCEI is the world's largest archive of environmental data, hosting comprehensive oceanic, atmospheric, and geophysical research. From the depths of the ocean to the surface of the sun and from million-year-old ice core records to near-real-time satellite images, NCEI is the nation's leading authority for environmental information. In addition to housing data in their archives, NCEI makes it available through a suite of tools found online.

The partnership

In late 2018, NCEI formed a partnership with the Sea Grant team to introduce new stakeholders to targeted NCEI tools by engaging the team's contact list and the broader national Sea Grant network. In addition, the team would identify current users of NCEI products to allow them an opportunity to weigh in on tool content and usability. The team's contacts represent a wide swath of stakeholders and potential end users, ranging from people who fish for either income or recreation, those who study or manage natural resources or protect public health, and more. Many of these stakeholders need the science the team shares to better do their jobs, while some simply want to better understand the Gulf of Mexico and its resources. The Sea Grant team engages with the following target audiences:

- Fishers (for-hire, commercial, recreational)
- Natural resource managers
- Tourism professionals
- University researchers
- Environmental NGO/nonprofit staff

"The truth of the matter is that—as we intended—the Sea Grant outreach team has been a force multiplier for NCEI regional outreach efforts. The team has extended NCEI outreach across the Gulf in ways we could never have done on our own." —**Sharon Mesick, Chief, Coasts, Oceans, & Geophysics Information Services and Coastal Data Development Program Manager, NCEI**

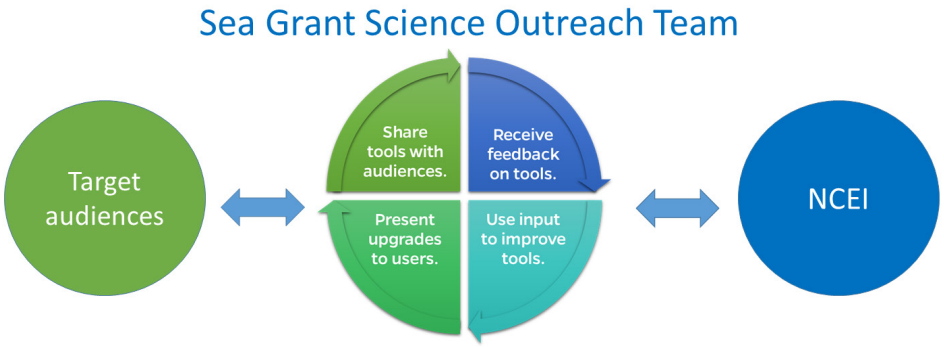


FIGURE 2. The Sea Grant Outreach Program's established two-way communication protocol with audiences across the spectrum of users and producers in the blue economy is designed to continually support NOAA engagement efforts. (Mississippi-Alabama Sea Grant Consortium/Tara Skelton)

- Policy makers
- Emergency responders
- Health professionals
- Oil industry professionals
- Tribal members
- Other NCEI-specified target audiences

Through the relationships with NCEI and other NOAA partners, the Sea Grant team would introduce targeted sets of potential users to tools NCEI had slated for updating (**Figure 2**). Because Sea Grant programs are independent, they have more flexibility to engage formally and informally with end users through traditional university approaches compared to federal engagement approaches, which can require lengthy reviews. The Sea Grant team would gather feedback on the tools through a variety of methods that they could customize based on particular needs for each project. The methods included direct emails and surveys, posters and information booths at events, seminar and workshop presentations, tools cafés, and focus groups.

While engagement methods changed depending on the featured tool, the goal of audience interactions was the same: to improve the utility of the tools based on user experiences. The team gathered information about ways in which the tools in their current form were being used, how they were or were not meeting audience needs, and specific suggestions from users for improvements. For example, some users requested the inclusion of additional data layers to online mapping tools. Other users shared input on webpage or tool design, including asking for more user-friendly data displays, improved search functionality, and/or the connection of the tool's data to other networks.

> "The Sea Grant Team added an element of professionalism to our website redesign input-gathering process that turned out to be invaluable. Stellar planning, facilitation, and synthesis of feedback, plus everyone was a great pleasure to work with!"—**Heather Coleman, Deep Sea Research and Technology Program, NOAA**

At the conclusion of each information-gathering session, the Sea Grant team shared audience recommendations with NCEI and their partners. Tool developers then considered the input when implementing technical updates. The team plans to share the tools with the users whose input helped shape the changes once updates are complete.

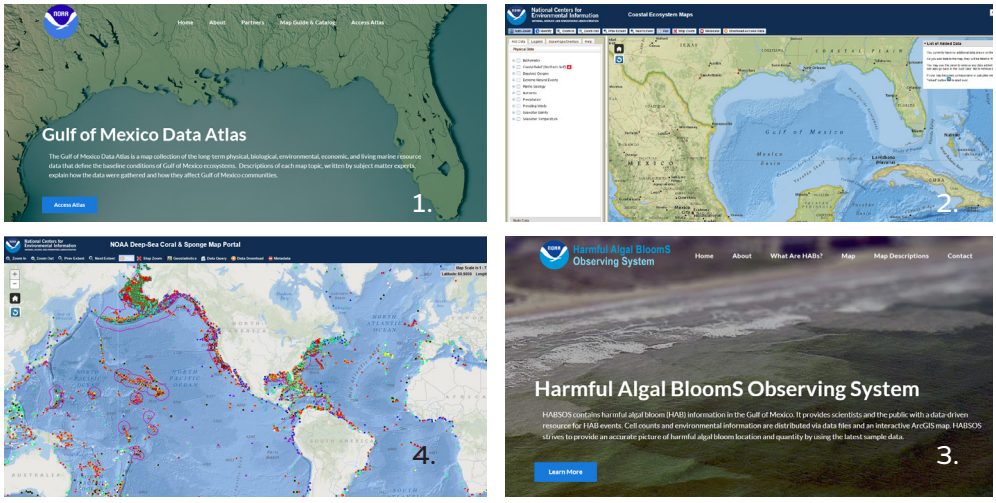


FIGURE 3. Sea Grant solicited target users to provide input on the following NCEI tools (clockwise from top): Gulf of Mexico Data Atlas, Coastal Ecosystem Map Viewer, Harmful Algal BloomS Observing System (HABSOS), and the NOAA Deep-Sea Coral Data Portal.

FIGURE 4. NCEI partner Madalyn Newman (left) and Gulf Sea Grant Science Outreach Team member Missy Partyka (right) look on as attendees at the Gulf of Mexico Alliance Tools Café in 2019 test and comment on the NCEI tools Data Atlas and Ecosystem Maps. (NCEI)

THE PARTNERSHIP AT WORK – CASE STUDIES

NCEI and other NOAA partners identified four tools and a companion web page slated for technological overhaul during the first two years of the project: Gulf of Mexico Data Atlas, Coastal Ecosystem Map Viewer, Harmful Algal BloomS Observing System (HABSOS), and the NOAA Deep-Sea Coral Data Portal (**Figure 3**). The Sea Grant team worked directly with NCEI and their NOAA partners associated with each tool to create a plan of action. The team tailored strategies to suit both the tool itself and its specific targeted audience of current and future potential users. The end result was three very different plans of action designed by the same team.

Case study: Gulf of Mexico Data Atlas and Coastal Ecosystem Map Viewer

The Gulf of Mexico Data Atlas (Data Atlas) and Coastal Ecosystem Map Viewer (Ecosystem Maps) are two NCEI tools that share roughly the same information in different formats. The Ecosystem Maps are built on an interactive web mapping platform while the Data Atlas was modeled after a physical atlas with plate-style pages. NCEI sought clarity on the utility of both tools for end users. To address this, the Sea Grant team began working with NCEI leads to identify the stakeholder groups they wished to target for feedback, primarily members of state and federal agencies, academic organizations, relevant business/industry, and environmental nonprofits. They identified the Gulf of Mexico Alliance's (GoMA) annual Tools Café as the venue site to get one-on-one interactions with the specified users in a casual yet cooperative environment. Once the venue was designated, the Sea Grant team developed a detailed process to demonstrate and test the tools live, while collecting feedback that was immediately accessible by NCEI (**Appendix A**).

> "The feedback collected by the Sea Grant team at the GoMA Tools Café led NCEI to combine the functionality of the Coastal Ecosystem Maps into a planned new version of the Gulf of Mexico Data Atlas."—**Angela Sallis, General Dynamics Information Technology, contracted to NCEI**

On June 10, 2019, representatives from NCEI and the Sea Grant team jointly shared the Data Atlas

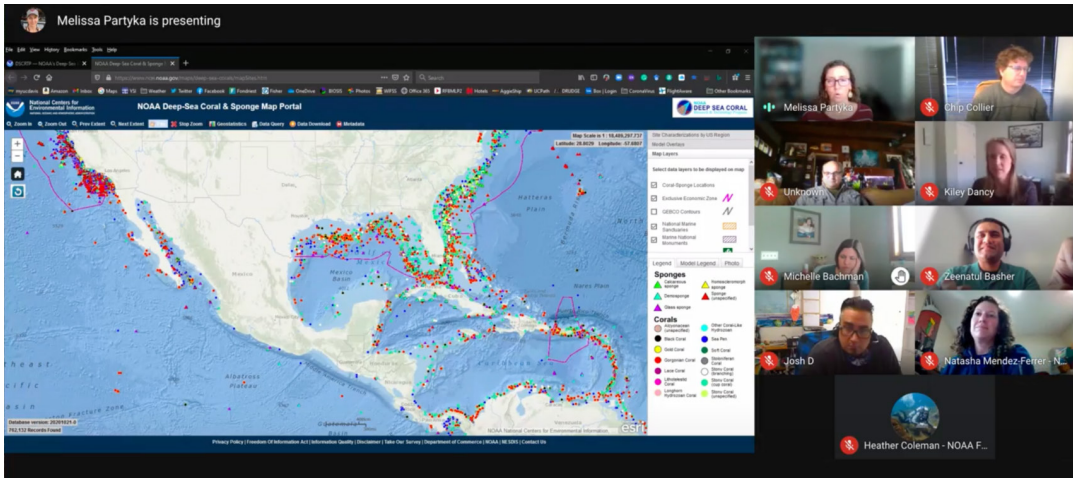


FIGURE 5. Sea Grant team members Missy Partyka, Emily Maung-Douglass, and Monica Wilson partner with NOAA DSCRTP leader Heather Coleman to facilitate a discussion during a virtual focus group aimed at understanding user needs related to deep-sea coral and sponge products. (Louisiana Sea Grant/Emily Maung-Douglass)

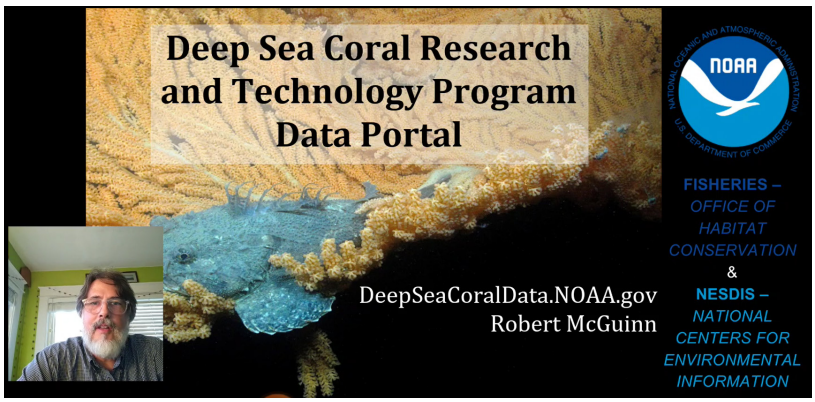


FIGURE 6. Robert McGuinn highlights the NOAA DSCRTP data portal at a virtual symposium that reached hundreds of people. (Mississippi-Alabama Sea Grant Consortium/Steve Sempier)

and Ecosystem Maps at the Tools Café and received feedback from 19 participants (**Figure 4**). They received 33 comments about the tools—21 for Ecosystem Maps and 12 Data Atlas. The majority of the attendees came from members of federal agencies, and they shared 17 comments that could be classified as user requirements by NCEI. A summary of the feedback is in **Appendix A**.

Case study: Deep Sea Coral Research and Technology Program

The Sea Grant team worked with NOAA's Deep Sea Coral Research and Technology Program (DSCRTP) and NCEI to gain an understanding of user needs related to two DSCRTP tools—the NOAA Deep-Sea Coral Data Portal and the NOAA Deep-Sea Coral & Sponge Map Portal. Working together with DSCRTP leads, the team developed a multi-tiered plan to understand who was using the tools, the ways users currently employ those tools, what additional features in a DSCRTP tool would be helpful, and what alternative data sources people turn to.

Based on several discussions with the NCEI project leads, the Sea Grant team quickly developed and administered an online survey of DSCRTP tools' potential users—those identified by literature searches, existing contacts and connections of DSCRTP and Sea Grant, and U.S. regional fisheries management councils—to identify current usage and needs (**Appendix B**). Fifty-seven survey respondents shared their level of familiarity with the tools, how they heard about the tools, feedback on existing features, and desired additional tool capabilities (GIS, education, and outreach features). The survey asked which alternative tools and/or data sources respondents use (if any), their primary purpose for using DSCRTP tools, which DSCRTP products and services they have used in the past, and how they have used the information gained from those tools. Respondents also provided general demographic information and shared their amenability to joining in a virtual focus group.

> "Working with Sea Grant was essential in helping to solicit critical feedback from users of our current deep-sea coral map and data portal. This feedback made the design requirements for our new portal very easy to write."—**Robert McGuinn, Project Manager, Deep Sea Coral Research and Technology Program, NCEI**

Following the online survey, the team coordinated and ran three focus groups with 20 participants in total (**Figure 5**). The main purpose of all of these groups was to 1) solicit feedback on data and map portals, 2) determine uses for coral/sponge data, 3) gather information on additional user needs, and 4) understand opportunities for improvement. Participants included fisheries management council staff from around the U.S., postdoctoral researchers, university faculty, NOAA Marine Sanctuary members, and representatives from nonprofit organizations. Focus groups were developed based on input received from the online survey and from preexisting contacts of DSCRTP. Overall, focus group members tended to be highly familiar with DSCRTP tools. During the virtual focus groups, DSCRTP leaders provided a brief overview of DSCRTP tools. The Sea Grant team then facilitated discussion with current tool users, drilling down to gather input on how DSCRTP tools are being used (**Appendix B**). Questions included those about desired features, available data, layers, statistics, as well as functionality. The team gave participants an opportunity to provide anecdotes of when the tools had been useful and when the tools fell short. In addition, the team sought opportunities to raise awareness of the DSCRTP tools and was able to highlight the work in regional, virtual symposia (**Figure 6**).

FIGURE 7. HABSOS technical director Jonathan Jackson gives a live demonstration of the HABSOS interactive mapping portal while Sea Grant Science Outreach Team member Missy Partyka captures feedback from stakeholders during the June 2019 HABs workshop in Mobile, Alabama. (Mississippi-Alabama Sea Grant Consortium/ Melissa Schneider)

Case study: Harmful Algal BloomS Observing System Interactive Map and Data Portal

The Harmful Algal BloomS Observing System (HABSOS) Interactive Map and Data Portal was scheduled to undergo updates and revisions beginning in the spring and summer of 2019. During this same period of time the northern Gulf coast was experiencing impacts from both red tides and a cyanobacteria bloom. Stakeholder groups, including commercial and recreational fishers and officials from the tourism and public health sectors, had questions about those impacts and where to find accurate and timely sources of information on HABs in the northern Gulf.

> "NCEI leveraged the abilities of the Sea Grant team to assess user requirements related to the HABSOS project. This information enabled NCEI to propel the HABSOS project to a higher trajectory by directly targeting the identified user requirements." —**Jonathan Jackson, NOAA Affiliate**

The Sea Grant team, in collaboration with NCEI staff and the developers of HABSOS, produced a half-day input gathering workshop titled "Preparing for Harmful Algal Blooms (HABs) in Coastal Alabama and Mississippi," which was held at the NOAA's Gulf Disaster Response Center in Mobile, Alabama, on June 13, 2019. The purpose of the workshop was to bring together stakeholders, scientists, and policy makers/regulators to discuss current science on HABs, stakeholder needs, and future directions. Sea Grant organized and facilitated the event and invited interested groups to participate.

A total of 68 people attended the workshop, including speakers and Sea Grant extension professionals. The attendees represented a variety of sectors, including public health, commercial fishing, tourism, regulatory authorities, academia, outreach/extension, and natural resource managers.

The HABSOS technical lead, Jonathan Jackson, demonstrated the HABSOS tool for workshop participants. The team solicited stakeholder feedback through a series of questions in a live web-based survey platform to gauge the familiarity of participants with not only HABSOS but NOAA/NCEI (**Figure 7**). In addition to the live survey, participants provided their input on current needs and future directions in HABs-related research, outreach, and extension and gave additional feedback on HABSOS. The questions from the survey, those results, and the results of the input session are provided in **Appendix C.**

Following the Mobile HABs workshop, the team continued to work with NCEI and HABSOS developers to find additional venues to share the tool and solicit feedback from current and potential end users of the tool. Aimed at academics and Florida-based regulators, the first of the series was the Florida HABs symposium held in St. Petersburg on August 20, 2019. The team co-developed an abstract and poster they presented during the poster session (**Figure 8**). The poster was accompanied by a comment sheet with six questions regarding HABs and HABSOS (**Appendix C**). The team used this approach again during the 10th Biannual U.S. HABs Symposium held November 4-8, 2019 in Orange Beach, Alabama, submitting a slightly different poster than used at the Florida event. HABSOS technical

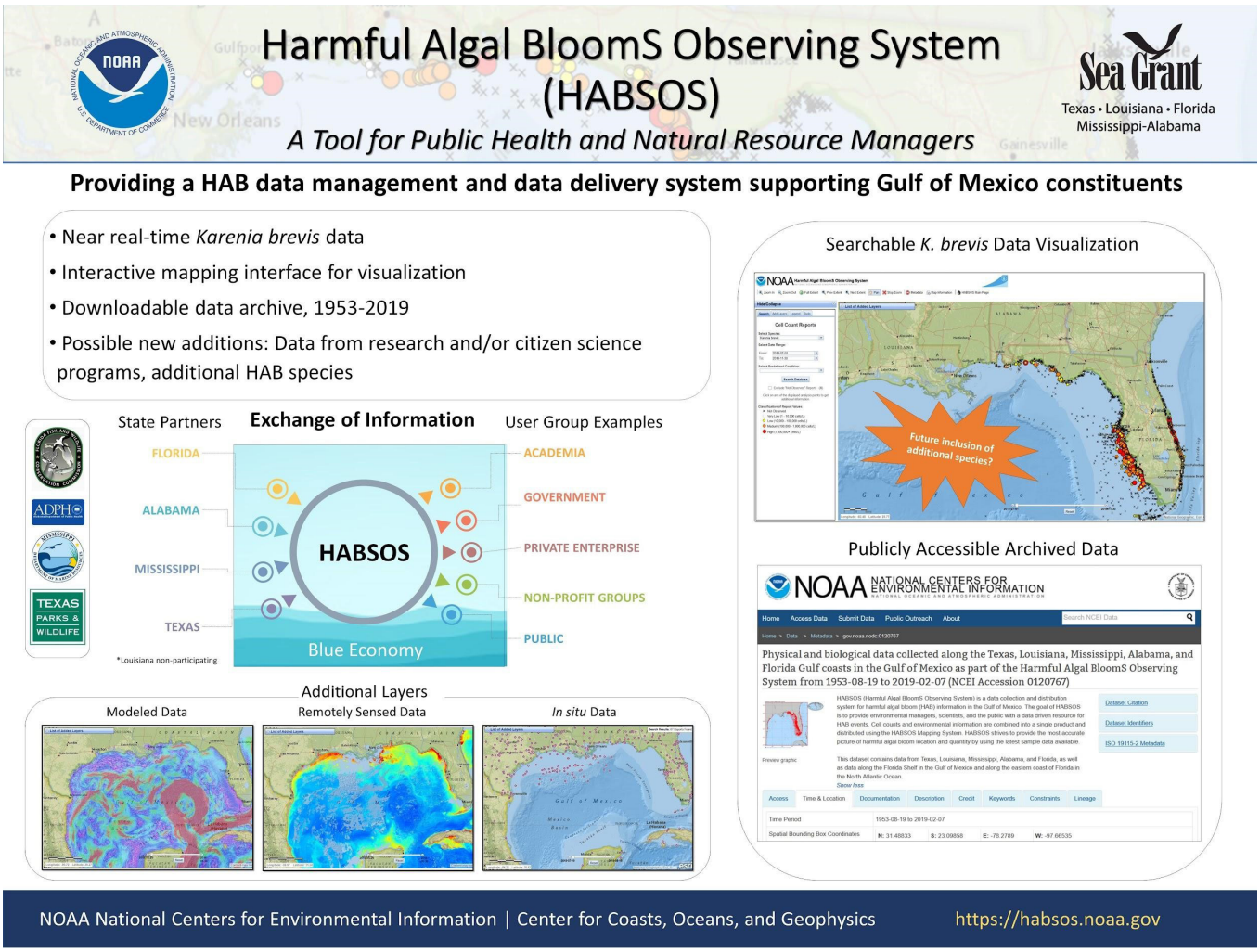


FIGURE 8. This HABSOS demonstration poster co-developed by the Gulf Sea Grant Science Outreach Team, NCEI, and HABSOS developers was presented at the U.S. HAB Symposium (November 4-8, 2019).

director Johnathan Jackson also gave a presentation demonstrating the key features and utility of HABSOS and asked participants to stop by the poster and provide comments. The U.S. HABs Symposium was generally aimed for academic professionals but also included public health officials, representatives of key stakeholder groups (fishing and tourism), and extension professionals.

> "If you want to engage with your users to gather feedback on a product or service you are providing, first engage with Sea Grant. They really know how to make the process go smoothly and yield results."—**Robert McGuinn, Project Manager, Deep Sea Coral Research and Technology Program, Data Systems, NCEI**

CONCLUSION

To summarize, Sea Grant Science Outreach team contributions have driven NCEI actions in terms of revisions to products and services NCEI offers. NCEI needs to know what users want to better inform their product updates but does not have the capacity to solicit current users or identify new ones for input. Sea Grant, on the other hand, uses their established outreach network to seek guidance from current and potential tool users via survey, online and in-person demonstration feedback focus groups, and large meetings, using methods tailored to both the tool and the audience whose guidance NCEI desires. The team then delivers this input in actionable form to NCEI to inform product upgrades.

APPENDIX A: TOOL EVALUATION PROCESS FOR DATA ATLAS AND ECOSYSTEM MAPS

Goals

To seek clarity from stakeholders for the utility of both the Gulf of Mexico Data Atlas and Coastal Ecosystem Map Viewer

Questions

-Which of the tools would you be most likely to use?

-How would or do you use the tool?

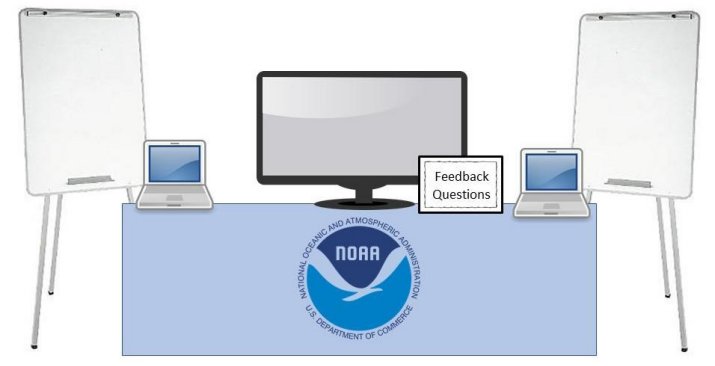
-How would you best describe yourself?

- State agencies
- Federal agencies
- Academic organizations
- Business/Industry
- Non-profits
- Other

-After using the tools, provide feedback.

Process

Two computers were set up on either side of the table and the monitor in the middle of the table along with the feedback questions in a frame (see mock diagram). One easel was set up on each side of the table to capture feedback for each tool. Easel pads will be divided into 6 equal rectangles. Each rectangle will have the target audience listed on top. Feedback questions were listed on a sheet of paper that will be placed in a frame and displayed on the table.



As people came to the table, they were given a brief overview of the Gulf of Mexico Data Atlas and Coastal Ecosystem Map Viewer. They then got a chance to explore each of them. Next, they received post-it notes to answer feedback questions about the version they just tried. Once they finish answering the questions, they attached their post-it notes on the easel pad in the box that appropriately described the group they belong to.

Results

The Sea Grant team received 33 comments about the tools—21 for Ecosystem Maps and 12 Data Atlas. The majority of the attendees came from members of federal agencies, with state agencies, business, academia, and nonprofits also reporting. Respondents shared 17 comments that could be classified as user requirements by NCEI. Most were unfamiliar with either tool at the outset but expressed that they would find them useful. Raw answers broken down by audience are listed below.

Federal agencies

- Yes, used before; sort of find helpful in work; Access to raw data? need a better understanding.
- Never used before; maybe would find helpful in work; can't figure out how to clear ID info when on screen; Clear All Layers option.
- Never used before; would find helpful in work; will need to play with.
- Nice to pop back and forth [between the two tools].
- Like the Help button.
- Like the metadata table.
- CMECS!
- Something like Ocean Reports that integrates both models would be useful.
- Ability to query the data by date or attribute.
- Table of contents for active data in view.

State agencies

- Basic description of data in the EM tool rather than relying on more detailed Atlas.
- Never used before; would find helpful in work; It's easy to use first try but difficult to visualize multiple data sets at once.

Business

- Never used before; would find helpful in work; interactive maps.
- Never used before; would find helpful in work; data summary; love the accessibility.

Academia

- Never used before; would find helpful in work with better layering; make reset button; items are hidden and may not be unlocked.
- Yes used before; Yes finds helpful in work; More frequent updates/versions of datasets.
- Never used before; would find helpful in work; include legend.

Nonprofit

- Mobile Baykeeper: Never used before; would find helpful in work with students; pretty cool.
- Never used before; would find helpful in work; more socioeconomic.

Other

- Needs more local data.
- Never used before; would find helpful in work; Interactive map is more useful of the two.

APPENDIX B: DEEP SEA CORAL RESEARCH AND TECHNOLOGY PROGRAM (DSCRTP) TOOLS ONLINE SURVEY AND FOCUS GROUP QUESTIONS

Goals

To determine who is using the DSCRTP tools, the ways they currently use those tools, and what additional features are desired in an updated DSCRTP tool would be helpful.

Online survey

1. Are you familiar with the NOAA Deep-Sea Coral Data Portal webpage?

   https://deepseacoraldata.noaa.gov/

   - No, I have never heard of it.
   - Yes, I have heard of it but never used it.
   - Yes, I have used it.
   - Unsure

2. On average, how frequently do you use the NOAA Deep-Sea Coral Data Portal webpage?

   - Unsure
   - Once every 1-3 days
   - Once or more per week
   - Once or more per month
   - Once or more per year

Questions 3-10.

We would appreciate your feedback on the NOAA Deep-Sea Coral Data Portal webpage.

The Data Portal webpage currently has these features:

- Reports to Congress and other major reports (e.g., State of Deep-Sea Coral Ecosystems)
- Species lists
- Image gallery
- Initiative pages - Documents describing regional Deep Sea Coral initiatives (e.g., priorities workshop reports, science plans, initiative final reports)
- Targeted project summaries
- Deep-Sea Coral publications
- Cruise reports
- Site characterizations
- Guidance to field/science teams
- Digital map application

3. Which features of the NOAA Deep-Sea Coral Data Portal webpage do you like best? Why?
4. Which features of the NOAA Deep-Sea Coral Data Portal webpage do you like least? Why?
5. Are there other features of the NOAA Deep-Sea Coral Data Portal webpage on which you would like to comment or see changes?
6. What education and outreach features would you like to see included in the NOAA Deep-Sea Coral Data Portal webpage? Why?
7. What additional features do you wish the NOAA Deep-Sea Coral Data Portal webpage included that it does not currently have? Why?
8. Where do you think you may have heard about the NOAA Deep-Sea Coral Data Portal webpage?
9. What education and outreach features would you like to see included in a NOAA webpage regarding deep-sea corals and sponges? Why?
10. Are there other types of features would you like to see in a NOAA webpage regarding deep-sea corals and sponges? Why?
11. Are you familiar with the NOAA Deep-Sea Coral & Sponge Map Portal tool?

    https://www.ncei.noaa.gov/maps/deep-sea-corals/mapSites.htm

    - No, I have never heard of it.
    - Yes, I have heard of it but never used it.
    - Yes, I have used it.
    - Unsure

12. On average, how frequently do you use the NOAA Deep-Sea Coral & Sponge Map Portal tool?

    - Unsure
    - Once every 1-3 days
    - Once or more per week
    - Once or more per month
    - Once or more per year

Questions 13-17.

We would appreciate your feedback on the NOAA Deep-Sea Coral & Sponge Data Portal tool.

The Map Portal tool currently has these features:

- Interactive map of coral and sponge occurrence points
- Site characterization StoryMap
- Predictive habitat model overlays
- Data query tool
- Data download tool (standard and advanced)
- Geostatistics tool

13. Which features of the NOAA Deep-Sea Coral & Sponge Map Portal tool do you like best? Why?
14. Which features of the NOAA Deep-Sea Coral & Sponge Map Portal tool do you like least? Why?
15. What types of Geographic Information System (GIS) features would you like to see added to the NOAA Deep-Sea Coral & Sponge Map Portal tool and why?

APPENDIX B: CONTINUED

16. Are there other features of the NOAA Deep-Sea Coral & Sponge Map Portal tool on which you would like to comment or see changes?
17. What additional features do you wish the NOAA Deep-Sea Coral & Sponge Map Portal tool included that it does not currently have? Why?
18. Where do you think you may have heard about the NOAA Deep-Sea Coral & Sponge Map Portal tool?
19. What types of features would you like to see in a NOAA mapping tool regarding deep-sea corals and sponges? Why?
20. What is your primary purpose for using information on deep-sea corals and sponges? – select all that apply:
    - Education
    - Natural resource management
    - Research/publication(s)
    - Identifying resources to be protected during a natural or human-caused event (e.g., hurricane, oil spill)
    - Locating areas for recreation (e.g., deep-sea fishing)
    - Other:
21. Please tell us more about your primary purpose(s) for using information on deep-sea corals and sponges.
22. Have you used NOAA Deep-Sea Coral Research and Technology Program (DSCRTP) products and services?
    - No
    - Unsure
    - Yes—please describe (e.g., in research, natural resource management, education/outreach, expedition location selection, in publication(s) - please share DOI)
23. Are there any alternative or complementary date or mapping tools you use for information on deep-sea corals and sponges?
    - No
    - Yes—I use:
24. Which best describes you? — select all that apply.
    - Concerned citizen
    - Educator (K-12)
    - Educator (University or college)
    - Emergency responder/response manager
    - Environmental consultant
    - Environmental non-profit
    - Fisher (recreational, commercial, for hire)
    - Natural resource manager
    - Oil and gas industry
    - Parent (Homeschooling or helping child with school)
    - Policy maker
    - Researcher
    - Science outreach professional
    - Student (K-12)
    - Student (University or college)
    - Tourism professional
    - Other
25. We would appreciate your insights. Are you interested in participating in a virtual small group discussion or having a brief discussion with us to help us better understand your needs related to deep-sea corals and sponge portals?
    - Yes, I am interested
    - Not interested
26. Thank you for your interest in helping us better understand your needs related to deep-sea corals and sponge portals.

    First name: _____
    Last name: _____
    Organization: _____
    Email address: _____

Results

In total, 57 people responded to the online survey. The majority were researchers (43%), approximately 15% were educators, and the remainder came from a variety of sectors (environmental consultant, environmental non-profit staff, natural resource manager, oil and gas industry, science outreach professional, and other). Roughly 46% of respondents had used the DSCRTP portal and 20% had used the map portal; the majority of respondents had heard of the DSCRTP tools. People who completed the survey reported that they use information on deep-sea corals and sponges for a variety of reasons, including (in order of highest demand) information for research and publications, locating areas for sampling/experiments, natural resource management, education, identification of resources requiring protection during natural or human-caused events (e.g., hurricane, oil spill), oil and gas industry initiatives, presentations, research grant proposals, and locating areas for recreation (e.g., deep-sea fishing). Respondents also made specific comments highlighting additional features and data options they would like to have added to the DSCRTP tools and other requested modifications. The team shared the aggregated results of the online survey information with DSCRTP.

APPENDIX B: CONTINUED

Focus group

1. Have you used the portal and map viewer, used in the past several weeks or last couple of months?
2. (General question) Picture yourself at a Council meeting discussing deep-sea coral and addressing Council or Committee questions on research plans/results/boundary change proposals/etc. What would you like to be able to show on the fly?
3. (Map portal question) What kind of statistics would you like to have accessible? Would you like them accessible by council boundary or some other unit?
4. (Map portal question) Which layers would you like to see as the default options?
5. (Map portal question) Do you require more GIS-like functionality in the map portal, or do you prefer to download the data and work with them in a desktop GIS? (will be asked via chat) If so, what types of features do you need?
6. (General question) What data sets would you like to be able to download besides coral and sponges?
7. What alternative sources of coral/sponge data do you use, if any?
8. Do you know that we contribute data to OBIS (Ocean Biodiversity Information System) and GBIF (Global Biodiversity Information Facility)?
9. (General question) Do you have any examples to share when the database was useful for you?
10. (General question) Share a story when it wasn't able to serve your needs.
11. (Map portal question) As far as visualization of the coral/sponge records, are there any areas we can improve? Or would complementary tools be able to solve this problem better?
12. (Map portal question) What are the top two features you want to see added or improved? (can be asked via chat
13. (General question) What is your favorite features or these portals? Do you like best and why? (via chat)

Results

Discussion centered around two focus areas. The first discussion centered on the field data collected from a variety of offshore cruises, including how to improve the quality, breadth, and ease of accessing this data. The second focus was the overall website design, including the ease of finding materials and the possibility for adding new material from a wide variety of sources to further the database. Suggestions ranged from collecting more information overall to collecting more sources from individual cruise data to build a comprehensive assessment of deep-sea coral and sponges. Upon the conclusion of focus groups, March 9, 2021, the team compiled a report of feedback for the NOAA DSCRTP team highlighting the conversations and discussion of requested responses and suggestions.

APPENDIX C: HARMFUL ALGAL BLOOMS OBSERVING SYSTEM (HABSOS) DEMONSTRATIONS AND INPUT SESSIONS

APPENDIX C: CONTINUED

Of the 53 participants that responded to this question, 40 (75%) agreed that the information found in the portal could be useful for making business-related decisions. Eight were not sure (15%) and five (9%) did not think it would be useful for them.

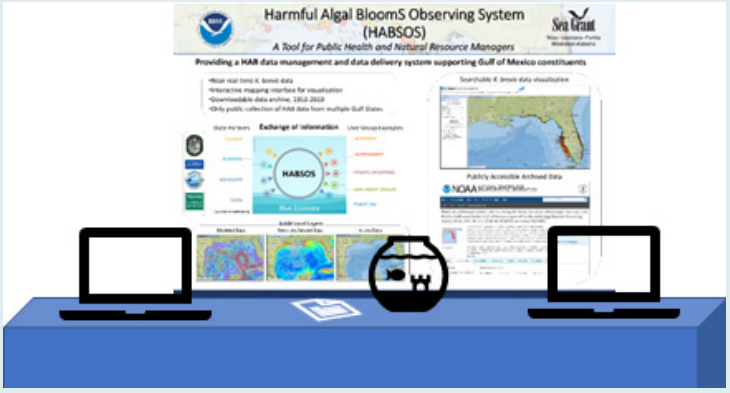
5. In three words or less, what are your primary concerns about HABs?

   Sixty-four responses were given with the majority focused on human health (n=33) , followed distantly by concerns over environmental impacts (n=13), financial impacts (n=10), and access to accurate and reliable data (n=8).

HABSOS Poster Presentation at Florida HAB Symposium and 10th Biannual US HAB Symposium

Booth setup:

Laptops were set on the table to allow participants to navigate HABSOS and the data archives (see mock diagram). Jonathan Jackson introduced participants to the website and provided technical support to help them navigate the site. Sea Grant Team members helped participants fill out the comment sheet. If participants wanted to remain informed about HABSOS they were asked to either leave their contact information on the comment sheet or drop their business card in the bowl.



Questions for participants:

- Have you used HABSOS?
- If yes, what have you used it to do?
- Are there additional data you'd like included?
- Could you make use of historical *K. brevis* data in your research?
- Please provide any additional comments, suggestions, or thoughts on HABSOS.
- If you collect *K. brevis* data would you be willing to contribute those data to the archive in the future?

Results

Key takeaways from stakeholder input included the ability to download data from the mapping portal, the incorporation of additional data streams (e.g., research data sets), and the need for additional types of harmful bloom data (e.g., *Sargassum* and microcystis). These comments, needs, and suggestions were provided to NCEI staff and the HABSOS developers and the inclusion of additional data streams and different types of HABs are currently now in development.

SEA GRANT SCIENCE OUTREACH TEAM

Dani Bailey
Texas Sea Grant College Program
danielle.bailey@tamu.edu

Emily Maung-Douglass
Louisiana Sea Grant College Program
edouglass@lsu.edu

Missy Partyka
Mississippi-Alabama Sea Grant Consortium
m.partyka@auburn.edu

Stephen Sempier
Mississippi-Alabama Sea Grant Consortium
stephen.sempier@usm.edu

Tara Skelton
Mississippi-Alabama Sea Grant Consortium
tara.skelton@usm.edu

LaDon Swann
Mississippi-Alabama Sea Grant Consortium
ladon.swann@usm.edu

Monica Wilson
Florida Sea Grant, UF/IFAS Extension
monicawilson447@ufl.edu

Sea Grant
Texas • Louisiana • Florida
Mississippi-Alabama

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