

Science and Technical Advisory Committee
Summer Virtual Meeting
Albemarle-Pamlico National Estuary Partnership
August 30, 2023

STAC Members: Paul Angermeier (Virginia Tech/USGS), Jud Kenworthy (NOAA ret.), Donna Bilkovic (CWM-VIMS), Wilson Laney (NCSU), Lee Bodkin (USGS), Bree Charon (NCCF), Paul Cough (US-EPA ret.), Bo Dame (Chowan Univ.), Don Field (NOAA ret.), Timothy Goodale (ECSU), Nathan Hall (UNC-IMS), David Hallac (NPS-CHNS), John Iames (US-EPA), Pete Kalla (US-EPA), Rua Mordecai (USFWS-SECAS), Dan Obenour (NCSU), Hans Paerl (UNC-IMS), Jacob Peterson-Perlman (ECU), Jonathan Phillips (UK ret.), Brandon Puckett (NOAA-NOS), John Walker (EPA-ORD), Rich Whittecar (ODU ret.)

EPA Staff: Angela Padeletti (Reg 3)

APNEP Staff: Dean Carpenter, Tim Ellis, Bill Crowell, Steve Anderson, Stacey Feken, Jimmy Johnson, Heather Jennings

Call to Order

Kenworthy: called the meeting to order.

- Welcomed all members and others to the meeting.
- Recognized three new STAC members (Puckett, Charron, Phillips).
- Encouraged members to visit STAC website to view member biographies.
- Agenda review
- Meeting notes from the STAC spring meeting were not yet distributed but a draft will be released to members later.
- There were no public comments.

Angermeier: Thanks to members, especially new members, for participating today. Excited to get members engaged.

APNEP Staff Update

Carpenter: Members received the staff updates report prior to the meeting. Wish to highlight a couple of the update topics (since the STAC spring meeting in mid-May):

- SAV high-salinity spring surveys in the “Pamlico South” subregion, the third of four subregions within the footprint running from Ocracoke to Avon, commenced in late May. Boat-based operations (Tier 2) took place May 23 – June 9. Whereas the objective was to survey 150 stations, only 70 stations were surveyed due to very poor spring weather conditions.
- An EPA-NEP audit team conducted a program evaluation on APNEP, the previous evaluation occurring in 2018. The 2023 evaluation included a three-day site visit in mid-July. Staff appreciation extended to STAC members Kenworthy, Field, and Paerl for their

participation during the two days that the evaluation team spent on the coast witnessing presentations on partnership contributions. The EPA-NEP audit team briefed the APNEP Leadership Council on the final day of their visit and shared the news that APNEP will be receiving the highest rating possible, formalized in an upcoming letter from EPA.

- Spatial targeting project, which began with member contributions at the STAC winter workshop, is recruiting a small steering committee that will include STAC members Dame and Field. This committee will also have members from the Citizens Advisory Committee (CAC) and Leadership Council (LC).

Kenworthy: How did STAC contributions factor into accomplishing the score received by APNEP?

Carpenter: An additional element of the EPA program evaluation not mentioned in the staff highlights occurred prior to the site visit: staff submittal of a programmatic narrative based on a required format that basically highlights what has been accomplished over the past five years (2017 to 2022). As far as STAC role in APNEP's success, some of those efforts should be included in the highlighted projects and associated partner contributions documented in the narrative.

Padeletti: We (the EPA-NEP audit team) are also looking that the STAC is not a kind of runaway organism by itself, but it's really interacting with the staff and management team. Our look is through coming to the staff meetings on being on Leadership Council meetings, and just making sure those supportive systems are there. We found over the last five years that APNEP has one of the great STACs with really involved members that have a diverse viewpoint that really makes the STAC and therefore the A-P region a better place. So that's were looking for on top of all the things that Dean had said.

Kenworthy: Thank you, Angela. I am glad that the STAC members that are here today were able to hear that because it is a welcoming opinion. Yeah.

Padeletti: I just want to tell the staff that it wasn't that they did the best that they could in the past. We were all very impressed with everything that the STAC and the staff have done over the last five years. The Leadership Council will see that in our letter that says basically there's not too much to work on during the next five years to improve. Just kind of stay the course with a couple of little tweaks, but it's really you have a great strong program, and we want to continue to see that.

Cough: Will the STAC members at some point see some of the documentation that went into the program evaluation?

Carpenter: The final documents should be posted on the APNEP web site in the future, but we have not received the official EPA letter yet.

Kenworthy: For new members who weren't present for the initial effort at the STAC winter workshop, please describe the purpose of the spatial targeting strategy.

Carpenter: The spatial targeting strategy will be the first project funded by APNEP's Bipartisan Infrastructure Law (BIL) funding. The strategy is an attempt to get the science to help target where APNEP should conduct restoration activities. Of the Leadership Council's five priority areas, two natural resources have been selected for the initial target test: submerged aquatic vegetation (SAV) and emergent wetlands/living shorelines. Spatial analysis of various data layers, of both the resources plus factors influencing the condition of those resources. The analyses provide an ideal of where success can be had from a biophysical perspective. In addition, there will be social layers that provide the perspective of natural resource access for disadvantage communities. The STAC at their winter provided a first cut on available data layers. The project's steering committee will provide both technical and management guidance to the spatial analysis contractors as they propose various algorithms/models. Note that an NEP/federal goal is to ensure that at least 40% of BIL funding provides a direct benefit to disadvantage communities.

Laney: Regarding the priority habitats, in mid-October there is an opportunity for APNEP to give a presentation to the Habitat Committee of the Atlantic States Marine Fisheries Commission.

Laney: Also, would STAC be interested in working with staff and folks who have spatial analytical capabilities to assess the ramifications of the US Supreme Court Sackett decision for wetlands conservation within the APNEP geography?

Crowell: This topic was a large part of the discussion at the recent Leadership Council meeting, and Jud and Paul represented the STAC. They can provide more details, but the Council is moving forward with an analysis and I'm sure we will engage the STAC at some level in that exercise. Kirk Haven (LC Chair) is taking the lead on that analysis. Regarding the ASMFC Habitat Committee, it would be a good opportunity if we have the availability and capacity to provide an update.

Discussion Topic: 2023 Member Survey

Kenworthy: The STAC leadership has had several discussions about how to better improve and facilitate STAC engagement with staff. One idea was to revisit the 2012 STAC member survey. There was some interesting feedback then, and thus before we conduct a 2023 survey, we wanted to get ideas about the survey in general and its content.

Carpenter: Here is a summary of the 2012 survey contents. There were questions about meeting location and facilities accessibility, meeting frequency and duration, and organizational and disciplinary representation. Also questions about how members transfer information to their representative organizational and disciplinary networks and bring back to STAC information from these networks. Inquiries on priority issues and STAC member roles included.

Mordecai: Getting survey responses were challenging in 2012. An alternative to consider is send out the questions in advance then dedicate a section of the STAC meeting to complete the survey live and taking about the results. It may allow more interaction across STAC members and bump up response rates.

Laney: It would be interesting to know why members agreed to join the STAC in the first place. Also, what are their expectations and what motivates members to continue serving.

Bilkovic: It would be helpful to include a question about what barriers there might be that people perceive to participation.

Angermeier: I support the notion of completing the survey live but for members who don't make the meeting at which the survey is discussed, we could still distribute a survey to them.

Cough: As a member, I want my participation to have an impact.

Laney: I totally agree with Paul on making an impact and suspect that is a big motivation for everyone. So how does a member make an impact? One way is to prepare issue papers for distribution to the Leadership Council and CAC. Another is sharing with others, such as the proposed October regional meeting, is how we've been successful or the challenges we faced.

Angermeier: I agree with Paul and Wilson said regarding motivation. Another aspect are other forms of incentive given that STAC members are volunteer. What to present to performance evaluation folks in a member's organization, including scholarly products and management related products.

Kenworthy: Any member objections to conducting a survey and dedicating a discussion session to that topic? Not seeing any hands raised, we will go ahead with developing survey content. If members wish to propose questions, please send to me and Paul (STAC Co-Chairs).

Discussion Topic: Preliminary Thoughts on an APNEP 2024 State of the Estuary and Watershed Report and Companion Report Card

Carpenter, Slide 1: By the end of my presentation, I hope to reinforce to members the term "preliminary thoughts". It's not about the role of assessments now but more about shaping the next generation of APNEP ecosystem assessment hopefully with a deliverable in 2024. My intention today is to provide some background about APNEP assessment activities since 2012, then some possible pathways for the next 12 months, and during the discussion segment begin a staff conversation with committee members on their role, which to me is a facet of the discussion segment just completed. Note that what follows is Dean's viewpoint and not necessarily those of staff nor of STAC leadership.

Carpenter, Slide 2: An important part of the 2012-2022 CCMP was the incorporation of ecosystem-based management (EBM). Of the seven EBM steps (articulate program goals, develop system level model for goal attainment, assessment current management efforts-- identify gaps, develop management strategy, develop monitoring program, assess performance, manage adaptively), steps 3-6 have had the most attention recently. The first four steps are addressed by the CCMP, and we are currently undergoing the third and fourth step to create a third generation CCMP, including the identification of gaps that perhaps were not addressed in 2012 based on the science or policy priorities, or what are partners are not doing. Recently in this forum and other forums we have discussed our monitoring program and how we try to develop monitoring strategies. Currently, the focus is on estuarine water and sediment quality, but we also anticipate encourage the other ecosystem components to help start beginning to think about developing their monitoring strategies as well.

Carpenter, Slide 3: Today however I wish to share thoughts on the assessment step (Step 6). There are four crucial steps when following the adaptive management cycle, which is an important facet of EBM. Following plan, manage, and monitor steps, "assess" means creating some kind of assessment deliverable that interprets that information collected and report to the next iteration of planning. There's importance of applying the cycle at regional scales with a system-based perspective. Note the first of three assessment activities references identifying successes and failures of meeting restoration targets. That reminded me that if following an adaptive management strategy, that the assessment should occur prior to creating a new plan and determine priorities in that new plan. For those that were not around in 2012, the assessment and CCMP were released at the same time.

Carpenter, Slide 4: With the 2012 CCMP there were four guiding questions targeted for the citizen and should motivate us over this next planning period (through 2028).

Carpenter, Slide 5: Here are some examples of the candidate indicators that determine our ecosystem outcomes, which in turn determine the metrics that our monitoring & assessment teams (MATs) have been working on. APNEP has three goals, and this table is just an example of the human goal, and how the goals is articulated in outcomes, and then articulated more by ecosystem indicators, and what is not shown in this table a greater articulation by the metrics that support those indicators.

Carpenter, Slide 6: In addition to our outcome-based indicators, we also have stressor-based indicators and this table provides examples.

Carpenter, Slide 7: We attempted to address Question 2 (of the four questions) about status in the 2012 assessment, and considered it an interim product at the time. It had a selected number of provisional indicator metrics based not necessarily on priority but largely on the expertise that we could tap from STAC and external partners. We asked authors to focus on status and trends between the first CCMP released in late 1994 and the second CCMP released in 2012. The assessment's question-based format was based on the Heinz Center national-scale assessment of natural resources in the 2000's. What was always envisioned was moving beyond

the interim product of status and trends, to conduct a second and third phases of diagnosis and forecasting respectively.

Carpenter, Slide 8: Regarding the writing process for the 2012 assessment, the original idea was that the STAC would be leading the charge and complemented by staff plus we hired Dr. Lindsey Dubbs as a contractor to help in the editing process. We had a comprehensive and aggressive vision, but what happened over time when the rubber met the road was that a relatively small subset of STAC members, external contributors, and staff became both senior authors and co-authors of the 24 reports (more recently called metric reports).

Carpenter, Slide 9: This is the 2012 assessment's table of contents for Chapters 1 (Introduction), 2 (Region's Ecosystems), and 3 (System-Wide). For the ecosystem-wide and ecosystem components addressed (Chapters 3-5), indicators were of three types: "extent and pattern", "chemical & physical characteristics", and "biological components".

Carpenter, Slide 10: This is the 2012 assessment's table of contents for Chapters 4 (Coasts, Sounds, Near Marine) and 5 (Fresh Waters). Note that in Fresh Waters we only had the capacity to address "chemical & physical characteristics" indicators.

Carpenter, Slide 11: With an interim mindset, we had a sixth chapter lay out what would be the next steps. This is the 2012 assessment's table of contents for the first part Chapter 6 (Next Steps), including "Active Assessment Function" and "Improved Condition Baseline".

Carpenter, Slide 12: This is the 2012 assessment's table of contents for the second part Chapter 6, including "Additional Indicators & Chapters" and "Beyond Condition". There are whole sections like forest, farmlands and grasslands, and urban and suburban, which weren't addressed at all.

Carpenter, Slide 13: This is the 2012 assessment's table of contents for the third part Chapter 6, including "Beyond Ecosystem Outcomes", looking at management actions and stakeholder understanding.

Carpenter, Slide 14: So eleven years later the next steps were not implemented, no ecosystem assessment upgrades of any kind of synthesis were done. The focus returned to individual indicator metrics. Two second-generation metric reports have been produced. The first was "Extent of Submerged Aquatic Vegetation in High-Salinity Waters" (with 2012 ecosystem component "Coasts, Sounds, Near Marine: Extent & Pattern"). Note that those questions in italics reflect attempts in this second-generation metric report to begin addressing the diagnosis and the implications for management and proposed interim targets.

Carpenter, Slide 15: The second metric report is "Atmospheric Nitrogen Deposition" (with 2012 ecosystem component "System-Wide: Physical & Chemical"). Again, it's question-based and has those diagnostic and forecasting/management relevance questions. I wish to emphasize that during the more recent era (2017-present) what we have been trying to facilitate is

working with the MATs to pick a small subset of the indicators and supporting metrics they had developed and create some of these metric reports. What we are envisioning now is expanding upon the metric reports to this next-generation assessment product that has much more syntheses and narratives leading the way. Given the anticipated pace, I am envisioning synthesis pieces that would be based less on metric reports (technical analysis of metrics), but the metric reports would serve as case studies of a deep dive for a particular metric(s) that a MAT felt was most important.

Carpenter, Slide 16: Other Ecosystem Assessment Formats. These are some of the technical assessments that I plan to review over the next couple of months to learn of the possible approaches of doing a comprehensive assessment. As a complement to the technical assessment, we anticipate a companion citizens assessment through work with the entire Management Conference (STAC, CAC, and Leadership Council).

Carpenter, Slide 17: Bioregional Assessment Questions. Just a few more concepts that I presented to the STAC when they first formed in 2004. These are the kind of basic questions from the perspective of policy makers that were proposed for consideration.

Carpenter, Slide 18: Assessment Planning. This quote addresses the difficulty of doing ad hoc assessments. Our approach is to propose monitoring frameworks and collect a strategic collection of data to be better able to address the policy questions, rather than depending solely on an ad hoc collection from our various partners whose monitoring is shaped by their mission responsibilities.

Carpenter, Slide 19: Scientific Assessment for Environmental Policy. These insights are proposed in a 2019 book by Oppenheimer et al. I'll be happy to take any questions.

Angermeier: Do you see the fundamental building blocks of this as being these metric reports?

Carpenter: I think those metric assessments that we focused on are important and should be included, but the real priority is synthesis by basically taking all the data that we can gather at a certain level of quality and certainty. The book reference in the last slide that I had to pass over talks regarding the importance of syntheses: it is not simply compiling summaries of information on individual metrics, or individual aspects. The act of synthesizing creates epistemic knowledge as well.

Angermeier: So that implies to me that there comes mostly from the STAC writ large is that we must provide basically expert judgement on how to assess and synthesize things for aspects that we may not have any real reports on?

Carpenter: Not any metric reports?

Angermeier: Metric reports, right. So, our expectation is for folks to get together and do some sort of consensual brain dump on what the assessment should look like, given there is a lot of missing knowledge?

Carpenter: I think it's at two levels: within the MATs to have a discussion on how many metric reports can we produce over the next say 12 months and what kind of synthesis can be produced as well? Then it goes to the STAC level with a systems perspective, looking across resources (MATs).

Bilkovic: Will there be an opportunity to evaluate the list from 2012? Is there any information in terms of which indicators were most useful for management decisions?

Carpenter: The 2012 indicator list was not based on MAT priorities, but on contributor interest. I would like to see them considered for incorporation, however. Tim Ellis did remind me that those indicators featured in 2012 were vetted by the STAC by 2007.

Ellis: I suggest that we don't have to reinvent the indicators and supporting metrics: they have been vetted. The question is how to update them. We should clarify that our MATs met extensively from about 2017 to 2018 and each MAT re-evaluated indicators that we developed by 2012. So, these indicators were vetted through the STAC and approved by the Leadership Council. We have a set of 50+ indicators and associated metrics to pull in for our collective ecosystem assessment. Dean will send the indicator list back out to the STAC following this meeting so you can see what each MAT proposed.

Hall: The Policy Collaboratory right now is funding an assessment of North Carolina fisheries and fisheries habitat to see whether the 1997 Fisheries Reform Act is working as intended. As part of that project, I'm on that project and we've assembled many different time series indicators that are not just focused on the A-P geography, but since that's most of the coast these information sources could really be useful for an APNEP assessment.

Carpenter: We don't want to reinvent the wheel wherever it's aligned with our mission questions.

Hall: What we're doing is very similar to what was done back in 2012.

Modecai: For the new recent trends in southeastern ecosystems for the Southeast conservation applications strategy goal report, we've been updating some things and some of the newer ones we have are kind of fine resolution. We have the code. Not just land cover for trends and uncertainty and things, but also a landscape condition indicator that looking at multiple scales and integration. We could run a revised code for the A-P region for something specific of even subregions.

Laney: There are ongoing studies in the fisheries realm, including plenty of stock assessments since 2012. That would allow efficient updates for the 2012 fisheries metrics. To Donna's point, I suggest distributing the MAT indicator lists to the STAC.

Kenworthy: It's clear to me that for the assessment topic there's probably a lot more room for discussion. For example, what Rua and Nathan brought up in terms of what other resources are out there that we can draw upon that will be valuable for this exercise. It points out how important the partnership is and how individual STAC members could bring these resources to the table to make the job of doing this very challenging ecosystem assessment.

Action Items

- STAC leadership to continue discussion with staff about planning for the APNEP ecosystem assessment.
- STAC leadership to Incorporate today's feedback for development of 2023 STAC member survey.

Closing Comments & Adjournment

Kenworthy: Thanks to everyone for joining today and look forward to making progress.