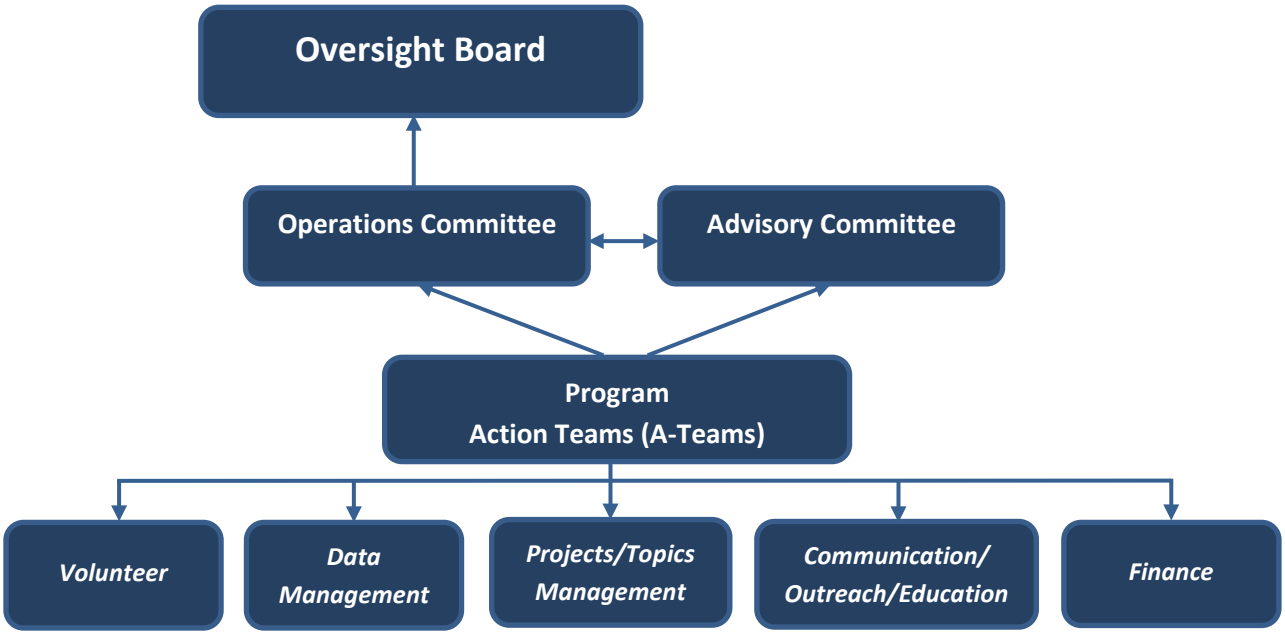
SAFMC CITIZEN SCIENCE PROGRAM
Program Recommendations
Round 1 - March 2018

I. SAFMC Citizen Science Program Blueprint & Work of the Citizen Science Action Teams

Early on in the development of the SAFMC Citizen Science Program, the Council's Citizen Science Program Blueprint identified an overall programmatic structure to support the internal operation of the program and the long-term support of citizen science projects that might be conducted under the umbrella of the Program.

Citizen Science Program Organizational Chart



Action Team Development

The Council placed strong emphasis on their belief that development of the program needed to be inclusive and stakeholder-driven. To further support this philosophy, the Council utilized the programmatic structure outlined above to first establish a Citizen Science Advisory Panel and associated Action Team (A-Teams) to begin the work of developing the standards and operating policies by which the program should function and operate. Per the recommendation in the Blueprint, the A-Teams were defined as task forces that would be developed during the initial launch of the citizen science program to help develop program components The Action Teams that were formed include the following five programmatic areas:

Volunteers

Team will consider

- **Recruiting/Retention**
- **Training:** *delivery, skills certification, continuing*
- **Incentives:** *tangible/ intangible, data sharing, accessibility*
- **Role in project ID & research needs**
- **Expectations:** *participation, communication, feedback, data results and usage, building sense of ownership in program*

Communication-Outreach-Education

Team will consider

- **Approaches & Tools:** *programmatic, projects/ results, and to participants*
- **Media Plan:** *Branding/PR*
- **Feedback-Recognition Plan**
- **Training Plan:** *approaches, tools, methods*
- **Newsletters/Reports:** *program and projects*
- **Technology Platforms:** *web-based, social media role, others*

Data Management

Team will consider

- **Managing entity?**
- **Data Life Cycle**
- **Data Policies:** *collection standards, QA/QC*
- **Access:** *confidentiality and ownership*
- **End-user citations**
- **Validation**
- **Use guidelines:** *agreements and waivers*
- **Infrastructure:** *entry, storage, housing, database*
- **Electronic tools**
- **Data documentation:** *obtaining and managing*
- **Applicable data standards:** *IQA, NS2*
- **Platforms for data**
- **Presentation & marketing**

Finance & Infrastructure

Team will consider

- **Administrative funding:** *short-/long-term sources, budget*
- **Project funding:** *sources, partnerships for receiving, disbursing, managing funds*

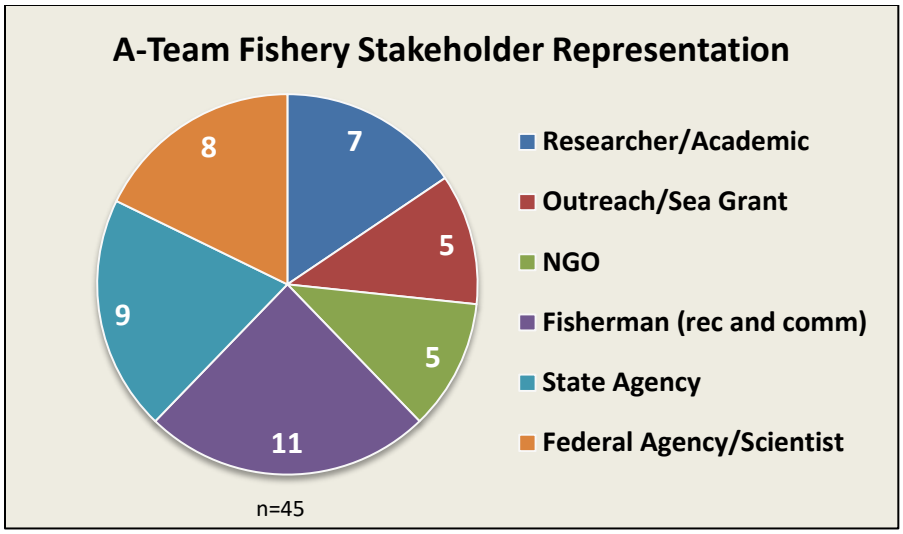
Projects-Topics Management

Team will consider

- **ID topics/research needs**
- **Application process**
- **Approving/endorsing projects:** *pre-review process, review entity, revising*
- **Prioritization of needs**
- **Selecting projects for support, endorsement**
- **Soliciting ideas**
- **Outlining project expectations:** *Goals and Plans for Data, Volunteers, Communication, Project Promotion, and Science Methods/Deliverables*
- **Training for science methods in citizen science**
- **Evaluation of projects:** *performance measures of success*

Action Team Appointment & Membership

Similar to the format of the Citizen Science Program Design Workshop held in January 2016, representation and participation on the A-Teams was intentionally designed to be inclusive of a wide array of fishery stakeholders that may have an interest, specific expertise, and a role to play in the Council's Program and future projects. A total of 45 members were appointed to the five A-Teams representing a diversity of fishery stakeholders that include the following.



This wide range of fishery stakeholder representation has brought immeasurable expertise to the work of the A-Teams and has led to collaboration across the A-Teams on some of their work to date.

Recommendations from the Citizen Science Program Blueprint

In addition to the recommendation to develop Action Teams, the Blueprint outlined other recommendations for moving forward with Program development which have either been implemented, are currently being worked on by the A-Teams, or will be addressed once the work of the A-Teams is complete including,

Blueprint Recommendation:	Status:
Hire a full time program manager as soon as funds are available.	Implemented (December 2017)
Expand existing partnerships with the identified agencies and programs and build collaborative relationships with newly identified agencies and programs.	In progress *(Finance & Infrastructure and Data Management A-Teams)*
Pursue short-term funding options for program development and long-term alternatives to ensure its success and sustainability.	In progress *(Support for pilot citizen science project secured; Finance & Infrastructure A-Team work.)*
Develop a project selection process in order to initiate a "kickstarter" project.	In progress *(Support for pilot citizen science project secured; Projects/Topics Management A-Team work.)*
Agency reviews program SOPPS to ensure compatibility with applicable laws and mandates.	Future step *(Will be initiated once A-Team work is complete, as appropriate.)*
Establish a Citizen Science Program Oversight Board.	Future step *(Will be initiated once A-Team work is complete, as appropriate.)*
Establish a Citizen Science Program Operations Committee.	Future step *(Will be initiated once A-Team work is complete, as appropriate.)*
Establish a Citizen Science Advisory Committee.	Future step *(Will be initiated once A-Team work is complete, as appropriate.)*

II. The Work of the Citizen Science Action Teams

Each of the five Action Teams have been meeting monthly via webinar since August 2017. The work of the Action Teams has been guided by the Terms of Reference approved by the Council in June 2017 to outline the specific tasks that should be addressed when developing recommendations for each Program component. The Action Teams prioritized the Terms of Reference in order of which tasks to accomplish first and began the supporting work for developing Program recommendations. To read a summary of all Action Team Meetings see the *Citizen Science Advisory Panel Pool & Action Teams* section of the following web page: http://safmc.net/citizen-science-initiative/

Overview of All-Hands Citizen Science Action Team Meeting

On January 31, 2018 an All-Hands Citizen Science Action Team meeting was convened for the first time to bring together all members of the five Citizen Science Action Teams to review and discuss their work on developing Program recommendations between August and December 2017. The goals for the meeting included:

- Present and receive feedback on A-Team work to date
- Discussion/review of initial program recommendations
- Identify any overlapping tasks where A-Teams can coordinate work
- Learn about the upcoming citizen science pilot project and research study being conducted with the Citizen Science Association

Meeting materials from the All-Hands Action Team meeting are available on the Council's Citizen Science Program page: http://safmc.net/briefing-books/cit-sci-a-team-all-hands-meeting-01-31-2018/

III. Action Team Program Recommendations – Round 1

The following is a summary of program recommendations from each of the five Action Teams for the Council to consider and adopt as policies for operation of the SAFMC Citizen Science Program. These represent "Round 1" of program recommendations and additional program recommendations will be presented to the Council as the Action Teams continue their work in 2018.

The purpose of the recommendations is to outline the standards and policies by which the Program will operate to ensure the Program's vision, mission and goals that are outlined in the Program Blueprint are met.

Mission Statement:
"Improve fisheries management through collaborative science"

Vision Statement:
"more collaboration + more data + more trust = better management"

Program Goals:
GOAL 1: Adopt and sustain a new approach to increase the data available to address research and management needs.
GOAL 2: Ensure data collected are appropriate, relevant, reliable, accessible, timely and useful.
GOAL 3: Build partnerships for mutual learning and collaboration.
GOAL 4: Enhance stewardship for the resources of the South Atlantic.
GOAL 5: Foster active engagement and communication about processes, results and impacts.

Communication/Outreach/Education A-Team - Recommendations

RECOMMENDATION 1: Projects should consider pre-testing and post-validation of the data collection method to be used.

Rationale - With any type of data collection method, pre/post testing of that method needs to be done to make sure the data being collected is valid. It also helps ensure users know how to report data, allows them to provide feedback about the process, and improve data QA/QC. The A-Teams inventory of citizen science examples indicated the importance of pilot testing data collection methods to ensure users understand how to report data, are comfortable with sharing data and have the opportunity to provide feedback on the data collection method.

RECOMMENDATION 2: The Program needs to establish training guidelines for projects to follow.

Rationale – Best practices for training can help ensure successful engagement with volunteers on data collection. Training guidelines should outline what training should contain (training materials that clearly outline the purpose and mission of the project, background on the science behind the project (methods, etc.) and how and when the data may be used); possible train-the-trainer approaches, and as appropriate a plan for the use of test portals for projects containing mobile sites/apps.

RECOMMENDATION 3: The Program should help support evaluation of volunteer expectations and attitudes.

Rationale – From an outreach perspective, monitoring and understanding what motivates volunteers to participate in a project and what expectations they have for participating in a project will enhance volunteer engagement and retention over the long term. Ideally, evaluation should be conducted during the project (to help guide future communication) and after the project is complete (to evaluate project success).

RECOMMENDATION 4: The Program should establish guidelines for disseminating results of projects.

Rationale – Results from projects need to be conveyed in the appropriate format and context for the different audiences that may be using the results. Based on the audience, use of the appropriate outreach tool should be considered (blog, newsletter, scientific journal publication, etc.) and delivery of the information should be timely through the use of regular progress reports (quarterly, semi-annual, annual). Use the opportunity to also incorporate volunteer recognition to help further motivate participation in the project.

RECOMMENDATION 5: Projects need to have a clear plan for sharing data and results of projects.

Rationale – Providing volunteers with a way to view their personal data contributions (through a web-based account or interactive website) as well as sharing aggregated data results (to help show trends in data over time) is an important communication and outreach tool for volunteers and an incentive for volunteers to stay engaged in a project.

RECOMMENDATION 6: The Program should support and develop guidelines for project promotion and sharing results that considers audience type.

Rationale – For project promotion, knowing the audience, understanding the message frequency that is appropriate for that audience and choosing the appropriate communication approach for delivering information about the project is key. For example, when promoting a project to fishermen/volunteers/general public, the message should focus on reasons for participating and how the information will be used. Whereas, when promoting a project to scientists, the message should focus on data quality and how data can be accessed for use. Therefore, customizing the frequency, messaging, and communication approach based on the target audience and project type should be considered. Additionally, understanding the number of volunteers and the level of volunteer involvement needed for a project will help determine how much time and effort to invest in communication about the project. Projects that are simply recording data on a mobile app may take less time and effort than a project involving volunteers collecting biological samples.

Finance & Infrastructure A-Team - Recommendation

RECOMMENDATION 1: The Council should retain operational oversight of the Citizen Science Program and identify options and pathways for securing the necessary funds to do so.

Rationale – The A-Team identified a 2-entity budget approach for the program that divides the budget into Operational/Administrative activities and Programmatic/Project activities. Operational/administrative activities should be housed at the Council with Program staff overseeing administration and management of the Program and integration of projects and outcomes into the management process. Programmatic/project activities could be managed by a distinct entity to oversee specific aspects of projects (volunteer management, database management etc.), including additional non-operational staff on a project-by-project basis.

Data Management A-Team - Recommendation

RECOMMENDATION 1: The Program should consider use of the Data Management Resources Inventory as a reference for development of proposal review criteria and project/data standards.

Rationale – The A-Team conducted an extensive inventory of data management resources available in the region with regard to fisheries related databases. The survey collected information about the type of data collection program, data storage, metadata, data provision and use, and the funding/cost of the data collection program. These items could be used to develop criteria for data management that projects must outline when being considered for endorsement by the Program; and for use to develop specific data standards a project must meet for consideration by the Program.

Projects/Topics A-Team - Recommendations

RECOMMENDATION 1: The Program should use existing resources, such as the Council's Research & Monitoring Plan, to identify priority topics and project ideas for the Program.

Rationale – The A-Team reviewed existing resource documents that could guide development of citizen science research needs. The Council's Research & Monitoring Plan which is updated every two years includes input from the Council's Advisory Panels, the Scientific & Statistical Committee and SEDAR research recommendations. This document can serve as a source

document for further development of topics and project ideas that could be addressed using a citizen science approach.

RECOMMENDATION 2: The Program should develop a Citizen Science Research Needs document and develop a process for soliciting additional input and review of the document on a regular basis.

Rationale – The Council's Research & Monitoring Plan provides technical and species specific research recommendations. However, the A-Team suggests developing a separate document that is informed by the Research & Monitoring Plan but specifically provides research need topics that could be addressed using different types of citizen science projects. The document would receive regular review (annual) by the Council's Advisory Panels and Scientific & Statistical Committee, and the Socio-Economic Panel before being reviewed and adopted by the Council. The A-Team also suggests establishing a mechanism for providing less engaged members of the public to provide suggestions and/or rank potential topics/project ideas outlined in the Citizen Science Research Needs document.

RECOMMENDATION 3: Project criteria should be incorporated, when possible, into a SAFMC Citizen Science Project Endorsement Program.

Rationale – The Council's Program intends to support projects in two ways – 1) the Program internally pursues funding for specific projects, and 2) external partners pursue funding for projects that meet the goals/objectives of the Council's Program and are endorsed the Program. In order to support projects, the Program needs to identify what criteria a project must meet to be endorsed by the Program for use in science and management. Project criteria should include guidelines for a project design plan that provides project developers an understanding of what and how much data is needed to be useful to management. Project criteria guidelines will support development of a Project Endorsement Program that would allow the Council's Program to endorse external projects in the absence of any funding for a project. In essence, external partners would seek funding for a project and apply to receive Project Endorsement from the Council's Citizen Science Program indicating that the project has met the criteria for being used in management and/or assessments.

Volunteers A-Team - Recommendations

RECOMMENDATION 1: The Program needs to support development of a Volunteer Interest Form to serve as the initial mechanism for engaging volunteers in the Program and to better understand the demographics, interests, skills and experience of potential volunteers.

Rationale – The A-Team reviewed example citizen science projects and compiled a summary of how these projects engaged with volunteers before, during and after a project. Understanding the motivations, expectations and demographic of volunteers proved to be a common theme amongst the example citizen science projects reviewed by the A-Team. This will be especially important for the Council's Program given the wide geographic range of the potential participating volunteer base as well as the diverse nature of the types of volunteers that may participate in projects (recreational/commercial fishermen, etc.). It will also help guide development of the types of projects that the Program will feasibly be able to conduct given the capacity of volunteers. The A-Team also recognized the need to understand the demographics, interests, skills, and experience of potential project partners such as scientists, researchers, NGOs and other

fishery stakeholders that are not fishermen. Therefore, the A-Team has been working collaboratively with the Projects/Topics Management A-Team to develop a Volunteer Interest Form that will collect information about potential stakeholders that will engage with the Program.

RECOMMENDATION 2: The Program needs to develop Training Plan guidelines to help projects develop initial and continuing training efforts for different types of projects.

Rationale – Through a review of literature and example citizen science projects, the A-Team learned that volunteer training should consider both initial training (before the start of the project) and continuous training (refresher training periodically for the duration of the project). Therefore, the A-Team is recommending developing guidelines for what should be included in a Training Plan for projects that should outline the materials, approaches, and delivery methods for both initial training and continuous training efforts. The Training Plan could be organized by different types of projects. For example, training needs for mobile app-based projects, biological sample projects, observational data projects, etc.

General Recommendations – All A-Teams

RECOMMENDATION 1: Designate A-team liaisons to coordinate collaboration between A-Teams.

Rationale – During the All-Hands Action Team meeting in January 2018, several action items were identified where more than one A-Team needed to work together on developing a specific program recommendation. The Program Manager will routinely summarize action items that may lend themselves to collaboration between A-Teams and provide this to the co-chairs of each A-Team. The A-Team liaisons from each team will review the list of action items, determine how to approach collaborating on the action item, and establish a point person from their A-Team to work on the action item.

IV. Next Steps – Action Team Work for 2018

After the All-Hands Action Team meeting in January 2018, the A-Teams have continued their regular meetings and developed a list of the next tasks to be addressed as well as areas of collaboration across the A-Teams for 2018. Below is a summary list of some of the continuing tasks the A-Teams will be conducting.

Communication/Outreach/Education

- Develop Communication Plan for SAFMC citizen science pilot project.
- Review and provide feedback on the draft Citizen Science Research Needs document.

Need for A-Team Collaboration –

- Work with Volunteers Action Team in relation to Training Plan guideline recommendations

Finance & Infrastructure

- Recruit up to three additional members to the A-Team, in particular with expertise in non-profits, foundations and governmental relations.
- Research and compile a summary of funding models for the Program to consider for both operational and programmatic support. Models that are being explored include public-private partnerships with 501(c)3, crowdfunding, academic partnerships, “Friends of” NGO/foundation, quasi government partnership (Sea Grant, ACCSP, etc.)

- Share the promotional flyer with potential funding partners and work with staff to begin promotion of the Program and exploration of partnerships based on appropriate funding models.
- Review and provide feedback on the draft SAFMC Citizen Science Research Needs document.

Need for A-Team Collaboration –

- Coordinate with other A-Team members that have expertise in non-profit development and management on different operating models.

Data Management

- Continue to compile information about how existing citizen science projects handle data management to add to the inventory.
- Compile information about current methods that citizen science projects use to validate data collection methods.
- Research and compile a summary of data standards being used by other programs to serve in the development of data standard criteria for projects under the Council's Program.
- Review and provide feedback on the draft Citizen Science Research Needs document.
- Using the draft Citizen Science Research Needs document, identify the type of projects that the Program might support and develop a general data standard for each type of project using different types of platforms (i.e., mobile app projects, etc.)
- Develop a template for a Data Collection Plan for a project – possibly use the SAFMC citizen science pilot project as the example.

Needs for A-Team Collaboration –

- Coordinate with the Volunteers A-Team on how to develop the database for the Volunteer Interest Form and how to ensure security of these data.
- Review the Communication A-Team inventory of project examples to see if there are examples of data management.
- Work with the Projects/Topics Management A-Team as they develop project management plan templates for different types of citizen science projects
- Work with the Finance & Infrastructure A-team as they explore different funding models and what funding partners might expect as it relates to data "ownership" and funding partner expectations.

Projects/Topics Management

- Develop a Project Management (Design and Planning) template for the SAFMC citizen science pilot project.
- Review and provide feedback on the draft SAFMC Citizen Science Research Needs document.
- Develop criteria that projects must meet to be endorsed by the program and develop guidelines for what should be included in a Project Endorsement Program.
- Develop a method for vetting project ideas that are not included in the Citizen Science Research Needs document but proposed by a fishery stakeholder.

Needs for A-Team Collaboration –

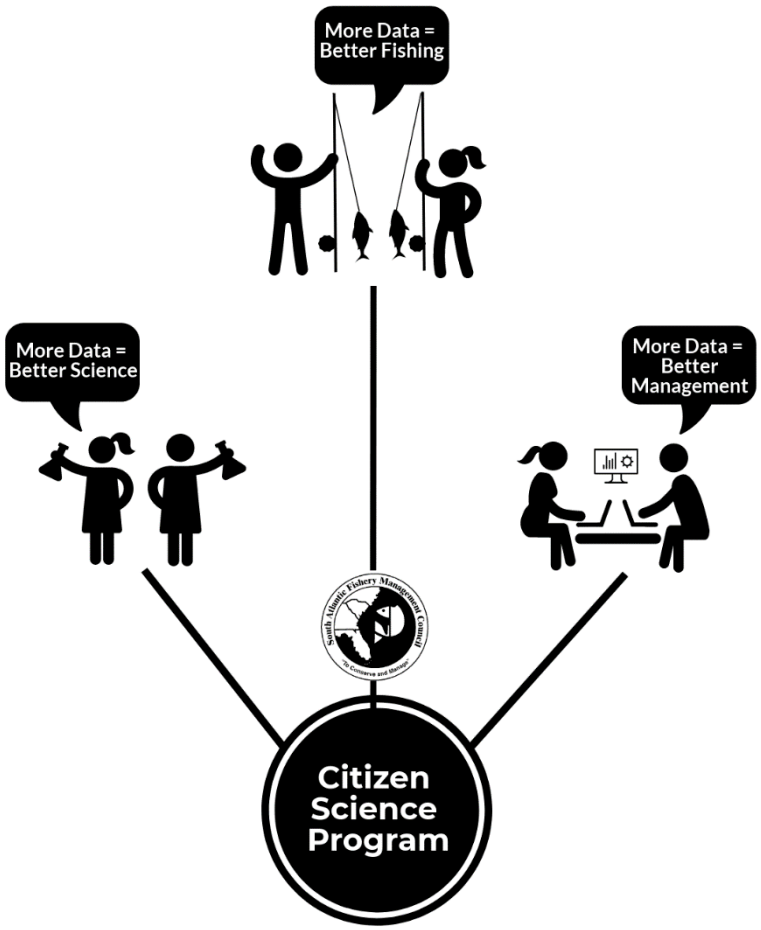
- Work with the Finance & Infrastructure A-Team on how project development relates to funding and the type of funding model that might fit with different types of projects.
- Work with the Data Management A-Team (as outlined above).

Volunteers

- Review and provide feedback on the draft Citizen Science Research Needs document.
- Finalize the content of the Volunteer Interest Form
- Method for matching volunteers (fishermen, scientists, researchers, etc.) on projects.

Needs for A-Team Collaboration –

- Work with the Communications A-Team on:
    - Developing methods for communication and delivery of the Volunteer Interest Form (instructions, electronic vs. paper, etc.).
    - Developing Program Orientation Material for Citizen Science Volunteer Applicants about the Program.
    - Volunteer Training Plan for the SAFMC citizen science pilot project.
    - Volunteer Recruitment Plan for the SAFMC citizen science pilot project.
    - Method to retain volunteers in projects.
    - Understanding how to develop volunteer recognition and incentives for different types of audiences and projects.
- Work with Data Management A-Team on database needed for the Volunteer Interest Form.



V. Action Team Resource Materials.

All products and materials produced to date by the Action Teams are available at the following links.

Communication/Outreach/Education A-Team – http://safmc.net/citsci-a-team-communication/

Google Drive Main folder:
https://drive.google.com/drive/folders/0B6XErmbTpHpXcHQ0c1dUZ1BrTDg?usp=sharing

- Inventory of Communication Tools in Sample Citizen Science Projects: https://docs.google.com/spreadsheets/d/13-Olz8s1W4sBVpqK9CgY_3s9WzqwftZTDxCHBzTV1Vg/edit?usp=sharing
- Communication Approaches Draft Document: https://docs.google.com/document/d/1UIwxer-YYLwiLTbBhd_cfAKqwpUPpfa8HMOeUpk7CoM/edit?usp=sharing
- Sharing Project Results/Promotion Draft Document: https://docs.google.com/document/d/1cB7JTkyFI4wW-eppxBJI87yZTOpevV01QHJP_Dbwx7k/edit?usp=sharing
- Sharing Project Results/Promotion Matrix: https://docs.google.com/spreadsheets/d/1_JIPjj7379BwwzBpiYg5dRaBgNp5rTutirJtYNf9ApA/edit?usp=sharing

Finance & Infrastructure – http://safmc.net/citsci-a-team-finance/

Google Drive Main folder:

https://drive.google.com/drive/folders/1hDwJNQNDlYYnbj1njAQhBJe09Obh4rXL?usp=sharing

- Promotional Flyer for SAFMC Citizen Science Program: https://drive.google.com/file/d/1j5cWC8nRj2eYJRGCsKd5sLfyntuxfjrO/view?usp=sharing
- Program Funding Models Draft Document: https://drive.google.com/file/d/1AioSfh8GZvMmRvPaSBiWpSKwr5mhyohl/view?usp=sharing

Data Management – http://safmc.net/citsci-a-team-data/

- Data Management Resources Survey: https://goo.gl/forms/LrZglJqBC8LCTNQ43
- Summary of Data Management Resources: https://docs.google.com/spreadsheets/d/1-kLbpTR903mvJgWIeW5yBCLgXMsnwqg7RXCtR0GCugE/edit#gid=1230891919

Projects/Topics Management – http://safmc.net/citsci-a-team-projects/

Google Drive Main folder:

https://drive.google.com/drive/folders/1PXc9A36Gc0kqwL-tG907eC_To9fOt2QT?usp=sharing

- SAFMC Research & Monitoring Plan, 2018 -2022: https://drive.google.com/file/d/1qglcH6qU2Pu_szzRZMLdC62V9gk_1lFg/view?usp=sharing
- Diagram of Identifying Program Priorities: https://drive.google.com/file/d/16xAhemM9779GIL_eqa5BYM8HIFxnkq1g/view?usp=sharing

Volunteers – http://safmc.net/citsci-a-team-volunteers/

Google Drive Main Folder:
https://drive.google.com/drive/folders/1aE9gp3QQ2haHLDVMr_ldjTue0xRvVWhV?usp=sharing

- Summary of Volunteer Training Approaches: https://drive.google.com/file/d/1muGmXtzGGhkmmzWLyBWouDtP4YqCUFrp/view?usp=sharing
- Diagram of Engaging Volunteers in the Project –What the Program needs to know about Volunteers: https://drive.google.com/file/d/1SKdxsHWs2ZPFe3Z5eHehUCpcw7GM_Z8W/view?usp=sharing
- Volunteer Interest Form Draft Document: https://drive.google.com/file/d/1um495LRMjm6JhLP4ncvGqVGzm2gTRofl/view?usp=sharing
- Case Studies of Volunteer Training Approaches: https://drive.google.com/file/d/14aVpyqzWceR-Ec9ZFSzZH8zHahhGlXus/view?usp=sharing
- Literature Review on Citizen Science Volunteers: https://drive.google.com/file/d/1zT7m9vmxLXHVT39kI8vK9Lr7jr6a9QLK/view?usp=sharing