SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

CITIZEN SCIENCE COMMITTEE

Webinar

June 10, 2020

Citizen Science Committee

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Dr. Genny Nesslage
Rick DeVictor
Erika Burgess
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Other observers and participants attached.

The Citizen Science Committee of the South Atlantic Fishery Management Council convened via webinar on Wednesday, June 10, 2020, and was called to order by Chairman Mel Bell.

MR. BELL: Welcome back, folks. This is the Citizen Science Committee, and we'll call the committee to order. Just a few things here. If you have any questions or comments or wish to make a motion, please raise your hand or use that, and Julia is going to basically lead this for us and monitor the hand-raising and who has got questions in the queue. For voting, it's the same thing, and we'll do it by consensus, if possible. If we need, if we can't reach consensus, we'll do a voice vote, and Julia will call the names, and use your question window to address any technical issues you might have.

For review, the committee members are myself, Kyle, Bob Beal, Carolyn, Chester, Chris, Roy, Tim, Steve Poland, Art Sapp, David Whitaker, and Spud Woodward, and so that's the committee members, and others are always welcome. The first item will be Approval of the Agenda. This is the agenda, and we've got basically three items. We're going to focus on Item Number 1, which is the Citizen Science Program Evaluation, and that's the most important thing, and we've got Rick Bonney onboard for that, and we want to make sure that we're respectful of his time and schedule. There is the agenda, and you've seen it, and is there any modifications or adjustments or questions about the agenda? Seeing none, then the agenda is approved.

Next is Approval of the December 2019 Minutes, and are there any changes or modifications or anything that needs to be done with the minutes? Hearing none, then any objection to approval of the minutes? Then the minutes stand approved from the December 2019 meeting. Then we'll jump right into the first item on the schedule, which is the Citizen Science Program Evaluation, and Julia is going to walk us into that, and keep in mind that they've done quite a bit of work here, and we are very fortunate to have Rick with us today. This is really important because, if you're going to evaluate your success, how you're doing, you've got to have some means of evaluation, and so go ahead, Julia. Take it away.

MS. BYRD: Great. Thanks, Mel. As Mel mentioned, Rick Bonney is on the line with us, and we're going to be kind of picking up where we left off at the December 2019 meeting and kind of talking about the work that's been done so far, and I know you can't see anyone, but I just wanted to give -- I know you know what I look like, but I wanted to just put a picture up there. Rick and I will be kind of tag-teaming this evaluation agenda item, and so you'll be hearing both of us kind of present and kind of facilitate and lead the discussion.

What we're going to do is I'm going to give kind of a quick background on kind of what's been done to develop goals and objectives and strategies and indicators, which is kind of the first piece of being able to look forward and put together an evaluation plan, and then I'll turn things over to Rick, and he will give kind of a little more information and reorient you all to the work that the Citizen Science Operations Committee has done, and then we'll pull up your Attachment 1a, where we're hoping to get feedback from you guys, and then Rick has one more kind of quick presentation that will go over kind of our next steps and give examples of kind of evaluations from different programs.

In order to develop an evaluation plan for the overall Citizen Science Program, back in 2018, in December, when you guys approved the Citizen Science SOPPs, you approved kind of the initial Citizen Science Program goals. Then, last year, we worked with Rick Bonney and Jennifer Shirk,

who helped us develop kind of draft objectives that were shared with the Citizen Science Operations Committee at their October meeting, and then they provided additional feedback, via a Google doc, through the end of December.

Then, this year so far, the Operations Committee has held kind of three webinar meetings to kind of work on developing these goals, objectives, strategies, and indicators of success document, and so, in January, they focused on kind of the objectives. In March, they continued working on the objectives, and they worked on strategies, and then, in May, they kind of finalized the Attachment 1a document that is included in your briefing materials, and Rick, in a few minutes, will get into kind of the differences between goals and objectives and strategies and indicators.

In between each of these meetings, committee members were providing input on this Google doc, and then Jennifer and I would kind of incorporate the feedback and provide an updated document to the committee, and so I just say this in that the Operations Committee has done a ton of work in the past kind of six months on this, and so I think they've done a really wonderful job, and I think we have -- We are really interested to get your feedback on the document that they've put together, and so, at this meeting here in June, we want to get your feedback on program goals, objectives, strategies, and kind output indicators of success.

These are the things that will serve as kind of the guiding light for the program, and it will help us, as kind of staff members, figure out what we need to be working towards, and so getting your initial feedback will be really helpful and appreciated.

As far as next steps go, the Operations Committee will be meeting again, and they're actually going to meet at the end of June, and then one more time this fall, and we're going to be drafting program outcomes, and, again, Rick will talk a little bit more about what these kind of outcomes kind of are generally, a definition of them, and then Rick is going to help us put together kind of an evaluation plan options that the Operations Committee will review, and then all of these things will come back to you, either at the September or December meeting.

We're hoping to have at least a strawman for the evaluation plan options for you guys in September, so you have a feel for kind of what resources may be needed to do that, and so, with that, I will let Rick take it away, as he talks more about kind of the definitions of what an evaluation is and the differences between goals and objectives and kind of highlight some of the Operations Committee's kind of discussions and drafting this Attachment 1a document.

DR. BONNEY: I guess we're all starting to get used to talking into what feels like talking into a black hole, and it will be that way for a while, it looks like, and I want to start by saying that this continues to be an incredibly rewarding experience, working with the council. I have enjoyed every moment of this, way back from the first Charleston workshop right up until now, and part of the reason I have enjoyed it so much is because of the skill of the staff and the council members. I am just continually blown away.

When Julia and her folks there say that something is going to be done on a certain day, it gets done. When she says there's going to be draft slides to look at, there they are. When we ask the Operations Committee to comment on a Google Doc, they comment. When we ask them to discuss it, they discuss, and I've never really seen anything quite like this, and I have worked with most

of the federal agencies, and I know you're not an agency, and maybe that's part of the reason it works so well, and so it continues to be really a rewarding experience, watching this all work.

In the beginning, I was asked, along with Jennifer, to try to provide some guidance to get the program started, and, in the last year or so, I've been asked to provide guidance to figure out whether the program is working, and I want to remind you all that this is, to the best of my knowledge, historic. I am not aware of any other group, NGO or government or quasi-government, that has systematically designed a comprehensive citizen science program, or tried to, and one of the things that means is that nobody has tried to evaluate one either, because there hasn't been one to evaluate, and so not only are you blazing new ground in creating such a program with infrastructure, but also you will be blazing new ground in trying to determine its effectiveness.

Now, I covered some Evaluation 101 last December, and that was six months ago, and so let me take just a very few moments to re-orient ourselves. First of all, what is evaluation? Here is a definition, and I don't think it's in the dictionary, but I think this is a pretty well accepted definition. First of all, we're talking about the systematic collection of data, and so, in other words, we're not talking about randomly gathering a little of this or a little of that or looking at some emails or getting anecdotes. We are talking about systematically collecting evaluation data.

What we do with those data is measure the strengths and weaknesses of what we're doing with the program, and so what's working well, but also what's not working so well and what could be improved, and evaluation can work at the product level, the project level, the program level, the policy level, and, in this case right now, we're talking about at the program level, and we're trying to determine and improve overall effectiveness of what the citizen science program is doing. The next slide is a slightly simpler definition of evaluation, and it combines multiple approaches to figure out whether something works.

To do an evaluation, whether it's project or program or whatever it is, there are some steps which are universally understood and need to be taken. You need to develop goals, and you need to develop objectives, and you need to develop indicators, and, since we all talked last December, we have decided that you also need to develop strategies.

A goal is something that is lofty and visionary. For example, we could say that a goal of the Citizen Science Program is to improve communication among stakeholders, but that's kind of hard to measure, and what the heck does that mean? What you need to do is you need to come up with objectives to meet that goal of communication, and those are specific and measurable steps, or actions, that can be taken to achieve the goal, and so an objective for a goal of better communication could be to develop a functional website. There are probably a lot of other objectives too, but that could be one.

Then the strategy then would be, okay, we're going to develop a website, but what do we need to do to do that? Well, one of your strategies might be that we'll start by hiring a designer, and then there would be more strategies, and, finally, we have these indicators, which are measured, that show that the objectives have been achieved, and so indicators here could be website is developed, check, but it also could be number of hits to the website, and maybe you're looking for fifty a day or 5,000 a day, and the number of comments that people leave behind when they're at the website, ten a day or whatever, and you could come up with those indicators ahead of time.

The indicators are really, really important, because those are the things that tell you whether you're accomplishing what you set out to accomplish, but, as you can see in the next slide, there are actually two kinds of indicators, and so what I was just talking about a moment ago are really outputs, and those are the direct products of activity, and they are fairly easy to measure. There are hits and comments, but, when you get to outcomes, these are indicators that show things that are more complex, and these are changes to individuals or groups or communities as a result of participating in a program or an experience, and those are harder to measure. What we're going to want to know eventually is has communication improved, and how the heck do you figure that out?

The next slide takes us back to where we were some months ago, with the Operations Committee saying to ourselves, okay, we need to come up with measurable objectives for these goals, and, because we're a little bit behind schedule, and because you probably all know these goals, I am not going to read them all to you, and I'm going to point out that there are five of them, and then the next slide, or slides, is going to boil these down a little bit.

Goal 1 is really all about designing a program framework. If you're going to have a program, it has to have overarching guidelines, and it has to have a framework to show how everything is going to fit together. The second goal is you're going to design and implement projects using that program framework. In this case, you've started with the scamp discards and with the FISHstory.

Then the third goal is specifically about data and making sure that projects are successful, and the reason we've called data out so heavily here is because this whole program started with the desire among all the stakeholders to have more and better data that could be used, potentially, in stock assessments and for making decisions about resource management, and so we really need to make sure that we have quality data, and those are going to be data that are used to make sure the projects are successful in meeting those goals, but we also have, in Goal 4 and 5, some other non-data outcomes. We want to build partnerships that foster learning, and we want to inspire active engagement, and, when the Operations Committee got to the point of looking at Goal 4 and 5, we came up with objectives that are a whole lot messier than they were for 1, 2, and 3.

One of the reasons is because those are more challenging kinds of goals and more challenging kinds of outcomes, and they're more social science kinds of things, and I think a little less attention has been paid to developing them, and so the next slide shows what the Operations Committee decided to do. It was to collapse them into one goal that simply says to foster mutual learning, collaboration, and program engagement.

Now, I can't see the number of the slides, and so I can't remember if this might be the last slide that we had in this series, but we're now down to these four goals that are pretty clear, and we then set about coming up with specific objectives for them, and I want to point out that this Operations Committee is very proactive, very collaborative, and, in my role as guide and advisor and helping with the evaluation, I actually didn't do very much but listen and reflect back to the group. It wasn't me that said you've got to collapse 4 and 5 into one goal, and that was the group that came back and did that. Again, for me, that was very rewarding, to see the group working that way. Am I correct, Julia? Was that the last slide in this session, and do we then start going on into the specific objectives?

MS. BYRD: Yes, and that was it, and so the next thing -- What I'm going to do is I'm going to pull up -- I will probably need to make this a big bigger, and so this is your Attachment 1a. Again, this is kind of -- Thank you, Rick, first off, for giving that kind of great orientation to what evaluation is and the differences between goals and strategies and objectives and indicators.

What we really want to do today is this is the first time you guys are seeing this information, and so we want to kind of walk through each goal and the objective and the strategies, and we also have some kind of output-related indicators of success, and we really want to get feedback from you guys on this, and the idea is we'll then incorporate your feedback, and then, at a subsequent meeting, we would provide this back to you, in the hopes that you all would kind of adopt these goals, objectives, strategies, and indicators.

At the top of this document, you can see kind of the vision statement and the mission statement, and what I am going to do is just kind of walk through each goal, and so I guess -- Mel, I guess what I was planning to do was kind of briefly walk through the goal, the objectives, and the strategies under each kind of goal, and then I'll pause and see if there's feedback on that goal, and then we can move to the next goal.

MR. BELL: Let's do one goal at a time and see if anybody has any questions or comments related to the objectives under that goal, and I think so.

MS. BYRD: Okay. Great. Thank you. We'll start with Goal 1, and so, again, just what we tried to do as the Operations Team is kind of boil it down to what a specific goal was, and so Rick just went over this a second ago, but Goal 1 is about designing the program framework, and so we have three objectives under this goal.

The first one is to establish the infrastructure, the organizational infrastructure, for oversight and administration, and so the strategies entail creating all the different committees and advisory panels that are laid out within the SOPPs.

Objective 2 is about developing kind of program procedures, policies, and tools, and so this kind of includes developing things like the SOPPs, the citizen science research prioritization process, an endorsement program, kind of project support resources, and kind of communication and outreach plans, as well as kind of developing this evaluation process.

I know we're running behind, and so I'm not going to read through each of these, but hopefully you guys have had time to look over them, and so I want to pause here for a second on Goal 1, to see if you guys have any kind of thoughts or comments on the objectives or the strategies under Goal 1, and, if you don't have specific kind of comments, I think it would be also helpful to know if these are kind of moving in the right direction, and I think that alone could be really helpful feedback for the Ops Committee.

MR. BELL: If you see anything that you want to comment on or ask about, just raise your hand, and Julia has got the list of -- She will see the hands. If you don't see any, Julia, we can move at your discretion.

MS. BYRD: Okay.

DR. BONNEY: I just want to remind the group that some of these objectives are simply codifications of things that were already done or are ongoing, first by Amber before you, and then by you, after you took over, and, even though they have already been done, it's really important to get them all written down in this way, so that anybody on the council, or anybody not on the council, could quickly look and see a summary of all the things that happened or needed to happen, but, in the process of writing down what it already means, then we came up with some new things that had to be done, and I just wanted to add that before you move on.

MS. BYRD: Thanks, Rick. I am not seeing any hands raised, and I guess I will assume, if folks don't have comments, that people think these are kind of moving in the right direction, and, if that is not the case, please feel free to raise your hand or speak up. Okay. I am not seeing anything, and so I'm going to go ahead and move on to Goal 2.

As a reminder, Goal 2 is all about designing and implementing projects, and so we have four objectives under Goal 2, and the first is to kind of publish and broadly disseminate the citizen science research priorities, because those are the topics for the projects we want to support, and those are the things that will address the council's research and management needs.

Strategies include kind of posting it and sharing it via social media, to the website, through external outlets, sharing priorities with you guys, the council, the SSC, the SEP, and distributing to all of our kind of program partners via kind of an annual report and other methodologies.

Objective 2 is about implementing the citizen science endorsement program, and so this -- Kind of the framework for the endorsement program was included in the SOPPs, but it has not launched yet, and, again, the idea of this is that it -- If the project wasn't developed kind of through the council, the council could endorse a project, if it kind of fit the criteria for our endorsement program, and so objectives include kind of developing a launch strategy, publishing the criteria, and providing an ad hoc committee that would review any endorsement applications.

The third objective is to provide project support resources and project development guidance, and so making those resources available on the webpage is one of the strategies, reviewing and updating the resources as needed, and distributing the research to our program partners annually, via a variety of communication outlets, and then we also want to provide kind of project development guidance via kind of webinars or YouTube videos, virtual office hours, kind of different ways, and we want to make sure the program is helping provide kind of guidance or helping connect people in the development of projects. A lot of these project support resources -- Well, a ton of these project support resources were developed by our A-Teams, when they were working on kind of SOPPs.

Then the fourth objective is to encourage collaboration by a diverse team of stakeholders when developing projects, and so, for our kind of internal council citizen science projects, we are using design teams with diverse expertise, and they provide guidance throughout the development of our project and the implementation of our project, and we want to help, again, identify and connect stakeholders for project development and implement a citizen science projects idea portal, where members of the public could share ideas for projects. Again, I will pause here and see if there's any kind of feedback or comment on the Goal 2 objectives and strategies.

MR. BELL: Think of it in terms, also, folks, of is there anything missing that they have perhaps overlooked related to an objective or a component that would be necessary to achieve the goal, and so it's a very systematic approach to designing this program, to make sure we've designed it properly, so it does what we want it to do and works for both the program itself and us involved as well as the public, and, ultimately, we can achieve the vision that we have aspired to, and so, if you see something that's missing, give a holler, or just raise your hand.

MS. BYRD: Mel, I think that's great. If you see something missing or there is -- Chester, go ahead.

MR. BREWER: I don't know whether you want to talk about it right now, but, in conjunction with this, there are certain projects that I would like to see, or certain research projects that I would love to see, get priority. They would be things like evaluating the effectiveness of our special management zones, evaluating the effectiveness and use of descending devices, and I would probably -- I mean, I have just started thinking about it, but I probably could come up with some other ones, and I feel like you've done absolutely gorgeous work here in getting this thing organized, but the scup project has kind of not moved forward that quickly, because I understand there is just not that many people that fish for scup, and perhaps another project with a broader appeal might be a good idea. With that, I will mute myself.

MS. BYRD: Chester, thanks for that comment, and I think you're right that the scamp project is kind of -- It's a little bit of a specialized fishery, and there's kind of a small kind of audience that it may appeal to, and, when we do the project updates, we'll kind of update you guys on the FISHstory project, which is the one that's looking at kind of using crowdsourcing, through the Zooniverse platform, to help us identify and count fish in historic photos, and we've been very surprised, in a good way, about the interest in that project since we launched a little over two weeks ago, but I think I would love to kind of chat with you more about some of kind of what you think priorities are.

I will also mention that, in conjunction -- When you guys update the overall council research and monitoring plan, you will also be updating the citizen science research priorities, and we get feedback from both the Operations Committee and our other advisory panel, the Projects Advisory Team, who help us kind of update those, and then they will be shared with you, and so you guys -- I think it was December of 2019 when you looked at them, and so that would be a great way, if there are things that you guys think are research priorities that aren't captured in those -- That's kind of a great way to kind of update those, through kind of the process that's laid out, and that would be wonderful, and it would make sure that kind of it's clear kind of what the priorities are from the program from you all's perspective as council members.

MR. BELL: Right, and so, to Chester's point about project priorities, we have a process in place to identify those and then, specifically related to a project that's underway right now, we can comment on that later, but there is a process in place to identify priorities and where we invest our time and effort, but, yes, that makes perfect sense, Chester, to do that.

MR. BREWER: Thank you so much.

MS. BYRD: Thanks, Chester. I don't think that I see any other hands raised, and so I will go ahead and move on to Goal 3. Again, this is the goal that's focused really on data and making sure

that projects are successful. We have three objectives, and the first one is to kind of implement program guidelines that address kind of data management, data standards, quality, data accessibility, and so, to do that, the strategies include ensuring our project support resources include clear kind of data guidelines, that we share those guidelines with any projects that we support, whether they are internal or external, and, also, if we endorse them, try to develop kind of minimum data standards that projects must meet to be supported or endorsed by the program, and, also, we want to develop kind of draft data accessibility agreements and incorporate those into the project resources available online.

I know kind of transparency and data accessibility were something that were important in the development of the program, and so that strategy is there to try to address that, and the second objective is to review project results, to determine if the data meet the project and/or program needs, and so we want to kind of develop and implement a process to review kind of project results and share summaries of that review with you guys as a Citizen Science Committee and to also publicly highlight that information, and we also want to develop kind of an adaptive process to help projects that produce data that kind of address project or program goals, and so sometimes small tweaks to a project can do a lot to improve how successful it is, and so we want to make sure that we have a process where we can provide feedback to folks who are doing projects, to try to improve the success of those projects.

Then the third objective is to kind of document the contribution that the citizen science projects and data are making to the council's research priorities and decision-making, science and management decision-making, and so that includes developing a kind of project inventory that kind of summarizes that information and distributing that inventory via the annual report and perhaps other avenues, and so that's kind of the data-related goal. Any kind of thoughts or comments? Are we leaving anything out of this goal, as far as objectives and strategies go?

MR. BELL: If you think about it, the last objective is really kind of our -- That's our useful deliverables, if you will. Are we actually achieving, going back to our vision of providing useful data that can be used eventually for management purposes, and are we doing that, and so that is, I think, essential to us achieving what it was we set out to achieve with this, and Julia mentioned, under Objective 3, that it's kind of the adaptive component of evaluating what you're doing, and it's sort of a feedback loop, and it's like adaptive management and adaptive -- You always have a feedback loop, to see if you can make improvements and that sort of thing, but is there anything missing from this that we've overlooked or anything we should add, or do you have any questions?

MR. BREWER: I really like Objective 3.3, because, if you are encouraging people to participate in the program, and they do, and they work hard, and they provide you useful data, something that we can use, then they need to be told that, yes, this worked, and we made this particular management decision in part based on the information that you provided, and so thank you very much, and so I think that the atta-boy, I guess you would say, part of this objective is really important.

MS. BYRD: Thanks for that comment, Chester, and I really agree, and that is something definitely that we heard a lot of from folks as we were developing the program, that this kind of feedback loop is really important and needs to be there, and it's critical kind of to the success of individual projects, and perhaps the program as well.

I'm not seeing any other hands raised, and so I'm going to go ahead and move on to the last goal, and, again, this is -- As Rick already kind of alluded to, this was originally that we had two goals, Goal 4 and Goal 5, that were combined into one goal, and it concentrates on learning, collaboration, and engagement, and so the first objective is to kind of promote opportunities for learning among diverse constituents, and so it's kind of encouraging development of projects over a wide range of research priorities.

I think that kind of goes along with what Chester was saying about having projects that reach different sort of audiences, and so different people may be able to be involved in different types of projects, and that would be a good thing, and we want to kind of utilize ideas that we collect through this project portal, once it's developed, and we want to kind of serve as a matchmaking service between kind of fishermen and scientists, through kind of project development and implementation, to promote learning. We want to host kind of open discussion with stakeholders, so we can share project results or lessons learned, or perhaps highlight some of the stakeholders or project participants, so they can kind of share what they've learned from each other.

Objective 2 is to try to foster distinct partnerships and develop new partnerships, and so we want to have kind of best practices for creating partnerships, encouraging kind of clear lines of communication, conducting informal kind of reviews or evaluations of partnerships, and kind of exploring some of the broader citizen science platforms for partnerships that will help us connect kind of volunteers to projects.

Objective 3 is to try to strive to enhance trust among scientists, managers, and fishermen, and so we want to encourage transparent communication, manage expectations, develop a method where we could try to evaluate kind of this trust among program participants, and then ensure kind of best practice guidelines addressing building trust among different project participants.

The fourth objective is to engage kind of new categories of stakeholders that aren't typically involved in the council process, and so that means identifying ways to promote the program or projects kind of outside of our normal communication methods and to develop a mechanism to track engagement across different stakeholder categories.

Then the final objective for Goal 4 is to develop a volunteer engagement strategy using the tools that were kind of outlined and developed by the Citizen Science Action Team, and so that's developing kind of communication tools to maintain volunteer awareness of the program and individual projects, creating a volunteer recognition program, compiling available resources on volunteer engagement, developing kind of matrices to show what type of training and delivery approach is needed for different types of projects, developing lists of things that may be good to use as incentives, and then identifying the appropriate ways to share information about the program and about individual project results in a way that volunteers and participants would like to receive that information, through different data visualizations and things like that.

That is kind of Goal 4 and the draft objectives and strategies, and so, again, we're asking for the same feedback. Are there any kind of questions or comments? Are we missing anything? Is there anything in here that you feel is inappropriate or you have concerns about? Again, any feedback would be greatly appreciated.

MR. BELL: Going back to something Rick said, keep in mind that the first three goals were really about kind of the science itself and building the program so that we can actually acquire the science, is it the right science, are we doing it the right way, can it be used for management decision purposes eventually, hopefully, and the fourth goal is really about the people, and what makes citizen science work are these people.

These are people that have invested their -- They believe in what we're doing, and they have invested their time and their resources and their energy, and this is about that piece, or is it working for the people, and do people want to be involved in this, and do they understand what we're doing, are we communicating, and so this is a very important goal, but, as Rick pointed out, the first three are kind of about the science piece and the deliverables, if you will, and this is the piece that really gets to the heart of the folks that are doing the work, basically, and so anything missing, any comment?

MR. WOODWARD: You all have done a great job, and I think this covers the depth and breadth of the citizen science initiative. I think you've all done a real good job with that, and I do think that Number 4, Goal 4, is probably the one that is going to end up being the most important, because I know, from my years of experience of trying to engage the angling community and citizen science initiatives at the state level, we always ran into the fatigue factor. People would get excited about it and do it for a little while, and then they would just sort of fall off after they don't either see a tangible result of their efforts or, even worse, sometimes an outcome doesn't match their expectations.

I think this is an extremely important goal, and I think all of the objectives underneath there are articulated very well, what has to happen to be successful in that goal, and so one suggestion is that we've got some existing state-level citizen science programs that maybe we could use to tell the story of how well it works, and the simple one is just the carcass program. I mean, we use it in support of red snapper management, and we use it in support of a lot of state and interstate-level management, and so that's something that has a proven track record and has proven validity, and maybe that's a story that can be told to help bolster support for the council's citizen science initiative.

MS. BYRD: Thanks, Spud, and I think that's a really good idea, and I think having some kind of key examples to be able to share with people would be really helpful, and so that's a great suggestion. Thanks.

MR. WHITAKER: Just sort of to echo what Spud said, giving those participants some feedback on what's going on and how their information that they provided feeds into the big picture, and keep those people innovated, and Spud used to give away hats and shirts, and maybe he can provide some, but one general question. Does the council maintain sort of a living list of research needs or anything like that? Obviously not all would be applicable to you, but do you know if that sort of thing exists?

MS. BYRD: Yes, and so the council, and, John and Chip, feel free to jump in if I'm not describing this correctly, but the council puts together a research and monitoring plan that is updated every two years, and so, every two years, it gets reviewed by kind of the SSC, by council staff, and then it will come to you guys as council members to review, and then I think it gets sent to NOAA Fisheries, and I'm not sure about kind of that end piece, but they look at things like if there are any

new research recommendations that maybe have come up through SEDAR stock assessments or that have been recommended through different kind of SSC reviews of things or that may have come up during you all's discussion around the table, but that's done kind of every two years. Then, when we update the citizen science research priorities, we look to that document, to see which pieces may be appropriate to try to tackle with citizen science. Chip or John Carmichael, I don't know if you all have other things to add on top of that. David, does that answer your question?

MR. WHITAKER: Pretty much, although I am interested in developing a much broader list that perhaps colleges and universities could farm out to graduate students that might be a level below what we need critically for some of our work, but to get some basic life history information, for instance, and things like that, but we can talk about all of that later.

DR. COLLIER: We do include specific information in that list, whether it's for upcoming stock assessments or different things like that. That way, the research that's being developed through the grant process and a variety of things, they can go to the research recommendations and monitoring plan and really use that in their grant writing, showing that it's a data gap for the South Atlantic Fishery Management Council, and I think some of our university partners have been incorporating that into their grant writing documents.

DR. MCGOVERN: I just want to add to what Chip said. We get those research priorities, and we provide them to like Kelly Donnelly in our Grants Office, and they are incorporated into like the MARFIN RFP and things like that.

MS. BYRD: Great. Thanks, Jack.

MR. BELL: I think there's no shortage of needs or ideas, but, yes, it's being able to access what we've kind of got listed in place as useful, as well as other things will come up as we go through various things we're dealing with, and we'll find needs. As Chester said, Chester has in his mind certain priorities and things, and so keeping a running list is always good.

MS. BYRD: Yes, and I think, with the process that we have to update not only citizen science research priorities, but the council research priorities, every two years, it allows those kind of hot topics to sort of come up, and that's hopefully a timeframe that they can be added to the list, and I think, as Mel said, there are a lot of kind of research needs, and so one of the reasons that the council started this program is looking to see if citizen science -- Looking for some of those kind of non-traditional data collection methods like citizen science that can help address some of those needs. I guess are there any more -- Thank you for the feedback for Goal 4. I think that was helpful, certainly, and then I'm going to go ahead and go down to the draft indicators of success.

These are kind of the output indicators, as Rick mentioned earlier, things that are kind of easy to measure, like how many projects have been developed, how many proposals have been submitted, are the SOPPs updated regularly, and the number of partners that have participated in projects and the development of projects, the number of participants we have, things like that, things that are more easy to count, and then, in the upcoming months, we'll be looking to kind of brainstorm about what those kind of harder-to-measure outcomes will be, and so things like developing trust. What do we mean by that, and we want to define more of what we mean by that and how we would measure it.

The idea here is that many of these things could be developed into something like a dashboard, so that it would be a quick look at kind of some of the outputs from the Citizen Science Program eventually, and so I'm not going to run through all of these, and hopefully you guys have had time to look over them, but, if there's anything in particular on the list that is missing, we would love to hear that, or, if there's anything on here that you think may not be appropriate as kind of an output indicator of success, that would be helpful to hear, and I guess I will also note that, if folks have kind of more time in the upcoming weeks to kind of look over this, or you think of ideas of things that should be added or could potentially be added, please feel free to reach out to me and kind of provide that input, and I can share that with the Operations Committee as kind of we move forward on next steps.

MR. BELL: That's a good point, Julia. If you guys have a little more time and can sit back and look at these things, and if you think about it, if you have an ah-ha moment afterwards or something, and this is not anything that we need to sort of codify today completely, or bless, and so it's still a bit of a work in progress, but, when I saw the output list, in my mind, I'm looking at that from a standpoint of if you were coming in and kind of inspecting a program, to ensure that the program is doing what you want it to do.

It's like a checklist that you go through that this, this, this, this, boom, and so it's kind of like an inspection checklist, in my mind, but, if there's something missing that you think would be useful to include as a means of indicating success, feel free to shoot it to Julia at any point.

MS. BYRD: I am not seeing any other -- Mel, first off, thank you for that, and I'm not seeing any other hands raised, and so, again, if you have additional thoughts on this, feel free to contact me, and then the next thing we wanted to do, as far as kind of evaluation planning goes, is, as we mentioned earlier, kind of the next steps are talking more about program outcomes, and what Rick is going to do is give a quick presentation on kind of some examples of other programs that have -- Some examples of outcomes that have been measured from other programs that we thought could be helpful as we go through this.

DR. BONNEY: While you're working on getting that up, Julia, let me say that, for those of you who wondered what Julia does at the council, you just saw her job description, and it's pretty unbelievable, first of all, what she and the other staff there have already done, but it's a long, long list of things that still need to be done, but there's no question, and you all know this, that everything that you're doing is under-resourced.

This is under-resourced, and so many of the ideas that you just came up with would require, I think, some more staff, in order to really make them happen, and what an incredible amount of potential there is, but it's amazing how much is already happening there, and I also wanted to point out that those outputs, that long list of outputs, which were primarily generated by the Operations Committee, those are all things, a checklist, as Mel said, and it's completely appropriate for the council staff to collate that information and publish it on a dashboard somewhere, and that is a very important part of your overall program evaluation. Nobody is going to disbelieve that information.

Now, as I start to move into outcomes, we're getting into some areas here that would be harder for people to do who haven't already been trained in program evaluation or have the time and the

resources to really dive into it. First of all, a full evaluation involves planning, implementing, and reporting, and so, under planning, you need to design your research and evaluation plan, and, to do so, you have to have specific evaluation questions that you're trying to answer, and not research questions about red snapper, but research questions about what's actually happening with the program, in terms of developing trust or finding partners who think that they're getting some really deep, important value in the project.

You have to start with those questions and to develop those questions, and then you have to refine them, and so you have some questions, and you send them out, again, to the Operations Committee, or the wider council, and say, okay, please help us refine these evaluation questions, so we know that we're about to evaluate something that you all really care about.

Once you have the questions, then you need to implement an evaluation, whether you're using surveys or focus groups or whatever it is that you're using, but you need to test them first and make sure that those instruments that you are using are working, and you need to refine them and, finally, administer them to your sample size.

Then, once you get the data, then you get into the reporting phase, and you need to analyze the data, report them out to all the stakeholders, but also disseminate them to the wider public, so that other people can see what's being learned and accomplished by this project, and so evaluation is a pretty robust and comprehensive and somewhat complex project.

What do we mean when we talk about outcomes? Well, the Great Backyard Bird Count is a project of the Lab of Ornithology that takes place every year. Over one weekend, we ask, now worldwide, everybody to count all the birds that they can find in their community, and so, those of you who heard me speak back in Charleston, I talked about eBird and about the Great Backyard Bird Count way back then, and, in those last four years, it's grown bigger and bigger. In this slide, you can see that it just happened last February, and we had 250,000 checklists, 7,000 species observed, and I don't even know how many millions of birds were counted, and it's incredibly effective in that way, but, in the next slide, you can see that this is an old evaluation, and it goes back to 2008, but old is memorable, like some of us are getting to be.

This was published, and what my staff and I were able to show, by doing an evaluation, an outcomes or summary evaluation of the Great Backyard Bird Count at the time, was that participants were learning to identify more species than they had before they participated. They were understanding bird population diversity, and what I mean by that is they were understanding -- By looking at the web results and comparing them to their neighbors and to other communities and reading our newsletters, they were understanding about bird populations beyond what was just in their own backyard.

They were observing interesting behaviors about the birds that came to their feeders, things they had never noticed before, things that blue jays were doing to each other, or cardinals were feeding each other or mating or whatever, because they were being asked to really take a good, close look at the birds in their yards and their communities, and we learned that they were beginning to keep records. Now, obviously, they have to keep some checklist to submit to the Great Backyard Bird Count, but we were also able to document that, even after the count was over, they kept on keeping records that they hadn't before, and we were able to document that they knew how to use our basic

data analysis tools to ask some simple questions, using the online resources, about how bird populations are changing over time.

Finally, many of them understood that their data were in fact contributing to science, and that's the discussion we just had about ten minutes ago about the importance of making sure that the council data are getting used in science, and so this is the kind of outcome that goes beyond how many people participated and how many checklists did they send in that you can assess through an evaluation if you have the resources to do so.

Now, the Great Backyard Bird Count is more of what we call a contributory project, one that is designed by scientists who say here is our question, and we want to know how many birds are in your communities, and please go out and count them and use these data forms, and then send us the data, and we will analyze it and tell you what we've learned, but, again, going back to the talk four years ago, which some of you would have seen, I talked about collaborative and co-created citizen science, in which the community is much more deeply involved in the process of the citizen science project, and maybe they're actually even running it, which was the case for the Salal Harvest Sustainability Study.

This was a study that was started by a colleague of mine, Heidi Ballard at U.C. Davis, and it was actually part of her graduate work, and so it also goes back to 2006, but salal is an ornamental undergrowth plant in the Pacific Northwest that, if harvested sustainably, will continue to grow year after year, and it gets harvested and used in ornamentals, particularly at Christmastime, and there is a vibrant community of salal harvesters, and the question was can this community, does this community, want to be involved in managing the resource and working together to figure out how to make sure it's not overharvested, and so that might sound a little bit similar, and you might understand why I am bringing up this project.

The next slide shows what Heidi was able to document in her thesis work, and that is that, by working with this community, and I believe it was twenty-five or thirty individual salal harvesters, she worked with them, and they designed a research question, and they designed the data forms, and they collected the data, and they analyzed their own data, and they published, with Heidi's help, their own data, and these data were used by the Forest Service to make some changes to the management regulations in the Pacific Northwest, with the complete understanding and buy-in of the salal harvesters.

Her research showed that they increase their ability to collect field data while they were out harvesting, and they increased their awareness and their understanding of science concepts, and not just what does the salal look like, but how does it relate to this forest ecosystem, and they learned a lot more about how science is conducted and what is a sample size, what's a random sample, how you do the data analysis, and they became more involved in the harvester community, speaking out and meeting each other and talking and going to meetings to talk about how they can work together, and this all improved relationships and trust between the harvesters and the forest managers, mostly at the U.S. Forest Service, and this is all published, and you can read about if you're interested in going further.

The next slide is how did I do this with the Great Backyard Bird Count, and how did Heidi do it with the salal harvester project, and how did many other citizen science projects gather these kind of outcome data for their projects? It depends on the project, and it depends on the research

question, but they used combinations of focus groups, where you get people to sit down in a room together and lead them through a conversation, where you learn how they think and feel and act about something.

You can do phone interviews with participants and projects, which are extremely rich and rewarding, although they are labor intensive, both to do the interviews and then to gather and code the data, but it's important to do some, because phone interview data usually can lead to the creation of better online surveys, or, for some audiences, paper surveys are still better, and I know that some fishermen surveys are still done dockside with paper and pencil, and that's entirely appropriate when it's the right way to reach a community, but the phone interviews can really inform the development of thoughtful surveys.

Then you can also do what evaluators call examination of artifacts, which might be emails, or they might be comments on Facebook pages, and there are ways of analyzing those kinds of data so that they become analyses of data and not replication of anecdotes, and so we could do this with the council project and with the council program going forward, and we can do it based on using a whole lot of resources that are available to develop this kind of robust evaluation plan.

A few years ago, I edited a small book for the National Science Foundation, and it's called *The Principal Investigator's Guide to Evaluating Informal Science Education Programs*, and it's online, and I believe Julia read the whole thing when I sent it to her, and there are six chapters, and the fifth one is particularly supporting the development of an evaluation plan that was written by one of my very closest colleagues, whom I called out last December, Dr. Tina Phillips.

We have already, in this chapter, shown how to lay out developing an entire evaluation plan, and then the next slide shows that Tina and I and a couple of other colleagues have done this specifically for citizen science. We developed a user's guide to public participation in scientific research, and this is another name for citizen science. We have all kinds of overviews of the techniques that you can use, best practices, templates and worksheets coming up with logic models and theory of change and actually collecting the data that you need.

The next slide shows that, in order to develop a lot of the projects that Tina and I were asked to evaluate, we began by coming up with an actual framework for evaluating the kinds of learning outcomes that can come out of citizen science, like behavior and stewardship, and so, if somebody gets involved with colleting angling data and submitting it and looking at how they are analyzed, will that lead to them becoming more robust stewards of the resource down the road, and we came up with the idea of looking at skills of science inquiry, and are people actually able to learn things like the need for randomized control tests and random surveys and such.

Once we have worked with the field to break down learning outcomes into these six basic buckets, the next slide shows that we came up with a whole bunch of actual scales that you can use, and they're on our website, and you can download them and use them, and we have instructions for how to use them, and some of these would be appropriate for council projects, and some not so much, and so all of this can be done, and it would be really fun to do, but it would take some resources beyond which we've been able to put into the project so far, and so the council is going to have to decide how important this is, how far it wants to go, what kind of a budget can be developed for doing this kind of evaluation, and it's all going to start with coming up with the actual evaluation questions.

It's coming up with the actual evaluation questions, and so what we would do is we're going to go back to the Operations Committee now, after this, and we're going to say, okay, good job on coming up with all those indicators of success, but guess what, folks? Your job is almost just getting started, because now we need to look at the interesting question of what audience is the program trying to engage, and is it fishermen, scientists, or managers? Are there others? What do we actually want the program to achieve beyond data?

If we want to build trust between fishermen, scientists, and managers, what does that look like, and is it the same for all the different audiences? What would we like each audience to do, think, and feel after they engage in the program? What we're going to have to do is go back to the operations committee, and we know they will be good at this, because they're very thoughtful, and also very vocal, and so we're going to get a lot of good ideas for how to go forward with the evaluation questions.

As a matter of a fact, at a recent meeting, we started talking with the Operations Committee about the audiences, and remember I said fishermen, scientists, and managers, and, well, they immediately said, well, you need educators, nature enthusiasts, NGOs focused on the environment, and possibly some others. We ran out of time, and we weren't able to flesh this out, but there's so much that could be done with this kind of evaluation.

Now, if all the council did was go to those outputs that we had on that last list and asked Julia and her staff there to keep track of all those and publish them in a dashboard, you would already be way ahead of what most groups have been able to do, in terms of documenting their success, but, if you want to go further and get some resources in some way to be able to go more deeply into the outcomes, it would be really fun, and it would be really exciting, and I think the next slide might be my last slide.

What we would need to do is we would need to begin with collecting baseline data for each audience, because we're not really going to know how people have changed, how their behaviors have changed, by participating in the project until after they have participated in the project or the program, and, in some ways, it's just getting started, but we need to know now how they think and feel about fisheries and fisheries resources and their skill level at fish identification and all kinds of things we can begin collecting right now, if we wanted to go in that direction.

It's going to be up to the council, the committee, to decide how far to go with this, and I would love to stay involved with you all and work on this, if resources are available to do so, and we'll have to see how things are going forward, but, if not, I would say this has been incredible, helping you all get to where you are now, and my next slide shows that I really want to thank you all for your trust and your patience and working with me on this.

I have loved every minute of it, and, if there's a way that we can keep working together going forward, I am all in, and I would love to do so, and that is the end of my prepared comments, and I think that it's up to our Chair to decide how much into the lunch hour we want to go with any discussion here, but I think, Julia, we did a pretty good job of boiling this down and not standing too much in the way of these folks and their lunch.

MR. BELL: Thanks, Rick. That's great, and we obviously just really, really appreciate your involvement in this, and we couldn't have done this without you, and so, related to the meeting right now, we're okay to run for a little bit longer, and so, if we have questions for Rick, while we have him with us right now, we want to make sure we deal with that.

I think what we'll do is take a little time for questions and discussion about Rick's last presentation, and Julia may have some other things as well, and we'll see where we land on time, and then I think the idea is we would go ahead and recess for lunch and then come back and take about fifteen minutes or so to do the last two items on the agenda at 1:30, and so I believe, Madam Chair, if that's good with you, that's what we'll do then, and so, Julia, I will turn it back to you to kind of facilitate questions or comments at this point.

MS. BYRD: Thanks, Mel. Chester, go ahead.

MR. BREWER: Thank you, Julia. Again, wonderful presentation. I have two things. One is the whole idea about satisfaction from the people that participate and how it changes their thinking, I think that's true, because we've had not necessarily citizen science, but we've had programs down here where you get people out, and they go sloshing through the mud, and they plant mangroves, and they love it, and their outlook on things kind of really does change, and so I think that's an important aspect.

Another is I remember when we were first getting this thing started, and I believe the number was about $170,000 that we needed to -- Part of all this was the reporting system, and we needed I think it was $170,000, and we didn't have the money, and we had to get some grant money, quite frankly, to get -- This was the citizen science reporting kind of thing, and I am wondering, and kind of underlying a lot of what we've been discussing here is the fact that I've heard this thing that we need more staff, and we need more expertise. To do this thing up right, Julia, has anybody come up with any kind of number as to how much money would be optimal, and, with that, I will close.

MS. BYRD: Thanks for that, Chester. I guess the short answer is no, and I can let you know that -- I mean, I think it's really important, and we've seen that, I think also, through some of Jennifer Shirk's research that was done, to be able to have a person kind of running the council's Citizen Science Program. Through my experience so far, I think it's also critical, when we have individual projects, to have project coordinators, at least part-time people, who are working on those to help with volunteer engagement and recruitment and retention.

It's very labor intensive, and I think, in order to do it right, you need to have people who can devote certain amounts of their time to different projects, and I know Allie Iberle, who was brought on as the FISHstory Project Coordinator, through the grant we got through NOAA's FIS Program, has been critical to the development and what we think is a very successful launch that I will talk a little bit more about after lunch.

As far as kind of this evaluation piece goes, I want to thank Rick for all of his hard work. I mean, it's his guidance, and the resources that he's been able to provide staff and the Operations Committee have been invaluable, and I would love to keep him involved in the program, particularly for this evaluation piece, and I think the plan for, as far as resources go for the evaluation piece, we're hoping to kind up with kind of a menu of options to present to you guys,

either in September, or at least an idea of that in September, or maybe a more fleshed-out idea in December, so you can kind of see what different levels of evaluation would cost resource-wise.

I am not sure, and I guess, again, the short answer to your question is no, but I think, in order to grow the program, having programmatic staff onboard is critical, and having kind of coordinators to help with individual projects is critical too, and I know that we -- The program has been working and partnering with people and applying for grants to support the development of new projects and things like that, but I guess, holistically, we haven't looked at how much it would cost, and I guess that would depend on kind of how much we want the program -- How much we the council want the program to grow and how quickly we want that to happen, and I'm going to also -- John Carmichael, I'm not trying to put you on the spot, but I know you've been involved since the very beginning, with Amber and me, and so I don't know if you have anything to add to that.

DR. CHRISTIANSEN: I want to reiterate what Spud -- I don't want to say what his concerns were, but he had talked about -- He had called it fatigue, and I think one of the biggest hurdles that you guys are going to face is going to be somehow showing people that, if they do participate, and, in the past, I think we've failed at this, but that, if they do participate, that their efforts do matter. I mean, we ask and ask and ask for information, and a lot of what I hear, and not all of what I heard, is everything I hear is, well, it doesn't matter what we find, and the scientists look at their papers, and I know -- I feel like I'm, the last two days, getting onto the scientists, but, in a way, I am, but when exactly are they going to consider this valid, and we're going to put a lot of effort on you guys' part, and, eventually, if a lot of these programs do happen, there's a lot of money being spent.

At some point, is this actually going to be used, and when are they going to consider crowdsourcing or public opinion or citizen science, if that's a better word for it, and when are they going to consider this valid? I mean, I asked this at the meeting, the last meeting or the meeting before, and I never really got a good answer, and the answer was, well, we'll have to wait and see what kind of data they come up with, and, I mean, are they looking for data that matches theirs, or are they looking for answers that go with what they think the answer should be, or are they going to actually think outside the box and say, even though their answers aren't the same as what we're seeing, their answers may be right.

MR. BELL: If I could jump in, Julia, and so, Kyle, good point, and I understand it fully. That's why we're going to the effort that we are now to properly build the program and properly build what we're doing, and so it's the science that we could produce could be useful for management purposes. That's why -- That was our goal from the beginning, was exactly what you're saying.

We don't want to just have something where folks go out and collect certain types of data, and we've got them involved, but then we never are able to actually use it, and it does meet all the criteria that we needed to meet to be able to be considered to feed into a stock assessment, and that's where we were hoping to go with the scamp project, but what you've stated is actually what we're trying to achieve, and that's why today what we're looking at is kind of the behind-the-scenes wiring of all this, but the idea is that, if this works properly, you will have science, or data, that will be useful and may be used, and so that's why we're taking such great pains to clearly establish how we're going to do this, how we're going to operate, how we're going to acquire the data and those sorts of things.

That's, ultimately, the goal, if you go back to the mission statement and the vision and the goal, and that's what we're trying to do, but, yes, you're right, and I share Spud's experiences as well. You get people involved in providing information, and they have a sense that, gee, well, nobody is ever really listening to us, or they're not looking at this, and, sure, that frustrates people, and that's what -- We certainly want to avoid that, and so, yes, it's a -- Your concerns are valid, and that's why we're going to the efforts that we're going through right now to try to build this in such a way that we can achieve exactly what you're talking about, is be able to provide input that is acceptable for use in science and management purposes.

DR. CHRISTIANSEN: I guess my point to that is it seems like it's not me that you have to convince, and it's the scientists on the other side that I'm looking for an answer from, and at what point do they believe it? You may have lost me for a second, but my question is more to the science community on the other side, and it's what do we have to provide that they are actually going to believe, that they're actually going to look up from their information and consider ours valid?

I mean, it's not me that you have to convince, and it's not the fishermen that you have to convince, and I don't think it's half the council that you have to convince. I mean, this is -- We are working on this, and, like I said, the staff is putting an enormous amount of time and effort in, and I just -- I guess I don't have a clear understanding of at what point is it valid, and it's not you and I that determine that, Mel, unfortunately.

MR. BELL: Yes, and I don't think -- It's not a simple matter of across-the-board, and I think what you're trying to achieve are the way you acquire the data, the data you have, and it meets a criteria that, yes, you and I aren't the ones that establish what those criteria for acceptability are, but they have to meet standards that the science side of the house feels comfortable with, in terms of how you got the data and how the collection program was set up and those sorts of things, you know is it statistically valid and things, and so, yes, you're right that that's not for me or you to make that determination, but it's not something that I think anyone can give a simple answer for.

It sort of depends on which particular project, which particular data, and how is that all put together, and we want to put together the data collection efforts by whomever is involved in such a way that it does meet those criteria that are acceptable from the science perspective, but that is -- It's going to be different, I think, for each type of project and each type of data, and so there's not a real simple, straightforward answer, but you're right that it has to meet --

DR. CHRISTIANSEN: I guess I'm not looking for a concrete answer, but are we working closely with the scientists? Are we working hand-in-hand with them and saying what exactly do you need from us to tell us before you're going to consider this actual real data, and do you understand what I'm saying? I understand exactly everything, but what I'm not getting is -- This is like going on vacation and saying, hey, we'll know we're on vacation when we get there, but we don't know when we're going to get there or where we're going, and we'll know when we get there, and that's a pretty broad stroke there.

MS. BYRD: Kyle, I wanted to just say kind of a few things, and, Mel, I think you've done a great job kind of answering his question as well, and it's not a straightforward answer, but what I will say is the way we have developed this program is that, one, we're trying to identify specific

resource priorities that you guys as a council have identified that you need, and we're trying to kind of fill data gaps with citizen science and not compete with other programs.

When we develop a project, we put together a design team that has scientists and fishermen on it working together, and it's really important to have scientists involved, because they can give insights on how to collect the data so that it can be used for its intended purpose, and it's really important to have fishermen, or whoever the participants and the stakeholders in that project would be, because they can tell you if what you're asking them to do is feasible on the ground, on the water, and so we're trying to do all of those things.

That design team provides guidance in the development of a project and the implementation of a project, to try to ensure that the data collected will meet whatever its intended use is, and I think it's also important to manage expectations, and so collecting data over a very short period of time may not give you the data that can be used directly in a stock assessment, and it may take a longer time to be able to collect that data.

I also think, you know, that we're learning, and so there are some projects that may be appropriate for citizen science and some others that may not be, and so, as the program grows, we'll kind of learn that and focus on the ones where citizen science can really fill a data need. The other thing that I will mention too is, on the Operations Committee, we have kind of representatives from each of our Action Teams, but we also have Rick DeVictor with SERO that sits on that committee, as well as Erik Williams with the Southeast Center, and Marcel Reichert, who was the SSC representative, and I know he's not on the SSC anymore, and so that may need to be revisited, but we're trying to bring scientists in and really have them collaborating with fishermen to try to kind of give projects the best chance they have at success and being used.

I know Chip wanted to maybe have a few thoughts to share on that too, and I'm not sure if others do, and I know Erik Williams is on the line, and I am not meaning to call you out, but I don't know if you have anything to add to that, because I know you've been involved in the council's efforts as well.

DR. COLLIER: Thank you, Julia, and, Kyle, citizen science can go in many different directions. With the FISHstory project, that's a short-term project, where we're looking at a set of photos and potentially getting some of that information used in a stock assessment, and that could be potentially different than other projects, and so you've got to consider the scope of the project as well as the information that it's collecting, and so some projects might be a long-term project, and then just small pieces are getting introduced into the science at a time before the entire project could be used.

Take, for example, and this isn't a citizen science project, but I think it's a very valid description, but the video survey that was started in 2010 that attached to traps, and it didn't get used for the first five years, because they needed to build a time series, and they were able to incorporate some of that information into some of the complexes that might be associated with each other, and so it was building upon itself, in order to fully develop the information that would later be used fully in stock assessments, and so you've got to take your time with some of these projects, and it could take five to ten years for all of the information to be used, but some pieces of the information might be developed along the way, and I think that's one of the things that we have to communicate with the people that are participating in the project, and Julia had mentioned this, is manage the

expectations and let them know where their information could be used and how it could be used in an orderly process.

DR. CHRISTIANSEN: I guess I will say one more thing, and then we're getting into lunchtime, but my last thing is, personally, I think citizen science is widely underused, and I think this is a segment that has never been considered valid, but is now being looked at as valid, and should be looked at as valid, and so I am all for these projects, but I just wanted to make sure that the time and effort is going to be accepted by those who have to accept it to make it useful, I guess is what I'm saying.

MR. BELL: That's, obviously, an important component, and you're right, Kyle, because, if we're producing something that is not valid or useable, then we're not achieving the vision that we had in place or the goal, and so your point is well taken. Julia, is there anything else you need to --

MS. BYRD: I was going to say, Erik Williams, I saw you had your hand up, but it went back down, and I have you unmuted on my end, if you have something to add.

DR. WILLIAMS: Thanks. I will just try and -- I mean, I understand where Kyle is coming from, and the only thing I can say is that science does have its rigors of what we have to check boxes, so to speak, to make sure that the data conforms to certain assumptions, and that's part of the process. It doesn't necessarily eliminate a lot of things, but it does sort of restrict the sort of inferences you can draw from the data, and so what you can actually take out of it and actually use, say, in a stock assessment, but the other thing I would add is, as Julia said, I've been involved in this process since the beginning, and I've thankfully been involved, and I enjoy it. I like working with this whole group, and I think citizen science is going to be a valuable thing, when we can get things up and running and get some useful data, and it absolutely is sort of the wave of the future for a lot of science programs, in some ways.

I will just say that I think the process we've set up has enough steps involved, and sort of checks and processes, and scientists involved, as Julia alluded to earlier, that I think that things that emerge from this will end up being useful, in one way or another. The degree of that usefulness will sort of depend on some factors, but I think it is ultimately going to enhance management, in the long run, and that's what, really, if we had to boil this whole program down to one sort of thing, that's what we're trying to do, and I think it will achieve that goal, but there's many other goals, as Rick Bonney and Julia have been talking about, and there's many other goals for this program as well, but I just wanted to add that, and so thanks.

MS. BYRD: Thanks, Erik. I appreciate that, and so, Mel, I don't see any other hands raised. I guess the last thing I will say is I think a lot of this conversation revolves around making sure the program is working like we want it to be working, and one thing that will help us figure that out is through evaluation, and so, again, I just wanted to kind of highlight, again, that I think this evaluation piece, not just of individual projects, but of the overall program, will really be helpful to make sure that we have a citizen science program that's doing what we want it to do, and, if not, it will help us figure out things that we need to change in order for it to work how we want it to.

I just wanted to kind of mention that as we kind of look towards the future and the next meetings and figuring out kind of what levels of evaluation the council, we, may be interested in pursuing, as far as the program and projects go.

MR. BELL: Perfect. That's a good wrap-up to that, and that is an extremely important thing, and, as Julia mentioned, we can look at the next meeting, and into December, about options for how we continue to carry out that evaluation, and it is essential to make sure that we're getting what we want to out of the program. Any other questions, Julia, while Rick is here? Has anybody got any? Do you see any on the list?

MR. DILERNIA: I want to just encourage you to continue development of this program, and I know myself, and there are other Mid-Atlantic Council members that are watching this very closely, and we're hoping that you get it down and that you get it working right, because I would suspect that, in the future, there are Mid-Atlantic Council members that would advocate that our council begin to copy some of the work that you've been doing, and so I just want to encourage you to continue developing the work and let you know that there are many of us that are watching and cheering you on, and let us know if there's anything we can do to support you. Thank you.

MS. BYRD: Thanks so much, Tony.

MR. WOODWARD: I guess this is a challenge for you, Rick, and one of the things that could always be a possible outcome of any sort of citizen science initiative is the collection of data that indicates a problem that prompts a management response that is deemed to be negative by those people who participated in the citizen science initiative, and how do we -- I am not expecting an answer now, but how do we deal with that? How do you keep people engaged when sometimes their efforts result in negative reinforcements?

DR. BONNEY: That's probably one of the evaluation questions that we would seek to answer. I would put that down as Number 1 on the list.

MR. BELL: As Rick pointed out earlier, our program does -- It's intended to do some things, and it does some things that we're kind of going where perhaps citizen science hasn't gone before, to some degree, and so, yes, Spud, that's a good point, and there are expectations on the part of folks that are involved, and then perhaps, when answers are not exactly what folks might have expected, then, yes, how do you manage that as well, but good point. Any other questions for Rick or related to anything that he presented? Do you see anything, Julia?

MS. BYRD: No, and I'm not seeing any other hands raised, and, before we break for lunch, just a big thank you to Rick Bonney for all of the work and advising he's done with us and for being on the call today and helping present the evaluation piece. It was much appreciated by the whole Citizen Science crew.

MR. BELL: Thank you, Rick, on behalf of the committee, so much for your involvement in this, and we look forward to being able to continue a relationship in this area in some capacity in the future, as we consider evaluation options and things, and so you've just been so instrumental in getting us to where we are, and we greatly appreciate that, and your involvement here today.

DR. BONNEY: You're very welcome.

MR. BELL: All right. Being respectful of your schedule, and I've eaten into your lunch a little bit, the idea is to come back at -- We will recess and come back at 1:30, and we'll take a little bit of time for Julia to do the two updates that we promised. Madam Chair, is that good with you?

MS. MCCAWLEY: That sounds great, and just a reminder, folks. As you come back to the computer at 1:30, just remember to put your hand up, so that we know that you're back, and, as Mel mentioned, we will still be in the Citizen Science Committee for a few minutes before we move back to the agenda, and I think next up after that is Executive Finance. Thank you, Mel and Julia.

MR. BELL: All right. See you at 1:30.

(Whereupon, a recess was taken.)

MR. BELL: We will reconvene the Citizen Science Committee, and we left with Item 2 on the agenda, which is a Citizen Science Program Update. Then, after that, Julia will do some project updates, and so we're going to just take about fifteen minutes or so and run through those, and so, Julia, you go right ahead and start.

MS. BYRD: Great. Thanks, Mel, and thank you, guys, for letting us run over a little bit. Again, I will try to get through this kind of quickly, but, if you all have any questions, please feel free to raise your hand and kind of slow me down.

First, I wanted to give you some kind of programmatic-level updates, and I'm going to try to focus on what has happened since you all's kind of March meeting, and so we spent the morning talking about program evaluation, and so you all know that we've been working very hard with Rick Bonney and Jennifer Shirk and the Operations Committee in --

MR. BELL: I think we lost Julia.

DR. COLLIER: It's showing that she's still speaking, if we hold on for just a minute.

MS. BYRD: Now can you hear me?

MR. BELL: Yes.

MS. BYRD: Sorry. I just got bumped off the internet, but I think hopefully I'm back and good, and so sorry about that. Anyhow, you all know that we've been working on program evaluation and that the Operations Committee has met a number of times. We also released our kind of first ever annual report, and so it was the 2019 Annual Report, and we released that and distributed it in April for the first time, as part of Citizen Science Month. It was also included as Attachment 2b in your briefing materials, and so, if you haven't had a chance to look over that, I would encourage you to do so.

We have been continuing to work with our NOAA colleagues on an AFS symposium that's focusing on how to better incorporate kind of citizen science and other kind of non-traditional data into assessment and management, and so I'm kind of helping co-organize that with other folks from NOAA Fisheries, and, in addition to that, both Allie Iberle and myself have submitted

abstracts to present as part of that symposium, and, as many of you guys may know, that has transitioned to a virtual meeting that will be held this fall.

Things were kind of put on hold, working on revisions on the bio-science manuscript that Rick Bonney kind of was leading the effort on, but we will be picking that up, and we're hoping to -- I am getting a little feedback, and so if folks could please mute themselves on their end when they're not talking, that would be great.

Then there was also a NOAA Citizen Science Workshop held this April, and it was originally supposed to be an in-person workshop, but it transitioned to a virtual workshop, due to impacts from COVID, and so that was really interesting to participate in, and we were also selected as one of the groups to give a quick presentation, and we presented on kind of the development of the council's Citizen Science Program and our kind of initial pilot project, SAFMC Scamp Release.

Then April is Citizen Science Month, and so, for this April, we decided to celebrate that month by doing a social media campaign. If any of you guys follow the council on Instagram, Twitter, or Facebook, you may have noticed a lot of citizen science posts in April, and we did two posts a week, and that really kind of tried to highlight some of the volunteers in the program who are participating in our project or have worked on our design teams, and so we really appreciate the volunteers kind of year-round, but we really wanted to highlight them, in order to celebrate Citizen Science Month. Then this month's *Citizen's Science Corner* newsletter article kind of focused on that campaign.

We're also trying to kind of broaden our kind of social media strategy, and, working with Cameron and Allie, we have been doing kind of CitSciFri posts, and so citizen-science-related posts every Friday, and now we're talking -- We have talked more about kind of developing that strategy and branding our posts, so that it's very clear that they are from the Citizen Science Program, and so that will be getting underway soon, and so, again, I encourage you to follow the council on social media, so you can check out the different kind of posts that relate to the program.

Then we've done a number of presentations, even with the impacts from COVID, and we were scheduled to present at the Mid-Atlantic Council's meeting in April, but that has been postponed. Like many meetings, that meeting turned into a virtual meeting, and so they had to kind of prioritize their agenda, and so we're hoping to get up there to present to them at a later meeting, maybe later this year or next year.

We presented to the I&E AP and the SEP this spring, kind of giving them updates on the program, and then talking more specifically about the FISHstory project, which I will mention in a few minutes, and we also were guest speakers for a College of Charleston Marine Policy and Fisheries Science class, and we gave kind of an overview of citizen science, the development of our program, as well as kind of highlighted the FISHstory project, to try to kind of recruit folks to participate in that project once it launched, and, then again, we presented at the NOAA Citizen Science Workshop.

The other thing that we're really trying to fish for now is to kind of grow our email distribution list. Through this list, we're hoping to kind of share information about the program, and it won't be a ton of emails, not more than once a month, and probably a little bit less than that, but we just want to kind of have a way that we're keeping folks informed of the program, and this is one of

the ways that we're doing it, in addition to kind of our social media presence as well, and so, if any of you guys are interested in being added to that email distribution list, just let me know, and we can get you on the list. That's just a quick kind of program update, and so I will pause here.

MR. DILERNIA: I just wanted to say that we were looking forward to having the presentation at the April meeting, but, as you explained, due to the COVID issue, we had to shorten our meeting, but, as I said earlier today, there are many of us that are watching your program grow, and we look forward to having you at a future meeting, and there are many members that would like to see your presentation, because I think -- You are making it successful, and, once it becomes very successful, I won't be surprised of -- Many of us would like to petition our leadership to adopt a program similar to yours, and so we look forward to having you at a future meeting. Thank you.

MS. BYRD: Thanks so much, Tony. That's kind of the program-level update, and so I don't see any other hands raised on that, Mel.

MR. BELL: If there's no questions at this time for Julia regarding that, she can go on to do the project-level updates.

MS. BYRD: Okay, and so next is kind of a projects and collaborations update, and so there are three main projects underway that I will kind of give a brief update on, and then the last slide will be kind of an update on where we are with some projects and collaborations that are under development.

The first update is on the SAFMC Scamp Release project, and, again, this is a project that's trying to collect information on discarded or released scamp, using a mobile app called SAFMC Release, and it really focuses on collecting kind of length information from released scamp and other information that could help inform discard mortality discussions, such as depth where the fish was caught and whether barotrauma-mitigation devices were used, like a descending device or the fish was vented before it was released, and so we're still working to recruit and retain commercial, for-hire, and recreational fishermen to participate in this project.

Right now, we have about fifty-two people who have signed up, although not that many people have reported released scamp yet, and so I know I've mentioned this before, but now we have kind of received funding for our ACCSP project that is kind of bringing our app under ACCSP's umbrella, along with an app to collect information on released fish from North Carolina. By bringing it under ACCSP's umbrella, they will be able to take care of maintenance of the app, and it's also going to allow us to expand the species collected through the app to all of the shallow-water grouper, and so we're excited about that, and that expansion should happen kind of late this year or early in 2021.

We haven't heard back from the Waitt Foundation proposal, which was a proposal that we had submitted to try and kind of promote the project by kind of chartering boats and bringing media out on the boats, to kind of show them how to use the app and talk about its importance, as well as best practices. COVID-19 would definitely impact whether or not we could do this project, even if we had funding, and so that's kind of been put on hold for a little bit.

As Chip mentioned earlier, SEDAR 68 got underway, which is the Gulf of Mexico and South Atlantic scamp SEDAR assessment, and the data workshop portion got underway virtually this

spring, and it's on pause now, and it will be picked back up in the, I guess, late summer or fall, but we kind of provided the information we've collected through the app thus far at the workshop, and then we're also working with a College of Charleston graduate student who is going to help us review kind of user perceptions of the app, to try to kind of identify ways that we can improve recruitment and retention, and so he is doing kind of a mixed-methods approach, doing some interviews and some kind of participant observations, and then he's also going to help look at some of the results from the MyFishCount surveys, to see if there's anything that we can learn from all of BeBe's efforts that have gone over the past year, as far as recruitment and retention go, and so we're excited to be working with him.

Then, next, I wanted to provide a quick update on FISHstory, and, again, a reminder that FISHstory is the project where we're trying to document historic for-hire catch and length estimates, using kind of historic photos. A lot has happened in FISHstory since your March meeting, and we've held a couple of meetings with our design team, and we beta-tested the kind of for-hire catch component of the project in Zooniverse, which is the online crowdsourcing platform, and we got feedback from the gold-star Zooniverse users, and we edited the project based on their feedback.

We had our validation team members kind of perform validation and verification of the beta-test photos as well, and so they have submitted their information, and we're analyzing that information now, and we are kind of working to put the finishing touches on our communication plan and data requirements document, but the most exciting thing about FISHstory thus far is that we launched in Zooniverse on May 26.

We have been absolutely blown away by the response that we've gotten, and I just want to take a quick second to kind of pull up the FISHstory project in Zooniverse. Hopefully you guys can now see the project in Zooniverse, and I'm just going to scroll down to this dashboard right here, where you can hopefully see kind of some of our FISHstory statistics.

We launched about two weeks ago, on May 26, and, so far, we've already had over 700 volunteers make over 11,000 classifications, and we have two different workflows. One is a little bit easier, where people are counting fish and people in the photos, and the other one is a little harder, more challenging, and people are actually identifying the fish in the photos, and so we're having multiple volunteers analyze each photo, and so we've already had 800 photos be retired, which means over ten people have analyzed each of those photos, and so, within two weeks, we've had an enormous response and a huge number of classifications made.

The only way we have advertised this project so far is by sending out an email via our Constant Contact email list, doing a news release, and then, also, Zooniverse sent out a notification that this project was available. Within the first twelve hours, we had 400 photos retired, which was really unbelievable, and we just kind of blown away by the interest.

Allie Iberle, who is the project coordinator for this project, has done kind of an awesome job, as well as our design team, and, of course, Rusty Hudson deserves a huge shout-out for providing all the photos for these efforts, and Allie has been very active on the talkboards through the project, kind of talking to some of the volunteers and answering questions and that sort of thing, and so that was really exciting news, and we were just amazed to see that so much has been done in such a short amount of time for this project.

Moving on in the presentation, we did a lot of things pre-launch to try to kind of promote the project, and we did articles in the newsletter, and we did a guest blog post for North Carolina Sea Grant's blog, and we highlighted design team members in our citizen science social media posts, and we did a social media kind of countdown and push to the launch, and we developed a lot of kind of promotional materials.

One thing that we kind of -- One Zooniverse recommendation that came through the project is that we really need to try to be targeted in recruiting the appropriate volunteers for the success of a project, and I think we've been amazed so far that we've been able to get so many volunteers and so many interested folks in the project, and we also have kind of a targeted outreach plan that we haven't even started to kind of implement yet, and so I think we'll be able to get the right folks volunteering to help us collect information on these photos.

Then I also wanted to quickly touch on the second component of this project, which is trying to get kind of length information from these photos, and so, again, the idea is that you would be using kind of the lumber, the two-by-fours or two-by-sixes, kind of where these yellow lines are measuring here, to kind of scale the length estimates in the photo, and so we are pilot testing a method on king mackerel, and we've developed kind of the protocol, and we have the database formatted, and we've also done some preliminary precision and accuracy analyses, and we're getting ready to start kind of -- Or I guess we're already underway with kind of production length analyses, and we've been really lucky to get a few additional length analysts.

Originally, it was just going to be Allie and myself kind of measuring fish in all of these photos, but we have, through kind of some of our design team members, Tracey Smart with MARMAP and Ken Brennan with the Regional Headboat Survey -- Their staff have not been out in the field as much, due to impacts from COVID, and so they have allowed some of their staff to help us on this project, and they are kind of analyzing some of the photos, to estimate lengths of king mackerel, and so we have trained all of those folks, and they have done calibration photosets, and they are getting ready to start kind of measuring fish in the photos on kind of a large scale, and so we're really excited about that, and we'll look forward to sharing more information with you all about those results in the future.

The last project that's underway is a project that we are a collaborator on that's being led by the Nature Conservancy, in particular Bob Crimian, and so the project is trying to kind of increase awareness of Gray's Reef among recreational anglers, to further their use of best fishing practices for deepwater species and to promote collaboration using citizen science to help fill data gaps.

We're one of very many partners on this program. As part of the project, we were hosting fishing learning exchanges, and we held two in Brunswick, and it was right after the March meeting, and so we kind of shared information about these with you all at the March meeting, and so those were held on the 6th and 7th of March, and then were supposed to hold additional meetings in Savannah and Atlanta, and, due to COVID-19, we have had to postpone those, and we're kind of working to develop new outreach strategies for this summer and fall, and so Bob Crimian is the lead on this project, and we actually have a call later this week, where we'll be kind of figuring out our Plan B to move the project forward with the impacts from COVID.

Then we also have a couple of projects that are under collaboration, and we mentioned these, many of these, at the March meeting, and so I just wanted to provide a quick update. The first project is

the one where we're trying to get diver observations for data-limited species, and so the idea here is that we would be working with recreational divers to get length estimates for some data-limited species, and this was to be a pilot done in the Florida Keys and to focus on species like hogfish and some of the groupers and some of the parrotfish.

We partnered with REEF and SECOORA on this, and we submitted a proposal in January to the Coral Reef Conservation Program, and we found out recently that we didn't get this project funded, and we also submitted a NFWF pre-proposal in March, and REEF took the lead on submitting that, and we recently found out also that that pre-proposal wasn't -- They didn't encourage us to submit a full proposal, and so we think this is a great project, and we are going to kind of follow-up with REEF and SECOORA, later this month, to figure out other avenues that we may be able to find or pursue funding for this project.

Then, the dolphin wahoo participatory workshops, I know Mandy and Matt gave a great update this morning, and so, again, I will just echo the collaborative nature of this project, and I think that things like that are going to be really helpful, and it was really informative, and I think everybody who participated in the meetings really learned a lot about the fisheries, and so we look forward to kind of figuring out how and when we can host the Florida Keys workshops.

A couple other things that have come up since the briefing book materials were due is there is another project that I had mentioned to you guys in March, and it is kind of documenting rare species observations, and so the idea is to develop an app and a website where people could document rare species observations, in the hope that that could serve as an early warning system for species shifts.

A letter of intent was submitted to SECOORA, and I think it was last month, and so to see if they would be interested in funding that project in their next five-year funding cycle, and so we're waiting to hear back from them, if they want us to submit a full proposal, and that project is being led by Janet Nye, who is at UNC, and there are folks from NOAA's Office of Science and Technology involved, as well as the council and SECOORA.

Then, additionally, we also will be submitting an ACCSP proposal later this week that will look to expand or make a customizable kind of citizen science app, and so, right now, we have this Release app, and what we're trying to do is build a kind of customizable app that you can kind of build on the fly, so to speak, so that, if you have a project, and you would like to develop an electronic data collection tool, there is kind of an easier way to do that, via an app development, and so we're working on that with Harbor Lights Software, and we'll be submitting that proposal later this week, and then we would find out whether or not it got funded late fall.

Those are the projects under development right now, and it's been a busy six months for the program, but now I'm happy to take any questions, if anyone has any questions about any of the ongoing projects or any of the projects or collaborations that we have under development.

MR. BELL: Anything for Julia right now that's related to anything that she's presented? You can always get with her through other means, if you would like to later, and I hate that we're just kind of rushing things here, but, Julia, have you got any hands?

MS. BYRD: No hands now. Clay has a hand.

DR. PORCH: Thank you, and I will make it quick, but I just wanted to say that there are several examples here that I think really do have tangible benefits for management and stock assessment, and I think that point came up earlier, and I am especially excited to see that FISHstory work that we've been talking about for twenty or thirty years, doing something like this, where we can get a little more historical perspective for our assessments, and this really fits the bill, and so I'm just really glad to see it happening.

MS. BYRD: Thanks, Clay. I know Rusty Hudson is another one who has been trying -- He's been sharing these historical photos for a long time, and so we're really excited that this project has taken off, and we're really lucky to have him share his family's photos.

MR. BELL: As you can see, there is no shortage of ideas and energy on Julia's part or the folks working with her, and so it's just got great promise, and thanks, Clay, for pointing out exactly what we were talking about earlier, that, yes, there are some things that are particularly promising related to science, and so any other hands at this point, Julia?

MS. BYRD: I don't see any other hands.

MR. BELL: Okay, and so then I would say is there any other business to come before the Citizen Science Committee at this point? Seeing no hands, then we will adjourn the Citizen Science Committee. Thank you, Julia, so much.

(Whereupon, the meeting adjourned on June 10, 2020.)

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Records	David
Reichert	Marcel
Reynolds	Jonathon
Rhodes	01Cameron
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Vara	Mary
Waters	James
Whitaker	David
Wiegand	01Christina
Williams	Erik
Willis	Michelle
Woodward	00Spud
Wrege	Beth
Wyanski	David
bennett-martin	paulita
brewer	chester
collier	01chip
crabtree	00Roy
crosson	scott

geiger	george
kraft	todd
poland	00steve
sandorf	scott
sminkey	thomas
thomas	suz
walter	john