

Submerged Aquatic Vegetation (SAV) Action Team Meeting
Albemarle-Pamlico National Estuary Partnership
10:00 am – 3:30 pm
May 8, 2017

Conference Room, NC-DENR Regional Office
Highway 17, Washington, NC 27889

*Notes by Wilson Laney, Kelsey Ellis, and Tim Ellis; Edited by Tim Ellis

Present: Brian Boutin (TNC), Anne Deaton (NCDMF), Don Field (NOAA), Jessie Jarvis (UNCW), Wilson Laney (USFWS), Brandon Puckett (NEER/NCCR), Joe Luczkovich (ECU), Hilde Speight (ECU), Dean Carpenter (APNEP), Jimmy Johnson (APNEP), Tim Ellis (APNEP), and Kelsey Ellis (APNEP).

Welcome and Introductions: Dean convened the meeting at 10:15 am. He noted that Joe Luczkovich of East Carolina University (ECU) will be joining us later.

Dean noted it has been a year since the SAV Action Team last met. This is the third team meeting.

Dean asked everyone to do introductions and everyone did so.

Dean noted that the agenda was a draft, but he got no response from anyone about any changes, so we will go with it as a final agenda, but it can be modified if anyone wishes.

Dean noted that he would take on the first three agenda headings. Then he will turn the rest of the meeting over to Jimmy.

APNEP Organization & Staff Support to Action Team

Dean noted that the SAV Action Team's second meeting was in 2016. He noted he hoped that most of us have seen and read the action items from that meeting.

Dean started his slideshow presentation.

Slide 1: Dean projected APNEP's adaptive management cycle on the screen and explained how the SAV Action Team fits into the process. He noted that Kelsey will be working with the Outreach and Communication Action Team, to develop messages for this (SAV Action) team, for engagement. Dean noted that they actually have a spreadsheet, which has a list of the sorts of products that we would like to have, for various stakeholder groups. We want to have the most effective product, to get the word out. He noted that we have actually discussed the potential for a mascot for the SAV Action Team (SAV AT). He noted that we have put up informational signs about SAV at boat ramps, and we can design a pamphlet for broader audiences. He

suggested that we let the other Action Team (Communications and Outreach) take on some of the outreach responsibilities. We have the SAV Monitoring and Assessment Team as well, who last met in February, and Dean will brief us on their activities.

Slide 2: Dean showed us an APNEP “wiring diagram” which shows how all the components relate to each other. On the slide were: APNEP, the staff, the funding entities, the Policy Board, the Science and Technical Advisory Committee (STAC), the Implementation Action Teams (ATs), and the Monitoring and Assessment Teams (MATs). Dean reviewed each of these in turn. The Implementation Action Teams are responsible for implementing the 58 actions from the Comprehensive Conservation and Management Plan (CCMP). There are twelve current Action Teams. Dean noted that the SAV AT has two main actions (i.e., protection, restoration, and communication/stewardship). Some of the teams have more.

Dean explained the Monitoring and Assessment Team’s role. We used to have a Living Aquatic Resources Monitoring and Assessment Team, but we broke it into aquatic plants, and aquatic fauna, and Wilson has the lead for the latter. Anne asked for clarification. Wetlands has always been a separate team, but recently they decided to break out the plants from the fauna, and spilt the Living Aquatic MAT into two.

Wilson noted that there will be some overlap between the ATs and the MATs, i.e.,. He noted that the Freshwater Habitat and Fish Passage Team is planning to map inland freshwater habitats which will undoubtedly include some wetlands. He suggested that the map should be coordinated with and reviewed by the Wetlands AT.

Dean agreed and noted that the teams should reach out to staff for assistance with regard to developing particular products which they need.

Dean noted that each of the teams will have an APNEP staff lead, as well as a Science and Technical Advisory Committee (STAC) lead. Jud Kenworthy is the STAC lead for the SAV MAT. Dean asked for a volunteer to lead this SAV AT; there was none.

Anne asked if Jud could lead this team as well.

Dean noted that Jud has expertise both on the science and policy side, but suggested that someone else also interested in the policy side might want to take the lead on this SAV AT. Dean noted that APNEP staff will not assign the team lead responsibilities, the team needs to do that task.

Dean noted that the APNEP wiring diagram gives folks a good idea of how things are organized. He noted that there are a lot of efforts ongoing, to mitigate the “death by a thousand cuts” of threats to the ecosystem. The MATs are out there trying to determine how the resource is doing. We are establishing a sentinel network, and will at least be taking annual measurements, and determine the “why” behind any observed indicator contractions, or expansions. He asked if that made sense and members thought it did.

Dean noted that there is a good bit of overlap between teams, and that it is a relatively small community. He noted it is good that there is overlap between the ATs and the MATs. He noted that over time, this group may engage more on the policy side of things. The SAV MAT will meet next and will be briefed on this meeting.

Slide 3: Dean noted the CCMP actions which are assigned to this group: B2.2, C3.3 and D1.1 are the three assigned to this team. These actions were included in the APNEP Strategic Plan. They are not prescriptive. Dean noted that the concept is that the experts in the field will look at these and decide on any specifics. For this one, it is not like we were starting from scratch. Dean noted that we have discussed calling it a “course map,” i.e., what does this team want to do to move these actions forward. Dean noted that it isn’t just APNEP, rather it is the entire collaborative that determines the pace and what we want to take on.

Brandon asked if the 10-year CCMP implementation window began in 2012.

Dean explained that in reality, it did, but the program went through the “dark ages.” The plan came out in late 2012, so the thought was that in 2013, they would re-focus to implementation. That was the second time when the timing was rather bad. In November 1994, and again in the fall of 2012, elections resulted in diminished federal resources coming from the federal sector to the partnership. There was a lot of research done in the early years, and all of those reports are now posted on the APNEP website. The short story is that APNEP was buried way down in the NCDENR hierarchy. There were only two employees left, in 1994. It wasn’t until the 2000 review by USEPA, when the program barely passed, that the program was re-elevated, having a Director instead of a Coordinator, and Bill Crowell was hired. In 2012, a new NC administration came in, some staff had resigned and moved on, and the program was viewed more as a pass-through program. Bill inherited another duty (Clean Water Management Trust Fund) which rendered him half-time, and so Dean was the only full-time APNEP staff person. So, they made the decision to delay initiation of the Action Teams. In 2016, they began to reinitiate the teams, and now in 2017 the program is fully staffed and they are moving ahead with team activation.

Anne noted that activity wasn’t entirely put on hold, or we wouldn’t be here.

Dean agreed Anne was correct. Dean noted that in 2000, there was a contractor-led effort to pull all the partners together and report on the data they had in hand. Basically, it took ten years to make the first iteration of the APNEP adaptive management cycle. Dean noted that Brandon was correct, we are about halfway through the cycle, but not halfway through the effort.

Dean noted that he hoped we can pull out from these meeting notes, specific points that we want to address over the short-term.

Slide 4: Dean noted that the SAV MAT actions are eight:

- Inform and educate NCDMF staff on the practical application and protocols for sonar surveys designed to map and monitor SAV in NC [ECU, NCDMF]. Ann elaborated that they had been reviewed on the protocol but will not be adopting it. Instead, they plan to try underwater photography first at a few sites and see how it goes before trying any sidescan efforts.
- Develop a peer-reviewed manuscript on the development and implementation of sonar methodology for mapping and monitoring SAV. This will include a comparison of Biosonics and Lowrance/Biobase approaches [ECU]. Hilde updated the team on this one. Currently they are only working on the Albemarle Sound. They are also working on a habitat suitability index for SAV in low-salinity areas. She notes that if that if an area doesn't have SAV, then it could be an area for potential restoration.
- Prepare a presentation for the APNEP "State of the Coast" meeting in November 2017. That will be held on November 15, in New Bern at the Convention Center. Wilson and Anne noted that conflicts with the next scheduled SAFMC Habitat Protection and Ecosystem Based Management Advisory Panel meeting.
- Developing plans for a USDA submerged soils sampling program in the APNEP region [NRCS, APNEP]. Dean briefed us on this one. He noted that due to some turnover, the APNEP had sort of lost touch with NRCS in NC. Dean learned when he attended a Barnegat Bay NEP meeting that NRCS wanted to do the submerged soils mapping. Dean and Jud Kenworthy have been working with the NC NRCS staff on this. They are proposing a "belt transect" from inshore to the Outer Banks. They need refrigeration for storing the cores. They are interested in collaborating with someone to look at the contaminants in the cores. Dean is talking to Dr. Reide Corbett (ECU) about that aspect. He and Jud have been talking also about the carbon content. Dean noted that there was no primary data for our region, with regard to Blue Carbon. Jessie noted that running across the sound, there are a lot of areas that won't have any SAV. Dean noted that they may decide to focus on the shelf. Dean noted that they want to have as representative a suite of samples as possible. Hilde noted that they could also do carbon-dating of strata within the cores. Dean noted that they will take cores, and he isn't sure where they will start, but it should be possible to leverage the work. Anne noted that it would be advantageous to take samples in some of the sentinel sites. Brandon noted that NRCS basically provides the physical properties of the soils. Dean noted that is why he needs to talk to the experts in our area. Jessie asked how far down the cores extend. Dean said, several meters. He noted that they have talked about taking two cores, one for archiving. Dean noted that the cores can take up a lot of space. Anne noted that perhaps we can learn about historic wetlands changes from this sampling.

Wilson noted that Brandon had touched on a point Wilson wanted to make, which is that he thought NRCS only did soil physical attribute profiles. Also, with regard to taking cores and looking at contaminants, Wilson noted that given the impact of hurricanes on NC sounds, the cores may or may not represent a lengthy time period. Based on past work that Dr. Courtney

Hackney had done at UNC-W, great changes can occur in the levels of contaminants, or locations of contaminants, within sediments, due to storm-caused sediment transport.

Anne asked about the USEPA Coastal Condition reports and how those relate. Dean hopes to keep those in mind as well. The team action items continue (Slide 5):

- Develop a metadata spreadsheet documenting the availability of remote sensing data (aerial photography, satellite imagery, reports, etc.) for SAV in the APNEP region [NOAA, APNEP]. Dean elaborated.
- Coordinate to plan spring 2018 aerial surveys for SAV in the APNEP Region [APNEP, NOAA, NCDMF]. Dean noted that this work is complex and requires a lot of coordination. They will work with the NCDOT to do the flights. He noted that he just learned last week that Reide Corbett (ECU) has gotten funding to do similar work in Currituck Sound, so he plans to coordinate closely with Dean. Dean noted that it will be five years since the last series was flown. We did the Currituck in 2012. But they will drop it now because it is too murky and since Reide will be doing that work. Dean and Don noted that the major effort will be in 2018. We will ask partners to assist again. Dean noted that he will ask Don to brief us on the second cycle map.
- Coordinate monitoring protocols for SAV research and monitoring programs planned for 2017 and 2018 [ECU, UNCW]. Dean noted the value of consistent protocols and being able to track what everyone is doing. He noted that it would be good to track Reide's and Jessie's efforts, and **suggested having a place on the team's website to highlight the SAV research that has been going on in the area.**
- Collaborate on the development and application of autonomous underwater vehicle (AUV) technology for mapping and monitoring SAV in the APNEP region [NOAA, Duke, APNEP]. Dean briefed us on this one. David Johnston (Duke) talked about this awhile ago and the idea was that it could be used for sentinel sites. Brandon suggested that for the sentinel sites, they should be flown every year. Dean agreed. He noted that we have a basic protocol, using sonar on a boat, and it's about a 1-day effort per station if you have enough people. The idea is to have a partner adopt a site and to fly the sites annually. Hilde confirmed the protocol.

Workshop Objectives

Dean noted that he hoped that we would come out with a list of bullets for this time (i.e., a course map).

SAV Monitoring & Assessment Winter 2017 Workshop Summary / SAV Action Team 2017 Plan, including feedback on SAV indicator metrics and thresholds

Dean noted that the MAT is charged with doing the assessment. We can track the extent of SAV (acres; and density of coverage using the three-class system), and break that down to

subareas. We can also conduct censuses in some other areas. He asked, what other metrics we might consider.

Don will discuss the second map. Dean suggested that we will have sufficient information for looking at a trend. Basically, how does the metric change over time. We can talk about influencing factors, such as droughts and hurricanes.

Brian noted that for this team, we have to have a diagnostic, in order to move toward a policy. Dean agreed. He noted that for the first assessment, we did not discuss trends. Brian asked, with two data points, do we even have enough for a trend analysis. He felt that we wouldn't have sufficient data until the 2018 flights are done, and then only for the high-salinity grasses.

Jessie agreed with Brian's overall point. She noted that the assessment is at least consistent.

Brian noted that protection is relatively easier to do, than restoration. He noted we have been talking for decades about whether direct restoration is needed, and if so, where.

Dean noted that we can pull our multi-year sentinel data, to assess changes or demonstrate how dynamic the resources is. Brian noted that the MAT needs to be on the hook for providing the data to us. Dean noted that for now, we have extent, for both groups. He is giving this group the opportunity to define what additional metrics will be useful. With regard to SAV extent, he encouraged us to consider what a healthy ecosystem is.

Jessie asked there are two main ways to move forward: historical ideal, or historical time frame. She described how they proceeded in Australia as well, which could be used.

Anne noted that we only have qualitative data from NC, not quantitative data.

Brian noted that historically there were more inlets, which certainly influenced the location and density of SAV beds within the sounds.

Anne noted that we could layer some datasets, to gain more insight into what factors may be influencing the beds.

Dean noted that the Tampa Bay NEP has aerial photos back into the 1950s.

Dean noted that you can pick up the deep water bed edges on some of the historic imagery.

Jessie stated that going back to the 1980s, was not likely.

Don noted that there is some available aerial photography for some areas which would enable us to map the deep water bed edges.

Anne noted that the nature of SAV beds is to change, which makes it difficult to determine how things should be.

Jessie suggested that we might be able then to monitor the dense meadows.

Anne suggested that it might be more useful to monitor the sentinel stations.

Dean noted that the sentinel stations will be part of the ground-truthing. We will have different monitoring at different times of the years.

Don noted that when you look at the Chesapeake Bay, and Tampa Bay, and Indian River Lagoon areas, you have the steady protocol, the sentinel sites, and can explain why changes have occurred. It is ideal to link the two approaches.

Jessie argued against using some historical baseline to set a restoration target.

Dean noted he was trying to say, a healthy system definition is not a regulatory thing necessarily. He noted that if we have a certain acreage in a given area, we should try to say whether that is a good or bad thing. For both reports, we would like to have some idea of what is healthy.

Jessie was just saying that the baseline should be part of saying what is healthy. She asked if we are going to use the report card to report on the metrics. Dean indicated that it will be a decision of the teams, which metric to focus on first. As soon as we have authors committed for the assessments, he will ask which ones have the most traction with the public. We won't use them all.

Jessie noted that it is hard to assess sometimes which data to use and how to report them.

Dean stressed again that right now, we will have two snapshots of SAV extent to report. We can also, based on the protocol work ongoing, address the cost-benefits of trade-offs.

Brian suggested that we need to decide for what we are managing. This will be informed somewhat by looking at the two data points.

Dean noted that he is committed to do an assessment, for SAV extent, in 2017. We will incorporate some of the work that we have done before, and note what we are doing.

Anne asked if anyone was doing sentinel sites on the Outer Banks.

Dean thought that there had been some work. He mentioned Sandy Point, as one site where some data should exist. Also, there is Quibble Point, and there is some historic NOAA data. Dean noted that eventually there should be sites all along the Outer Banks.

Don noted that in 1991, NOAA set up some sites that covered a pretty broad area.

Jessie noted that they are trying to coordinate all of the work to encompass the historical sites.

Anne noted that she hoped that there would be some standards.

Jessie noted that she had some things in mind in addition to extent. She noted that the NEER biomonitoring program may have some data which can be used. The baseline is still the hardest question. She wasn't particularly in favor of establishing an acreage target.

Brian noted that at some point, we have to know what we are managing for, so we can make policy recommendations. We need to define what additional information we need, to define the threshold we shouldn't go below.

Dean asked, can we do that now, or do we have to wait 10 years for more data.

Jessie indicated she would not give out a number just yet.

Anne noted it isn't so much we have in total, but where it is located, that is an important consideration. She noted that we used to have SAV along the Neuse River banks. She agreed that we want to have it in as many places as possible, not just in one spot.

Brandon noted that the sentinels need to be representative of each region, and he felt they are properly spread out.

Anne noted that different areas are important for different fish species.

Brandon noted that if increasing fish populations in the Neuse River is a management goal, then we can think about the benefits that both oysters and SAV provide. We can think about healthy systems. There are going to be things coming down from Raleigh that this team is not well-positioned to manage.

Dean noted that the Tampa Bay NEP had cautioned against using quantitative targets.

Brian noted that SAV is somewhat unique because it is both a target, and an indicator of ecosystem health. You won't have a healthy ecosystem if all of the SAV goes away. It is fine not to have a numeric target. We do need to be able to explain the ups-and-downs of SAV.

Jessie suggested that we could have an up- or down-arrow, but also give an overall grade. She thinks the idea of function is a good way to get around our lack of historic data.

Dean noted that he didn't want to conduct premature diagnosis, but wants us to be able to say something qualitative about how the first and second phases go.

Brian noted that we may be able to look at dense, versus patchy, and other aspects of what may go to function.

Brandon agreed that is a good point. Brandon asked if we considered the APNEP region healthy now. No, Dean advised that he doesn't. He noted that Brandon is aware of all of the issues.

Dean noted that we can start with our first major baseline.

Brandon noted that we definitely don't want to go below the 2006 baseline.

Dean agreed. He noted that from the preliminary data, some areas are getting patchier.

Anne noted that there is no reason to think that in the 2008 period, that was a minimum. Brandon suggested that we wouldn't ever want to go below that level. Anne noted that we know it wasn't exceptionally good in the rivers then. Hilde didn't know if the baseline was better than usual.

Dean noted that he, Don and Jud were going to be working on the assessment and will send it over for review. He wanted to know about whether they can push the envelope, or not. We can say we have two snapshots, and we have some annual data.

Anne noted that there are some older, qualitative data, from work Mark Brinson (ECU) did. She is aware that there were some areas which had more grass than they do now.

Don noted that in some areas, he can go back and look at the deep water edges. In Core Banks, for example, the edge has always moved back, not forward. That is based on maybe four to five snapshots. That is also true for all of the marshes. There is no line which has moved forward, all of them have moved back. It has never moved forward. They are excited about what David Johnston is planning to do now, flying these two lines every month for a year. Jessie noted that they have observed a lot of Cownose Rays as well, and may be able to count them.

Anne noted that what she is hearing is that SAV has declined in general.

Don noted that the wall of dense SAV beds is what absorbs the wave energy shock.

Wilson asked Jimmy if Bob Orth (VIMS) had said anything about being able to count seeds from cores, to gain some insight into the historic extent of beds.

Jimmy couldn't recall.

Wilson shared some of what Bob Orth had said, about Hydrilla having paved the way for recovery of other native SAV species. He noted also that even if we could find perfect cores, and find that we could count SAV seeds in the cores, Brian's point about the inlets changing in NC was a good one, and even if you found a lot of seeds at some point in a core, that didn't

necessarily mean that SAV was persistent at a site, due to the changes in salinity resulting from inlet closures and openings.

Dean wrapped up the SAV indicator metric discussion by acknowledging that we will leave it up to the SAV MAT to define a protocol, and that this SAV AT will have the opportunity to vet it.

Dean noted that we are at the point in the agenda where Jimmy will take over as staff lead. He also noted that it was near time for lunch. He asked about any rush hour in Washington. Jimmy reviewed the dining options. Jimmy suggested we break and bring our lunch back to the room.

- Lunch

12:45 pm: Jimmy Johnson reconvened the meeting. He noted that we will begin with a discussion of feedback on the MOU.

Feedback on “Memorandum of Understanding”

Dean noted that he had sent the MOU out to only four of us. Jimmy noted that many of the signatories had moved on. Wilson noted that the USFWS Regional Director at the time the MOU was signed, is now deceased.

Dean noted that the point was to solicit input from those he had sent it for review, with regard to whether it would be useful to have a revised MOU in place.

Wilson noted that from his perspective, it would be useful, since at present, USFWS staff have to pretty much be working under MOUs or other instruments in order to justify involvement.

Anne noted that Dean had made some changes to the MOU document. She didn't see anything wrong with updating it.

Brandon noted that it seemed really more focused on the monitoring aspect of things.

Don noted that NOAA is not on the MOU. The reason is that it would have had to go through NOS and USDOC general counsel.

Anne noted that Wilson didn't seem to have that same concern, in USFWS.

Wilson noted that NOAA has a LOT more lawyers than USDOJ does, which complicates matters. The USFWS has to request legal review from the U.S. Department of the Interior, Regional Solicitor's Office, and that office in the Southeast Region is currently understaffed and any requests for solicitor review have to first go through the surname route and be approved by the Regional Director, before going to the Regional Solicitor. So, field troops are reluctant to send such requests up for review unless they are really necessary.

Brandon asked if having the MOU in place was beneficial, or it just resulted in status quo.

Anne noted that when it first was developed, it was really useful in getting funds for the first aerial survey.

Jessie noted that there was nothing in there which really made any commitments on behalf of the signatories (e.g., don't have to donate money). Dean acknowledged that was true but that the MOU did help.

Wilson noted that it did make a difference, with respect to making it easier for the USFWS to provide funding through Challenge Cost Share and other mechanisms.

Anne stated she didn't see any down side to updating it.

Brian noted that he didn't want to see staff get into the position of having to create a MOU for each Action Team.

Dean noted that there has been a lot of turnover, so there would be the advantage which Anne pointed out, which is having all of the current leadership of the agencies be aware of what is going on. It would be sort of an outreach effort. Dean stated that there is no grand plan to have MOUs for every Action Team.

Brian wondered if there was any efficiency to having fewer MOUs.

Jimmy noted that there is an MOU between NC and VA, for the entire partnership. Kirk Havens (VIMS), current Chair of the APNEP Policy Board, is talking about updating and revising that one.

Jimmy noted that his real question is whether there is another MOU, within APNEP, outside of this one.

Tim noted that there is an Executive Order, but not another MOU to his knowledge.

Dean noted that the STAC has no MOU, but it does have bylaws and committees.

Brian suggested that if the interest is broader than just the SAV Partnership, it would be good to have a broader MOU, just for the sake of efficiency. If he is serving on another AT, which also wants a MOU, then his lawyers are going to be asking questions about efficiency.

Jessie noted that the purpose and benefits are broad enough.

Tim noted that the whole concept of APNEP is a gigantic MOU, because it is a multi-partner collaborative effort. Tim noted that to Wilson's point, it may facilitate the provision/transfer of funding.

Jessie wondered if it might be on the short list of agency requirements for providing funding.

Tim noted that it also could be useful for promoting the mission of SAV protection.

Anne noted that it could be part of an agency's mission anyway.

Tim noted that he was new to it, and given frequent turnover, it may be an asset in keeping people engaged.

We had some further discussion regarding how useful the MOU would be for those of us in the federal agencies.

Anne asked Wilson how he was able to justify his work with other Action Teams which didn't have MOUs. We (Dean and Wilson) noted that his liaison responsibilities were determined by his STAC membership. The USFWS at least up to this point has placed a strong emphasis on field staff working with partners to achieve objectives consistent with the USFWS mission, and as far as Wilson knows that hasn't changed, although he noted that he couldn't speak as yet to how the new federal administration may change priorities.

Dean asked if we should approach the STAC about this to see it would be a good idea.

Brian suggested that we consider having a broader MOU and the utility it might have. He suggests this may be more of something for APNEP to decide internally.

Dean suggested that we could take a look at updating this one, as a MOU "light."

Jimmy suggested that we needed to discuss it further as well with the Policy Board, and he will talk with Bill about getting it on their next agenda. But, at the moment anyway, he didn't see any reason to continue working on it, unless we determine that some other ATs want one, and there is merit to having a broader MOU for the program.

Dean offered that a middle-ground approach may be for just a few of the ATs to create MOUs; he gave the example of oysters.

Federal SAV Policies

Wilson and Jimmy briefed the group on last week's ASMFC Habitat Committee meeting and the discussion of the ASMFC SAV Policy. A survey was sent out to committee members as a review of the 20-year old policy and to see if they carried out what they said they were going to do. The survey results suggest that states had done a lot to recognize the importance of SAV, as well as mapping/monitoring programs and research - including NC. Jimmy and Wilson will provide copies of the recent ASMFC survey, as well as the SAV Policy itself, to the entire SAV AT.

Wilson noted that Bob Orth gave a fantastic presentation about research done and policies put in place for Chesapeake Bay. **Dean and Wilson are considering asking Bob to do a webinar of this presentation to the group.** Wilson stated that the ASMFC Habitat Committee was hesitant about doing a policy update since it's all still relevant. Instead, they have decided to republish it but including the survey results (e.g., current state efforts) and an updated research section.

Anne noted that the South Atlantic Fishery Management Council (SAFMC) also has a SAV policy document and it is also contained in the SAFMC Fishery Ecosystem Plan III, currently in preparation.

Dean asked if there is a need for a policy evaluation/reintegration. Anne stated that sometimes it depends on the authority of the agencies doing it.

Tim asked about all of the SAV policies and which ones may carry more weight in NC and VA, within the APNEP region. Anne named all of the SAV policies. Wilson asked if she and Jimmy thought that the NC Coastal Habitat Protection Plan's (CHPP) intent has been met. Anne didn't think it had.

Wilson suggested that an action for this team to pursue would be to look at the suite of existing policies and think about if there are things we can strengthen/improve; for example, have policies been implemented that have strengthened/improved habitats?

Anne doesn't think this has been done in a focused way but **felt it would be beneficial to do an evaluation of what is in place in NC, and what should be considered. She will recruit a subcommittee to work on this. Wilson volunteered to be on that subcommittee.** Jimmy noted that she could consult with Wilson and Jimmy with regard to the discussions at ASMFC last week.

Wilson noted the something that will soon be important here in NC is the conflict between aquaculture and SAV beds. Anne stated that there is ongoing research to look at this and cited Joel Fodrie (UNC IMS) and James Morris (NOAA).

Outreach Projects

Jimmy initiated the discussion by asking who is doing what.

Dean suggested we pick up this discussion where it was left off by the SAV Partnership. Need to consider what additional materials, if any would be useful, on the outreach side of things. We could then send these recommendations to the Engagement and Stewardship AT, which is meeting next week. **Dean noted that there is a spreadsheet with different kinds of outreach products and the different stakeholder groups and target audiences. Dean volunteered to get those materials together and send them to the group, with an overview of what has been done so far regarding outreach on SAV.**

Joe had joined the team after lunch. He noted that there are some informational signs put up at boat ramps, which he felt were useful in informing the public regarding the value of SAV. Dean noted that Jacquie Ott (NERR) had worked with us in the past, to do an evaluation of different types of outreach products. We did an analysis of what would be the most effective products.

Joe noted that he had seen the signage in Morehead, and felt that it was pretty effective, for anyone who had time to read it. It had photos of the different species, and targeted boaters and fishermen. He suggested that should be placed at every boat ramp located near SAV beds.

Anne noted that NCWRC was required to put it up at the ramp in Hampstead, because there was SAV there. Dean and Jimmy thought that APNEP funds had been used to get the signs made. Jimmy noted that the signs had been stored in some warehouse somewhere, but had been located and then put up.

Joe noted that the Chesapeake Bay Program funding was recently restored. The Facebook post noted that SAV restoration was a successful thing. Joe noted it will be good to get the message out about SAV being a key indicator species.

Anne asked how the Chesapeake Bay Program got the message out. Joe noted that someone in Chesapeake Bay had gotten the message out there. He suggested that we piggyback off their work and try to get the same message out here.

Wilson suggested that we think about an “Exploring North Carolina” program featuring SAV. He noted that Joe and Hilde would make very photogenic subjects and we could get some video of fish swimming around in SAV beds. He suggested that the producers (Tom Earnhardt and Joe Albea) would be receptive to the idea.

Dean reminded Joe that he had a colleague at ECU, a videographer, Eric Green, who might be interested. Joe indicated that he would reengage him, if he thinks we are ready to move forward with something. We could engage the public in Q/A, such as asking them where their blue crabs come from, and so forth. These would be public service advertisements (PSAs), or, you could put it on YouTube. Joe noted that the TV channels are required to do so many PSAs.

Jessie noted that she remembered some ads, about save the crabs and then eat them.

Jimmy noted that there is also a new video out of Delaware about mariculture and oysters. He will send it along to the team if he can find it.

Wilson noted just listening to Joe, he has come up with three possibilities: PSAs, YouTubes, and a 30-minute “Exploring NC” program.

Tim noted that there was an episode of “Exploring NC” done in the last year on water resources of the state from the mountains to the coast.

Jimmy noted that Wilson needed to talk to Joe anyway, about writing a piece for ASMFC's Habitat Hotline on his SAV work.

Wilson asked if Dean had other outreach materials on SAV. He does have some materials. Wilson and Jimmy will provide the ASMFC materials from 20 years ago. Wilson asked about other materials from other NEPs which have SAV. Dean doesn't have them. Anne reminded us the spreadsheet that Dean mentioned earlier, which had a lot of the references. She reiterated that we need to track that down and refresh our memories regarding what we already have.

Partner Updates

NCDOT: Dean gave the update from NCDOT for Kathy Herring. Mark Fonseca (CSA Ocean Sciences, Inc.) has been contracted to do some work for them; a wave attenuation structure to create a calmer environment for SAV to coalesce. They are getting aerials twice a year on the back side of the Outer Banks. They have been monitoring SAV in the Rodanthe Bridge alignment for several years. They have also been monitoring other areas. **She had attached several reports for Dean. Dean will email these materials to group instead of posting them on the public website.** She noted that Currituck has been surveyed by sidescan sonar, and will be developing mitigation strategies. This is in connection with the proposed mid-Sound Bridge over Currituck Sound. Brian said it is moving ahead, with no funding. Brian indicated that the potential toll for the bridge is \$50, which he felt people would readily pay as opposed to sitting in traffic for three hours on the present route to the Outer Banks during the peak of the tourist season.

Dean noted that he would probably create a restricted access site for members to review materials.

Jessie noted that some of the areas proposed for SAV establishment, don't make much sense.

Anne noted that Ken Riley (NOAA) has mentioned to her exploring the idea for compensatory mitigation in NC. They are working on what they need from the Corps, and NCDWR. Anne felt that in NC, we don't have good, strong restoration techniques. Ken's idea was to get the funding, and use it on something. She wanted to know what others thought about compensatory mitigation.

Brian noted scale is an issue. He said that TNC did some restoration in 2012, behind Nags Head Woods. They jump-started *Ruppia*. It really took off and is fantastic now, but to do that at a larger scale, would be very expensive. They used "pickerel bags" to make it work.

Jessie noted how it works.

Joe asked what the limitation is. Brian stated that widgeon grass produces tons of seeds. You need to have a seed source close by, and you need to have some means of wave attenuation. It

can be done, Brian stated, but a lot of the reasons SAV isn't everywhere has to do with wave energy, and other things.

Jessie noted that the restoration efforts done thus far have been good about demonstrating what doesn't work.

Brian noted that they have had some great success in the Virginia Coast Reserve, but they had optimal conditions there.

Anne noted that in the southern area in NC, there is enough light, it is shallow, and there is good flushing. She noted that once you do this sort of mitigation one time, you are just opening the door for more impacts from additional projects.

Dean asked if there is going to be damage, regardless. Could they do damage and then not have to pay anything? Anne noted that projects have to be "in the public interest."

Dean asked about funneling any funds toward protection of some resource, i.e., through more monitoring, or policy reviews.

Wilson noted that we had a discussion last week at the ASMFC Habitat Committee meeting, about estuarine mitigation banks and our thoughts on those. We decided to educate ourselves and then consider how to proceed, i.e., whether to develop estuarine mitigation bank BMPs, or not.

Anne and Jessie discussed the merits of "in lieu fee" mitigation and how any funds might be used.

Tim noted that there was some discussion on this at the last SAV AT meeting, about the possibility of using funds for other purposes (e.g., buy land for protection).

Brian noted that we are seeing a decline in SAV in NC, and we want to try to come up with ways to sustain the beds. Poop sticks (perches for sea birds, which then defecate into denuded areas caused by propeller scars and facilitate SAV regeneration) worked well in Florida Bay.

Joe noted that we need research to develop methods appropriate for the NC systems. It would be a really good story if we can find some funding to design a really powerful experiment.

NOAA, National Ocean Service: Don Field will go talk to David Johnston folks tomorrow. Don was contacted by the National Park Service (NPS) and they had some funding to do some SAV work. Don referred NPS to David Johnston, and he got the funds. They are flying two test areas on Shackleford and one other area. They are flying monthly for the next twelve months. Don noted that he doesn't have very good historical information, but is convinced that the SAV line is moving landward, in these beds. That will be going on for the next year.

Dean asked Don to determine whether what he sees is promising for application to other areas.

Joe noted that Jud was interested in working in the Neuse River.

Don noted that he doesn't know where all of the stations are. Don thought that there might be potential for siting some additional locations, but military airspace may be an issue.

NEERs/NC Coastal Reserve: Brandon noted that Jessie can brief us more on one of the projects in which she is involved.

NCDMF: Anne noted that they will be starting a sampling program in Region 3, Core and Bogue Sound, random sampling, looking inside and outside of SHAs. They will be working on what parameters to measure. They will be hiring a technician. The work will begin in July and they are working on a protocol now. They will look at percent cover, and density, height, and other metrics. Anne asked if we thought that random sampling is better. Jessie noted that it is better to sample the same site over time, if you were trying to follow a given location.

Joe noted that the idea is to be unbiased, to the extent you can.

Dean noted that you can have core sites that you work around.

Joe noted that you can have both random and fixed sites.

TNC: Brian noted that they are doing more work related to oysters. Regarding SAV, their efforts are more on enhancement than anything else.

ECU: Joe noted that they did the Neuse last year; this year they will be doing tributaries of the Neuse, and will then pick sample sites. They will need an extension. Joe has a final draft of the Pamlico report. Hilde noted that she is working on her dissertation. She is creating a Habitat Suitability Index (HIS) model for SAV in the Albemarle Sound. She has looked at temperature, salinity, bottom composition, and other parameters.

Brandon noted that sounds good. He noted that he had done that previously and asked her how she will interpolate, between stations. Hilde stated that she would use extrapolation. Joe noted that you have to have bathymetry, to expand things into shallow water. Joe stated that more long-term, fishermen and boaters provide an opportunity to do some mapping. This would be another way of getting citizens involved in the monitoring. He would welcome input. Joe noted that we might be able to involve some of the citizens. Joe noted if you are serious about this, you will provide the education to various groups. Joe noted that he is getting a new echo-sounder for his work. He hopes to get more funding. If he gets it, he is willing to put it on a SAV-boat. Joe noted that they have received some funding from the National Fish and Wildlife Foundation, as mitigation for the coal-ash spill, which they will be using in the Neuse.

UNC-W: Jessie noted that they secured three years of funding to start the southern sentinel sites. They will begin monitoring on July 1. They will be doing acoustics twice a year - June and August. They will be doing monthly sampling from April-September at all the sites. Pairing with local water quality. Multiple partners are working on it together.

Brandon noted that they are going to test a couple of novel indicators, including seed bank viability, and other aspects.

Jessie noted that sea grass is declining, or not there anymore, which isn't very much use.

Brandon noted that they submitted a proposal to develop a decision support tool for balancing SAV and other uses, such as aquaculture.

Dean noted that like the Engagement and Stewardship AT, APNEP also has a Decision Support Tools AT, and that one is also willing to assist.

USFWS: Wilson noted the USFWS SAV focus in North Carolina is currently in Mattamuskeet National Wildlife Refuge (NWR), although SAV does occur within or adjacent to other NWRs in NC as well. The USFWS has jurisdiction, when the SAV is completely within the Refuge, but in other cases may not have jurisdiction (i.e., at Swanquarter NWR where SAV occurs in the open waters of Pamlico Sound which are within the Congressionally-authorized Refuge boundary, but USFWS authority is limited to setting regulating only waterfowl hunting). Wilson noted that he had recently responded to the ASMFC's SAV survey and had compiled a list of all of the NWRs in the south Atlantic portion of the Southeast Region, which have SAV. Wilson briefed the team on the Mattamuskeet Collaboration Team, and the work that they are doing. The USFWS Southeast Regional Director and the North Carolina Wildlife Resources Commission Executive Director have signed two agreements with regard to working to solve the environmental issues at Lake Mattamuskeet, which is part of the Refuge and is the largest "natural" lake in NC. The assembled team consists of USFWS and NCWRC field staff, which are overseen by a Steering Committee and an Executive Committee. There are several issues there which have caught the public's attention and created some areas of controversy. These include management of the water levels in the lake, nutrient inputs, and loss of SAV over time. The team has recommended, and in some cases received funding for, conducting research on issues like Blue Crab population dynamics within the lake; nutrient inputs, sources and sinks and nutrient inputs from waterfowl; trophic changes which have moved the lake from SAV-dominated, to algae-dominated; and fish passage through the Refuge's water control structures. Additional funding is being sought to conduct research on the Common Carp population in the lake and whether carp removal should be pursued. Historically, there was a commercial carp fishery in the lake and it is thought that removal benefitted SAV survival and sustainability. Wilson will keep the team informed regarding what is going on. He noted a relatively recent development is that the NC Coastal Federation has agreed to take the lead in preparing a Watershed Management Plan for the lake's watershed. The plan's development has strong support from watershed residents.

Jimmy noted that this year, water levels at Mattamuskeet have been as low as they have ever been. Jimmy noted that the Refuge has asked for assistance from APNEP with regard to dealing with flooded septic systems. Jimmy noted it will take some time to get a watershed management plan done, and get some relief.

Jimmy asked for any other updates from partners. There were none.

Subcommittees

Jimmy noted that we sort of have two subcommittees. Anne will work on the SAV Policy, and perhaps after discussion with Bill, we may have one on the MOU.

Jimmy asked about any other subcommittees we may have.

Jimmy asked Don how he and Mary Grace were doing with the digitizing. Don noted that the NCDOT plane acquired aerial coverage at 10,000-feet, with a one-foot resolution. The NCDOT was to interpret the imagery, but that didn't work out well. So, Mary Grace was hired to reinterpret the imagery. She has finished the area from the Bonner Bridge down to Hatteras. Jimmy noted that she will be leaving APNEP to go to work for the NCCF. Jimmy noted that after she finishes the work for the NCCF, she can come back to APNEP and do more work.

Dean noted that Mary Grace's work was to make a map consistent with the original map. Joe asked if the imagery was good, but the interpretation was bad. Yes, that was the issue.

Jimmy noted that we will be back in touch with the promised information, and would send out a Doodle poll regarding the next meeting. Jimmy noted that at the very least we would plan to get together next spring.

Wilson asked about any legislation in the NC Legislature which would potentially affect SAV. Anne indicated that there are several bills which could potentially affect fisheries management. She has heard that both of them have traction.

Jimmy noted that there is another bill or resolution, which had to do with the density of SAV beds and oyster aquaculture. Anne noted that supporters want to allow SAV impacts from aquaculture. Jimmy thinks that Senator Cook had introduced some legislation. Jimmy noted that the proposal is to be able to do this. Anne stated it was ocean, but could be estuary as well. Anne noted that the budget bill will include some language to the effect that NCDMF has to be in control of their own funds, not unduly influenced by outside interests.

Dean asked again for nominations for an Action Team lead. There were none forthcoming. Jimmy asked if anyone feels led to facilitate the team, the APNEP staff will definitely back them up. He noted he doubts that anyone wants him facilitating a meeting. Anyone with a desire to serve, should contact Jimmy.

Action Items (based in part on text in red from above)

- **APNEP staff:** Create a space on SAV Team website to highlight ongoing research
- **Jimmy Johnson:** Work with Bill Crowell to have APNEP Policy Board discuss the need of an updated MOU for SAV.
- **Dean Carpenter:** Contact Bob Orth about doing a webinar for the team.
- **Dean Carpenter:** Email mitigation materials from Kathy Herring to the team.
- **Dean Carpenter:** Dean will send a spreadsheet and associated materials previously created on outreach efforts to the team. He will provide an overview of these materials and ask the team for feedback, which he will provide to the Engagement and Stewardship AT at their May 16th meeting.
- **Jimmy Johnson and Wilson Laney:** Send out the ASMFC survey/policy to the team. [done by Jimmy, May 9th]
- **Anne Deaton and Wilson Laney:** Will form a subcommittee to compile and compare SAV policies.
- **Don Field:** Will contact David Johnston and will investigate the potential for testing drone sampling techniques at a field site this season - potentially Neuse River.
- **Dean Carpenter:** Will ask the SAV MAT to determine the protocol for monitoring the high-salinity sentinel sites and ground truth stations, and will report back to this team for review.

Adjourn

The meeting adjourned at 2:47 pm.