DRAFT

APNEP Submerged Aquatic Vegetation (SAV) Action Team Workshop 2
NC DEQ Regional Office, Washington, NC
26 April 2016

Attendees: Anne Deaton (NC-DMF), Joe Luczkovich (ECU), Shane Staples (NC-DCM), Kathy Herring (NC-DOT), Dean Carpenter (APNEP), Stacey Feken (APNEP), Jud Kenworthy (NOAA-NOS, retired), Don Field (NOAA-NOS), Jessie Jarvis (UNC-W, Assistant Professor), Brandon Puckett (NOAA-National Estuarine Research Reserve), Wilson Laney (USFWS, ES and Fisheries), Maria Dunn (NCWRC, Habitat Program), Ken Riley (NMFS-Habitat Conservation).

Welcome and Introductions

Dean Carpenter welcomed everyone to this second meeting of the team. He suggested future meetings would be more frequent. Dean started the introductions. Everyone introduced themselves and explained their engagement with SAV.

APNEP Support to Action Team

Dean provided some background, noting that he had been engaged in the SAV Partnership since 2004. There are 58 actions in APNEP strategic plan and 14 action teams to guide their implementation (one being the SAV Action Team), each having the responsibility to implement a subset of actions. A division of activities once within the original SAV Partnership was required: the SAV assessment and monitoring team will continue their work (their last workshop was in February and Jessie Jarvis will be hosting an upcoming workshop), while this action team will focus more on SAV conservation, restoration and protection.

In noting that the original Partnership had the four elements of restoration, monitoring, assessment and outreach, Anne asked if the people weren't the same. Dean noted that with regard to protection and restoration, the monitoring and assessment element has been crucial so there is a lot of overlap right now. He did want to address the issue of who should be here, and what other organizations should perhaps be involved. APNEP strives to have 10-12 individuals on each action team, and they do what representation from the significant organizations that can help to move this effort. Dean noted that Anne had indicated that Ken Riley may be coming from NMFS (he is Ron Sechler's replacement). Dean asked if everyone was in agreement with the focus of this team in moving forward. Anne suggested that Dean should always have at least a brief update on the monitoring and assessment aspect of SAV.

Dean would like to see two objectives evolve out of this meeting today. One would be an action plan to cover the next two to three years. The other would be to elect a team leader who is not a member of APNEP's staff. Each APNEP action team will be moving at its own pace. He hoped that the charge of this team would align well with many participants' agency or institutional missions. The team leader should set the agenda and the team should set the pace.

Anne asked if it really was then an APNEP action team. Dean replied that it is, but APNEP staff are not the SAV experts. So the team members should determine the priorities.

Stacey and Dean are the two APNEP staff members who will facilitate this team: Stacey will be the primary staff liaison and Dean will be secondary. Dean will continue to be primary for the SAV monitoring and assessment team.

The role of team members who also serve on APNEP's Science & Technical Advisory Committee (STAC) is to explain based on the latest science how the ecosystem would be expected to behave, given the management (protection, restoration, engagement) paths considered. If after a number of years the system is not behaving as we surmised, then we have to be adaptive, investing in more research, or trying a different approach. This is different from the traditional approach were management strategies are allowed to run for years without considering a change in strategies. While there is a need to develop metrics, indicators used to assess the health of SAV for monitoring and assessment, there is also a complimentary need to development "management metrics" for each action team. He provided a hypothetical example for the Water Quality Action Team, where team members not only agree on a set of best management practices (BMPs), but also track their construction and maintenance to confirm BMPs are actually in place and functional. The lack of BMP tracking was a past criticism of the Chesapeake Bay Program. So there is a need to develop the tracking metrics, to ensure that the action team measures are actually implemented.

Anne asked about STAC representation on the Action Team. Dean noted that Jud, Don and Wilson are all on the STAC. Wilson is also on the Policy Board.

Dean noted that all of the management actions should take place in APNEP's program area, which includes southeastern Virginia. During the drive to this meeting, Wilson and he had a discussion in the car about the fact that a member of the SAV Partnership, John Gallegos, had retired from the USFWS in Back Bay, Virginia, but there is a new Refuge Biologist there who may be willing to join this team. There is also another staff member who John Gallegos was bringing to SAV Partnership meetings.

Dean asked if anyone had any questions regarding the role of APNEP in supporting this team.

Jessie asked if it was desirable to select a team leader today. Dean indicated it would be given this is the second workshop for this team, but given the time between workshops it is understandable that team members may require more time to work together. APNEP now has an Implementation Committee, whereas previously there was a Citizens Advisory Committee and Management Advisory Committee. Once a majority of action team Leads have been chosen/elected then the Implementation Committee will convene. All action teams should have been initiated in 2013, but various hurdles including diminished APNEP staff capacity lead to a long delay in activation.

Jessie asked if there would be two SAV team leads given there is a SAV Monitoring and Assessment Team as well. Dean noted that the SAV monitoring and assessment team will be run separately. As part of the Monitoring and Assessment initiative of APNEP, that team is really a subset of the Living Aquatic Resources Monitoring and Assessment Team.

Once convened, the Implementation Committee will encourage action teams to submit proposals for limited APNEP implementation funds. APNEP is envisioned as a type of a bridge organization to the partners. The partners' budgets have also been shrinking as well so it is important to participate in these processes to leverage partner capacities.

Anne asked how often the Implementation Committee would meet. Dean noted that once operational the Committee will determine meeting frequency. He envisions that they will meet before year's end.

Wilson suggested that one good thing would be to have a good diagram of APNEP's organizational structure, so the relationship between all the parts is clear.

Joe asked if some of the action teams didn't overlap in objectives, for example this team with the Nutrients Action Team. Dean agreed that there is some overlap but noted that the actions for which this team is responsible are unique to this team. The primary responsibility for this team is SAV restoration and conservation. Joe asked, if it is determined that nutrient regulation is important for SAV restoration then that message is conveyed to the Nutrients Action Team?

Dean agreed that some cross-communication among teams is needed. APNEP plans to have a STAC meeting to compare technical insights between active action teams. On the policy side, such comparisons will happen in the Implementation Committee.

Anne suggested that it was complex. Dean agreed.

Joe noted that is appears from the APNEP web site that SAV action team members have a place to put files, and also a list-serve.

Dean noted that any interested citizen could sign up for the list serve to track team progress. APNEP staff will also be setting up a site where the team members can put documents on which they wish to work collaboratively. If this team wants to pull in folks knowledgeable about SAV we can add them to the list-serve. Current team members will automatically be added to the list-serve.

Stacey indicated that some team members are communicating directly with each other. She will make sure that each member is signed up on the list serve. It can then be used not only as a communication tool by the team, but also will be open to the public as well. APNEP does have separate main mailing lists.

Dean noted that APNEP staff also will likely send out a note to the public letting them know that they can apply to join any action team.

Anne noted that the Rachel Carson National Estuarine Research Reserve was not technically part of APNEP. Brandon and Jessie noted that NERR is under NOAA's administration, whereas NEPs are under USEPA. Joe explained that Brandon has authority only in a couple of places, whereas the state has broader authority. Dean noted that around the country, many NEPs work closely with the NERRs.

Anne noted that the only portion of North Carolina coast absent from APNEP is that area from the White Oak River south. Ken noted that both units of the National Seashore system are within the APNEP region as well. Wilson noted that the southern portion of North Carolina not in the APNEP region is covered under the Eastern North Carolina –Southeastern Virginia (ENC-SEVA) Strategic Habitat Conservation Team of US Department of Interior, and also is included within the South Atlantic Landscape Conservation Cooperative (SALCC). Jud noted that the North Carolina Coastal Habitat Protection Plan (CHPP) also encompasses the entire state as well.

Brandon asked if the fact that APNEP was sponsoring this action team meant that the team couldn't work in that southern area. Dean indicated that the team can cover that geography as they will but APNEP funds must be devoted to its programmatic area. Anne noted that state agency members can address SAV statewide.

Wilson noted that Anne also chairs the North Carolina Subpanel of the South Atlantic Fishery Management Council's (SAFMC's) Habitat Protection and Ecosystem-Based Management (EBM) Advisory Panel, and as such should feel empowered to convene that group at any time she felt it appropriate. For example, if the SAV Action Team decided that any suite of best management practices (BMPs) for SAV conservation that they developed would be useful in other South Atlantic states, she could convene the group and develop those then take them to the full SAFMC advisory panel, then ultimately to the Council, for possible incorporation into SAFMC policy.

Planning: **SAV Action Team 2016 Action Plan, including SAV indicator metrics and thresholds**

Dean projected the team's three focal objectives from the draft SAV action plan. They are:

- CCMP Action B2.2: Develop and implement a SAV protection strategy
- CCMP Action C3.3: Develop and implement a SAV restoration strategy.
- CCMP Action D1.1: Communicate the importance of stewardship and offer opportunities for volunteerism to further APNEP's mission.

Joe asked how the team was supposed to develop a protection strategy, given that they do not have authority. Dean and Anne noted that there are APNEP partners who do have the authority. Dean noted that there is a carrot and stick approach possible. Policy recommendations can be forwarded from an action team to the APNEP Policy Board for further action. Anne noted that recommendations could also go to the CHPP Steering Committee for action. They could recommend that NC-DWR work on something then ask them what sort of progress they are making. NC-DWR would have to be willing to put any actions in their implementation plan. Anne suggested that this team needs a NC-DWR staff member. Dean noted that Jill Paxson represents NC-DWR but she was in the field today.

Ken noted that it is important for his organization to have language can be inserted into regulatory review transmittals. The NMFS can use those directly.

Wilson suggested that one good thing that this team could do would be to review the recently-revised SAFMC SAV policy, and also to review the Atlantic States Marine Fisheries Commission (ASMFC) SAV policy, to see how much had actually been accomplished.

Jud asked also about the SAFMC's Fishery Ecosystem Plan II, to which he is supposed to be contributing. He had agreed to serve but hadn't heard anything since. The SAV section of the

Council's Fishery Ecosystem Plan needs extensive revision. Wilson and Anne indicated that they needed to contact Roger Pugliese and notify him about Jud's concern.

Jud asked how many regulatory review actions each year deal with SAV. Shane indicated that there are a lot more actions that are involving SAV now, given the reduced number of sites. He and Anne indicated that they do have a means of estimating the amount of SAV affected. Ken indicated that he needs acreages for his performance evaluations.

Jud noted that nationally there are a few different lines of thought about where to drill down. If there is no inventory of how many acres are being impacted by actions in North Carolina, maybe there is a place that we can start.

Anne stated that she felt they had done a great job of putting together a database, and sometimes they may have square footage if dredging is being proposed. Shane indicated that for docks and dredging, some square footage estimates may be available.

Jud concluded that throughout the regulatory review process there is no quantitative information that would drive a protection strategy. Joe suggested that would be a recommendation for a protection strategy.

Don asked if there was a GPS point for each application. Anne and Shane indicated that there would be an address. Don indicated that for most of the SAV areas maps do exist, and that does provide some power for the future.

Anne noted that it would be possible for coordinates to be entered, and then go to Google Maps to determine whether there may be SAV impacts. Shane noted that the depth may determine what level of review is conducted.

Anne explained that NC-DMF no longer does permit reviews. The two staff that were doing those reviews were both moved to NC-DCM and are still assigned to do reviews for NC-DMF. Ken noted that NC-DMF still does aquaculture leases.

Jud suggested that based on this conversation, this team could do a review of whether or not the regulatory review process effectively protects SAV, and also make recommendations for improvement. Jud noted that the same thing has been pretty much true in each state in which he has worked. Some states have made an effort to improve things. If the US actually gets involved in carbon credit and sequestration, they will have to inventory their carbon resources

(live SAV) and also document the losses. That will have to be done quantitatively. And Jud sees a role for NC-DCM, NC-DMF, and NMFS in that process.

Ken noted that all NMFS can do is to make recommendations. They then should follow up on the US Army Corps of Engineers' (USACE) response to the recommendations. There is a need to understand how USACE (and USEPA) does or does not follow through. Contractors may ask for a release from any permit conditions. Anne stated that except for acreage, USACE did have some follow-up. All the recommendations did go into a database. The database did not have some fields that were needed, like the acreage of habitat affected. NC-DMF staff wound up trying to track things themselves.

Shane indicated that there is pushback from the current NC legislators about even implementing the current rules on the books. NC-DCM staff do try to reduce the amount of shading with respect to docks and boat traffic.

Jessie asked if all SAV are treated the same. Shane indicated that they don't treat all SAV the same, citing as an example the invasive *Hydrilla*. Also they do not survey pondweed in August. Jessie noted that there are different requirements for different species of SAV. Shane noted that when conducting surveys, species composition may be noted.

Maria noted that when NC-WRC staff reviewing a permit, they consider direct impacts but not account for indirect impacts. It would be good to show that impacts do occur indirectly. Anne agreed and noted that the cumulative impacts are not really addressed now. Maria noted that some property owners claim that the state can't tell them what to do with their property when SAV appears long after they acquired the property.

Jud noted that there needs to be a realization of SAV dynamics. Zoning of the seascape could help to address that issue. Joe suggested that this team could make that suggestion.

Anne noted that Maria is saying that even where we have rules there is pushback. Jud suggested that the ebb and flow of politics be placed aside. Joe stated that the team can go beyond politics, noting that there are elections every four years. Shane noted that having a group of experts agreed does lend some weight to the conditions. That helps at least before the lawyers become involved.

Joe noted that he had experience with one project, the Sandy Point Project, when the survey was done at a time of year when the SAV wasn't present. Also, the survey should consider whether SAV has been there during the last ten years. Joe noted that he had talked to lawyers

on both sides. The applicant was searching for any loophole to get out of the permit conditions. Words like "outstanding resources" and "significant" were used in an attempt to diminish the importance of the SAV at that site.

Anne agreed that having a map would be very useful for permit reviews, yet the elephant in the room is really the water quality and not the relatively small direct impacts. State legislators are allowing more impervious surfaces, want to eliminate the buffers, and other provisions.

Maria noted that there are some strong rules in effect now. The more people that push for dredging, the more she sees the rules going away due to the variances that are being granted. The NC Coastal Resources Commission could just decide to eliminate the rules. She suggested that agency staff work with applicants otherwise what little regulatory authority is in place will be lost. It would be difficult to prevent development in a habitat area and it would be difficult to push this into the regulatory process. She doesn't see any more regulatory protection than we presently have already.

Jud went back to what he said initially. There is the existing regulatory way to protect habitat, and then there are other approaches. If the regulatory members on the team just didn't see any ways to elevate the problems, such as no tracking logs, then there is a need to pursue a process to get some meaningful change. He asked where the rubber meets the road, where is the bang for the bucks? Is there some other mechanism available?

Ken noted that he was the new kid on the block. He can serve as a federal regulator to assist the state in cases where they are subject more to political pressure. The NMFS understands this and can assist the state. Jud noted that even NMFS is subject to pressure regarding beach nourishment and dredging projects. Ken noted that there are some differences in policies, and his conversation with NC-DCM staff has highlighted some of those differences. The NOAA policy is that there shall be no impact of docks on SAV but the state policy is more lenient.

Anne noted that it is often a matter of judgment on the part of the state, noting that in the past NMFS wasn't even reviewing a lot of the smaller projects. Ken agreed that was the case.

Joe asked what the line is between when the state and federal agencies review the project.

Maria explained to Joe. If the proposed project trips the CAMA major permit threshold then it goes to the federal agencies for review, but only if a further threshold is tripped. USACE determines whether it goes to USFWS, or NMFS, or USEPA. All this activity occurs within a

several-week period. USACE makes those calls so there have been a lot of times in the past, when there was no federal rule. That may be different now that Ken is there.

Jud noted that cumulative impacts may be small, but asked how many of them there could be. There is a non-regulatory side to protection, such as purchasing and setting aside land.

Jud asked if this team might need to divide into sub-groups, one to consider regulatory mechanisms, and the other to consider other conservation measures.

Dean noted that certainly could be the case then reminded members that he has yet to finish the workshop overview. Partner funding/planning issues, and activity tracking and plan review, were also part of the 2016 Action Plan.

Dean turned to SAV Restoration. Restoration strategies include shoreline armor removal and modification, removal and modification of overwater structures, etc.

Dean showed a map of the SAV resources. His last slide addressed the SAV monitoring and assessment updates. This included 2012-2014 aerial image interpretation (Don Field). Dean noted that the first cycle (2006-2008) covered much more area than during the second cycle (2012-2014), because inland areas were excluded in the latter where SAV is harder to detect. The next map should be released this summer. They are working on image interpretation right now, in consultation with NCDOT photogrammetry staff. Don is helping to work out an interpretation issue involving the interpretive resolution being finer in the second cycle as compared to the first cycle. In 2015-2016 boat-based monitoring protocols were developed (Kenworthy and Luczkovich). In 2015 sentinel stations were established in Albemarle Sound (Luczkovich). In 2015 there is a pilot survey and 2016 sentinel station establishment in the Tar-Pamlico River (Luczkovich). In 2015, there was National Coastal Condition Assessment (NCCA) monitoring (Carpenter). Dean explained the latter item. Not enough data were being collected by the NCCA core effort to allow APNEP to say with sufficient certainty water quality parameter such as light transparency, so APNEP doubled the number of stations in order to increase the level of certainty. APNEP is currently waiting on the data. Dean noted that it takes four to five years to produce the NCCA reports, which can be very frustrating. He hopes to incorporate the information into the APNEP 2017 assessment. EPA provided the training and lab analysis, while APNEP provided the staff and boats. In 2016 the sentinel stations in Albemarle Sound will be revisited. The role of sentinel stations include assessing more subtle changes on a shorter time scale, plus acting as ground-truthing sites for aerial mapping.

Jessie asked for how many stations they sampled. Dean indicated that once the sentinel stations are established, the goal is to monitor them annually. Brandon noted that the team at this workshop is different from the group that will be monitoring the sentinel sites. Dean confirmed that the SAV Monitoring and Assessment group is separate, but these data should be of great interest to this action team. More information will be coming. Dean noted that once he gets through this slide, he won't talk about monitoring and assessment for the remainder of the workshop. Brandon noted that he needed to link up with the monitoring and assessment group. Dean noted that Brandon is already on that group.

Anne noted that the sentinel site monitoring requires a great deal of equipment. Joe and Dean indicated that isn't necessarily the case. Dean felt that equipment shouldn't be an impediment for partners to collecting the data. Joe noted that each NCDMF vessel could be collecting data. Joe advised that currently there are two underwater cameras, one at NOAA (Don) and another at ECU (Joe).

Jessie asked about dividing the state up into regions. Dean indicated that would be acceptable, a "divide-and-conquer" approach.

Don was asked about underwater cameras, and indicated that the cost for some units is $2,200. There are less expensive ones. Dean noted that you don't need an underwater camera for each single station. Joe recommended that NCDMF purchase their own camera.

Dean suggested an approach for monitoring the sentinel stations, which entails several years of work. They will also determine the best time of year (spring vs. fall) for monitoring the stations. Dean noted that Joe has been getting CRFL awards to do SAV monitoring for this purpose. Joe's team has been moving south to the Tar-Pamlico and Neuse Rivers, so the question came up with regard to how to backfill the Albemarle Sound work. Dean noted that a training session will be held next week (May 3) by Joe and Hilde Zenil, in Albemarle Sound near Edenton.

Dean noted that it takes a crew of four a full day to monitor a sentinel station. Joe agreed that using four people makes it go faster. He provided the details of the process. Four people can do it in a day, or two people can spread it out over several days. Dean noted that if you figure ten stations, both in spring and fall, it does take a lot of time. Joe noted that their prior work did reveal a spring and fall difference. Jessie asked what happened to summer. Joe noted that they didn't find much in 2015 in the fall, but some of the same sites now have a lot. Anne indicated that she would participate in the training session on May 3. Joe will provide time and location to anyone who is interested. The meeting site is near the Edenton airport. Joe will provide lat/long coordinates.

Dean noted that the plan is to do one more year (2016) of dual-season monitoring in Albemarle Sound, and then make the call as to the sampling window in subsequent years.

Joe stated that he needs to know by day's end how many people are coming to the training session. There will be three from APNEP alone.

Dean continued his review. There is a question regarding whether to establish sentinel sites in Core and Bogue Sounds (Kenworthy and Field). He noted that NOAA has done a lot of work in those areas.

Jessie asked if the criteria for establishment of sentinel sites are in the CRFL reports.

Jud stated that for the low-salinity sites, the criteria Joe developed are pretty good. They haven't really finished the high-salinity sites yet. Mark Fonseca had established 18 sites a number of years ago, and Amy Uhrin went back to some of those sites. The protocols may wind up being very different for the high-salinity sites. Amy took cores. Don noted that Walt Rogers is doing the statistics on those sites right now. Jud noted that they have not decided to adopt a sonar protocol for the high-salinity sites. Dean suggested that be a topic of discussion at the next workshop of the SAV monitoring and assessment group.

Anne clarified that the protocol for the high-salinity sites has not been developed. Jud confirmed that is correct. Jud noted that we will know, based on Joe and Hilde's work, whether that protocol yields robust results or not.

Jud noted that at the SAV monitoring & assessment workshop in February , they had discussed the possibility for using drones.

Joe indicated that his ECU team will begin work in the Neuse River during or after July. He wondered if they should begin in the spring, or add a spring survey. He may want to do that, but adding the Neuse to the work that his team are already doing may be too much.

Shane stated that they see more SAV in the Neuse during the spring.

Joe noted that the NCDMF staff all appear to know this stuff, and could be collecting SAV data. Shane noted that some technicians are more observant than others. Joe agreed, noting that with the sonar you get the same data regardless of who is doing the interpretation.

Dean turned to the SAV assessment update being planned for 2016-2017. He asked the action team to consider what metrics to consider for that assessment.

Jud noted that one thing that has become obvious to him is that CRFL has been an important funding source. Another thing is getting involvement with the partners at the level Joe has been willing to do. Originally, Maurice Crawford was involved. The only reason that Joe was able to pick it up solo was because he has student help. Students are a significant and important resource. He proposed that UNC's Institute for Marine Sciences (IMS) be integrated this effort. There are a half-dozen folks at IMS, and NCSU's CMAST, working on SAV and all of them have students collecting a lot of information. Jud suggested that we need to find a way to actively engage them in the work that we need to do on the action team. Part of a commitment entails having students engaged.

Brandon noted that APNEP does have a fellowship now in collaboration with NC Sea Grant. There is also a fellow from Joel Fodrie's lab, working with them.

Joe noted that he has a hard time recruiting students to work on SAV. They rather want to work on fish such as red drum, despite the fact that SAV is good fish habitat. Anne suggested he combine the SAV work with the fish survey work because that is a key CRFL requirement. Joe noted that they have written up other CRFL proposals, but haven't had success except when they propose surveys. Anne suggested that they should try to engage Dave Eggleston (NCSU).

Jud noted that Dave Eggleston has added value, especially for the high-salinity work. Jud noted that Don is now the only person working on SAV at NOAA-Beaufort, whereas the lab used to have 10-12 staff devoted to that effort.

Ken asked if anyone had received any funding through the NC Ecosystem Enhancement Program (EEP). Anne noted that they had tried in the past but had no success.

Jud asked about the state promoting aquaculture in Core Sound. He had heard about a lot of meetings on this topic. Anne indicated that Steve Murphey took the lead on a report, which went to the legislature. One recommendation was to move slowly. There was also a recommendation on having a board. Jud suggested perhaps SAV could be incorporated into that initiative. Anne noted that Joel Fodrie already has a grant to look at aquaculture impacts on SAV. Jud suggested a student could be added to focus on this effort. Ken stated that all he had seen was a proposal.

Merits of Memorandum of Agreement

Dean noted that he wanted to finish the planning portion of the agenda. This year marks a decade since the original memorandum of agreement (MOA) was signed. The MOA was rather general, which helped in getting partners to sign the document. A revised MOA could help in deciding which partner is going to do what. It is often useful to the partners to have an MOA in order to justify their participation.

Joe suggested that one issue is that the organizations have had turnover in the administrative positions. He noted that his administrator knows nothing about it. Dean projected the list of signatories. Joe noted that probably every organization should recertify the MOA. Dean suggested that we appoint a couple of volunteers to read the agreement, and then update it to change the name of the organizations and so forth, and confirm the signatories, then get it refurbished. Dean asked if this was a good idea. Wilson thought it was.

Anne asked what happens if a revised MOA is completed, and a signatory at the higher level refuses to sign. It was noted that most MOAs usually have some sort of termination clause. Anne noted that the Governors' South Atlantic Alliance has been dismantled due to the lack of interest/involvement.

Dean asked for volunteers. He noted that he would be glad to read it and review. Joe, Wilson, Anne, Kathy and Joe all volunteered to read and review. Wilson asked Dean to send the document in Word, so we can use "track changes" in our review.

12:20 p.m.: The action team broke for lunch.

1:20 p.m.: Dean reconvened the meeting, noting that remainder of the workshop will consider the Protection, Restoration and Outreach and Education elements. Dean suggested that we cover the five objectives of the SAV Partnership 2012 Action Plan goals associated with these elements.

1) Develop and prioritize research questions that will allow better SAV habitat protection. Anne didn't recall that the SAV Partnership had done this. She felt that this could be pulled together rather quickly.
2) Use SAV presence as an indicator of aquatic life support and good water quality. Still valid.

3) Work with the NC Environmental Management Commission (EMC) to incorporate identified water quality parameters necessary for SAV into EMC water quality standards. Dean noted that this one is very relevant, because the APNEP Nutrients Action Team is already

considering this objective in Albemarle Sound. That team has already had multiple meetings. They are considering the ecological end points they want to consider, and SAV is one of them. Both Hilde and Jud will be meeting with them next month to discussing SAV issues. The protocol for recommending nutrient criteria for Albemarle Sound will eventually expand to other estuarine waters. Jessie asked if they are dividing the sound into smaller segments, or just using one criterion for the whole area. Dean stated that for their mandate, they were considering this customization for Albemarle Sound only. This is APNEP's opportunity to influence these objectives. Jud asked if Dean wanted to dig in to any of these, as we go through them. Dean wanted to get through them all, then come back to each one and see how we want to make them more explicit for 2016 and future years.

4) Support preference for SAV conservation over SAV restoration, where feasible.

5) Provide information to management supporting SAV presence as an indicator of aquatic life supporting good water quality. Anne noted that SAV maps would be good for this objective. Jessie stated that there is a lot of SAV on the back side of the barrier islands, as well as up the sounds. Dean noted that SAV presence should be for the longer window. Ken asked if the map could include consideration for climate change. Brandon noted that climate change impacts could be modeled. Anne noted that Jud had in the past suggested that we use suitability variables such as depth and water temperature. Joe noted that water temperature could change. Anne felt that water temperature at present was appropriate throughout the coastal plain. Anne felt that it was really habitat suitability, and that could include where it is, and where it could be. Brandon noted that the team's focus is on conservation rather than restoration. Brandon agreed that the dynamic layers are hard to include in HSI models. Ken noted that you needed to keep habitat potential in consideration. Jessie noted that in Virginia some meadows are fine and others are not, and she felt it would be hard to characterize. Ken expressed thoughts of trying to deal with developers. Brandon stated if something was presented in court, it wouldn't likely survive the challenge. Jud suggested that an opposite approach be undertaken. On land there is zoning, and he didn't understand why the same concept be applied to water. Joe stated that zoning doesn't usually occur outside municipal boundaries. The point was made that the state can set regulations. Joe noted that he was thinking of establishing zones where certain actions would be precluded. Maria noted that there is a North Carolina law that provides for riparian landowner access to the water. Ken hoped that any work would consider climate change possibilities.

Don explained that they kept on getting complaints when they tried to designate a depth criterion. The bathymetry data available from NOAA are of too coarse a scale to be useful.

Jud suggested that getting higher resolution bathymetry data layer is desirable. Brandon agreed that anyone who runs models is always looking for a better bathymetry data layer. Don suggested that LIDAR data might help. Jessie was surprised that such a layer already hadn't been developed.

Don noted that just recently they are getting bathy-LIDAR data in Florida. Before the bathymetry data was poor. They are hoping to get some support from NOAA headquarters to obtain some of these data for remote areas.

Dean noted that there was consensus that the five objectives for Goal 2 are okay. For objective 1 he and Anne suggested that we can pull out all of the information from APNEP. Dean noted that they could also add research questions from other sources. Brandon indicated that the CHPP would be a good source of information. Jessie asked for clarification. Anne indicated that she could extract the information from the new CHPP. She could send that around and others could add to it.

Brandon stated that would be the development part, then the group could reconvene and go through a prioritization exercise. Dean concurred.

Regarding objective 2, Dean indicated that is being done in the assessment. Jud suggested that the language should be changed, noting that SAV presence could also be used as an indicator of poor water quality. Just because it is there, doesn't necessarily mean that the water quality is "good." Jessie noted that it could be present in an area of declining water quality. Jud suggested that the term "Use SAV condition…." be used rather than "SAV presence".

Ken asked if macroalgae were included. Jud thought not because SAV are usually vascular. Ken noted that his point was that macroalgae are often dominant where water quality is poorer. Joe stated that there are some fish that use macroalgae. Jud stated that the issue as he saw it is whether the algae are displacing the SAV.

Anne explained that the intent here is to use SAV as an indicator of good quality. Jud suggested that the text be edited to say "presence/absence."

Jessie noted that in the Chesapeake Bay, they use SAV as an indicator.

Jud noted that the notion here is that SAV integrates water quality conditions over a long period of time.

Regarding objective 3: Jud asked what the EMC water quality parameters are. Anne named several of them. She said that they are based on phytoplankton requirements. Jud asked who on the EMC we would work with. Anne indicated it would have to be someone within the Water Quality Management Section. Although she doesn't know who at present is the appropriate staff member, it would be the section addressing water quality standards. Connie Brower was named. Dean thought the nonpoint staff should be involved as well, where Jim Hawhee is now located. He confirmed Anne's supposition that Connie is already on the APNEP Nutrients action team.

Anne noted that she recalled a previous conversation with Jud, in which he indicated that the standards were going to vary depending on the water body in which you were located. Jud noted that in the Chesapeake Bay, they are setting standards at the tributary level. Each tributary has a different set of standards. Some of the tributaries are sediment-dominated, and others chlorophyll-dominated. The model calibrated for the North River is the same model used for Chesapeake Bay. Jud stated that the big bogeyman in objective 3 is that there are no estuarine or marine water quality sites. If there are, there are very few of them. That is a hard hurdle to address. With no water quality data to use, assessment is impossible. That perhaps should be a recommendation from this group. Maybe some of this will emerge from the Albemarle work. He asked Dean if there was any report yet.

Dean advised that there isn't a report yet. Michelle Moorman's USGS report is still awaiting publication.

Jud noted that other than Hans Paerl's work, there is little other work.

Jessie noted that when she went online, it appeared that the tributaries had pretty good coverage. Maria stated that some of the data go back 30 years, but there are very few people working in the program these days.

Anne indicated that you have to take multiple sources of data and combine them, to begin to build a comprehensive database. Jessie indicated that it would be good to have all the data in one place. Maria noted that when NCDMF staff takes samples, they do take water quality data. Anne noted that the problem with those (Program 120) is that the data don't go back very far. Joe noted that the dissolved oxygen data don't go back very far, and they didn't take oxygen data very often.

Jud suggested the hard question here is what water quality data are being collected, and how long into the future. Dean suggested that we take the approach of identifying any gaps. He suggested that we might need a workshop on that topic. Brandon suggested that is an area where we should be partnership with the APNEP Water Resources Monitoring & Assessment team.

Jud asked about the status of that team. Dean indicated it will be re-booted, working with team leader, Tim Spruill. Jud noted that team should be asking the same questions about what water quality data are available. Dean agreed but noted that this team should also be asking the same questions. Jessie asked if optical parameters would be the way to go.

Jud stated that you cannot have a standard for dissolved solids that stands alone. Only if you integrated with the other water quality parameters.

Dean noted that the issue is going to come up next month, when nutrients are discussed.

Jud noted that nutrients are for the most part driving chlorophyll, because other parameters are on their own.

Anne stated they have a chlorophyll standard in Chesapeake Bay, but also asked if they didn't have a light standard. Jessie noted that chlorophyll a standards in Chesapeake Bay are still evolving. The standards are getting more seasonal.

Joe noted that you can't restore things to any standard, if you don't also monitor.

Jud noted that the standards for restoration may be higher than those for maintaining status quo. There is more sediment being resuspended, since there is no vegetation present to hold the sediment.

Joe noted that entails the whole resilience argument. Once you lose SAV at a site, you may have to require even better water quality in order to restore a site. Once you lose quality, it is difficult to get a site back. It is good to prioritize protection over restoration.

Jessie noted that we need to work with the APNEP water Quality Action Team in order to adjust the standards as appropriate.

Joe noted that we likely didn't want to hear that there are different parts of the estuary that have different water quality needs.

Dean asked if the near-term focus be on protection rather than restoration. Jud indicated that was good for him, as did Anne.

Jud suggested that we need to focus on preservation right now, rather than restoration.

Jud noted that there is sufficient information in the literature on restoration methods. He suggested that restoration location be determined first. Others have already published what size works and doesn't work.

Dean noted that we can address the APNEP actions serially if need be to move this forward.

Ken noted that he was interested in the step beyond, such as mitigation banks for SAV.

Jud noted that a lot of people have discussed the fact that SAV restoration is philosophically debatable. They have been batting the North Carolina shellfish franchises and considering whether they could be mitigation for SAV. Also, the big bridge projects could possibly be mitigated.

Jud thought perhaps they should be considering those as restoration sites, rather than SAV mitigation banks.

Jessie stated that there has been some successful restoration.

Anne indicated that Kathy has noted that there will be some NCDOT projects that will impact SAV, and asked about us considering NCDOT providing funds to conduct literature searching, or other types of mitigation.

Jud felt that would set a bad precedent.

Ken noted that NMFS is asking for some mitigation proactively, prior to the impact occurring.

Jessie indicated that bridges were going to be replaced, regardless.

Jud suggested one approach could be to have highway protection in perpetuity.

Ken noted that mitigation could be monitored.

Maria noted that there are a lot of challenges. It would be hard to set standards for establishing a successful mitigation project. Restoration is difficult enough, let alone trying to establish SAV mitigation banks. She noted that conditions vary across the state as well.

Joe stated that there have been some examples of mitigation for seagrass, like the Bonner Bridge and Sandy Point. Scuttlebutt is that the Sandy Point applicants selected a site at which they knew SAV would re-grow.

Marie noted that there are lots of issues.

Joe noted that the cost of restoration is not cheap.

Jessie noted that important source meadows should be identified. These would be sites that serve to provide propagules for other sites. Anne asked how such sites would be identified.

Shane indicated that there would be other associated issues, such as riparian rights and other aspects. How is a homeowner impacted when you establish a new SAV bed off their lands?

Jud noted that he had earlier tried to separate the non-prescriptive from prescriptive issues. Having non-prescriptive approaches would usually be better. However, there are more and more cases where eliminating certain prescriptive regulations may be desirable.

Anne noted that some SAV areas are already somewhat protected by virtue of adjacent National Wildlife Refuges.

Dean noted that regarding outreach, an SAV Partnership activity resulted in a list of potential outreach items, as well as useful tools and targeted stakeholders. Also NC Sea Grant did a coastal SAV fact sheet that was about four pages long. Jud noted that he had commented on a draft of that document. He asked if it was on the website now. Yes, it is. Dean noted that NCWRC also developed signage for certain boat ramps.

Maria thought that the NCWRC had put out a lot of the signs. Sarah Sherman and the engineers had put something together.

Dean noted that those are a couple examples of outreach products. Joe noted that he had approached a colleague about doing some videos, but it never worked out.

Dean noted the action he put up about outreach was rather generic, so if this team develop specifics those ideas could be shared with the APNEP Outreach/Education action team.

Jud asked about APNEP's economic values project. Dean noted that project was an economic assessment of the resources in the Albemarle-Pamlico region. That product was just finalized last week, and there will be a 1:00 p.m. webinar tomorrow by the RTI research team that produced the report. Most of this team should have received an e-mail message about it.

Jud asked if APNEP was going to record the webinar tomorrow. He asked if the group thought it was worth going for the economic value of SAVs as an outreach mechanism. Most people do think about value, about what something costs, and what they might gain from something they sell. If there is a desire to reach the public, one mechanism is to describe the value. Most people don't understand connectivity, although we do.

Anne noted that the CHPP had pulled together all of the SAV information, and SAV generally had less value than other ecosystems like oyster reefs. Brandon noted that the SAV values were more indirect. Anne indicated that she is glad APNEP has the assessment for NC.

Dean indicated that the economic assessment is not comprehensive, noting that the SAV focus of the report was carbon sequestration. When APNEP released the 2006-2008 baseline SAV map in 2011, they used a very conservative value of $12,000 per acre for fish habitat only, and the total was still very substantive, almost $1.7 billion.

Joe noted it was hard for people to appreciate something that wraps around one's boat propeller. Dean noted that we need a video to address that point. Joe noted that you need one that goes viral, otherwise you have to pay for distribution.

Dean asked if it wasn't part of the creative process to make the video. Joe indicated it was part of the process. He cited a "pick up the poop campaign" video, which was widely viewed. Ken noted that developing a message that you can have K-12 students take home to their parents, may be more effective. Brandon suggested that growing SAV in the classroom may be useful.

Ken noted that outreach materials may often have different audiences, but the K-12 message can be strongly received.

Brandon agreed that substantial changes will take place, during the next several decades.

Shane noted that one representative to the aquaculture conference stood up and stated, “It is just stinking grass.” Different people have different attitudes.

Dean asked Stacey if she will provide primary staff support for the APNEP Outreach & Engagement action team. Stacey indicated it has yet to be determined.

Dean noted that APNEP is doing at least one classroom outreach.

Joe noted that many boat owners have Lowrance GPS units on their boats, and perhaps can be co-opted into the monitoring program. Many homeowners can be persuaded to collect the data and then upload it to the web. Joe has talked to Lowrance staff, and they were receptive to the idea.

Dean noted as part of APNEP indicator development, he always considers whether indicator data could be monitored remotely, and also whether citizens could be engaged.

Ken Riley noted that Roger Pugliese of the SAFMC is really supportive of citizen-science approaches.

Joe stated that once data are collected using the Lowrance units, the data can be sent in and staff can upload them. You could even send waypoints to volunteers, to follow. This may be a project for a graduate student.

Maria noted that there are ways to have the citizens drop off their memory cards, and also coordinate the surveys seasonally. Joe noted that would certainly help with collecting data currently at widely spread sites.

Wilson and Anne noted that the SAFMC has a citizen-science initiative, and Roger is just one part of it. Kim Iverson and Amber Von Hart are the key staff members.

Joe noted that the Lowrance units are not very expensive.

Shane noted that there are some simple ways to provide incentives for getting volunteers involved.

Joe asked how he could get in contact with guides and others who may be interested in participating.

Ken asked him what sort of focus he wanted to have, local or a particular group? He asked in particular about "structure scan." Using that could be done locally. Ken noted that larger angler conservation groups could be targeted as well.

Anne noted that NCDMF has some large list serves as well, but there are some confidentiality issues.

Joe asked about a CRFL proposal to address the public education and outreach aspect. He noted that the "stinking grass" legislator was not typical. There are a lot of people who understand the linkages. Shane noted that the legislator was probably getting a lot of complaints about SAV interfering with aquaculture operations or proposals.

Joe noted that they would probably have to purchase some licenses, and involve boat owners who have the appropriate equipment. Joe noted that Hummingbird equipment doesn't work.

Shane asked about Garman. Joe noted that Garman doesn't work either. Shane stated that if all people have to do is push a button and drive a transect, they will welcome it.

Anne asked if there wasn't a quality control dimension, with regard to the way the equipment is mounted on the hull. Joe confirmed that is the case. Sometimes boat mountings have to be modified, but that can be worked through.

Dean noted that he was opening the floor for nominations for SAV action team leadership.

Stacey noted that they are also partnering with NC Sea Grant and she would be pleased to send out that information. Also, staff is updating the APNEP communications plan so she would welcome any thoughts on that as well, especially with regard to issues that can be addressed.

Dean called again for nominations. There were none.

Brandon asked about the progress of the other APNEP action teams. He noted that the overall Implementation Committee is going to be important. He asked if the action teams have a lead already.

Dean noted that many of the teams haven't yet been kicked off. However, the sooner the action team has a lead, the better. They can't move the Implementation Committee forward until they have all the leads, and it is also necessary to for logistics to have someone off with whom staff may exchange ideas.

Dean noted that because no member was volunteering, the workshop could be adjourned.

The meeting adjourned at 2:52 p.m.