Science and Technical Advisory Committee
Spring Meeting (Webinar Only)
Albemarle-Pamlico National Estuary Partnership
June 16, 2021

STAC Members: Brian Boutin (TNC), Bo Dame (Chowan U), Michelle Moorman (US-FWS), Jud Kenworthy (US-NOAA ret.), Wilson Laney (NCSU), Paul Angermeier (USGS/Virginia Tech U), Lee Bodkin (USGS), Eric Brittle (VA-DWR), Reide Corbett (ECU), Heather Deck (Sound Rivers), Randall Etheridge (ECU), Don Field (US-NOAA ret.), Erin Fleckenstein (NCCF), David Glenn (US-NWS), Tim Goodale (ECSU), John Iiames (US-EPA), Peter Kalla (US-EPA), Rua Mordecai (US-SACB), Dan Obenour (NCSU), Hans Paerl (UNC), Donna Schwede (US-EPA), Greg Taylor (US-NRCS), Doug Wakeman (Meredith U ret.), Rich Whittecar (ODU ret.)
EPA Staff: Rachel Hart (US-EPA-Reg4), Kelly Somers (US-EPA-Reg3), Megan Mackey (US-EPA-Reg3), Vince Bacalan (US-EPA-HQ)
Leadership Council: Paul Cough
Guests: Qianqian Liu (UNC-W), Renee Kramer (NC-DEQ), Menaka Atree (NC-DEQ),
APNEP Staff: Dean Carpenter, Tim Ellis, Bill Crowell, Stacey Feken, Heather Jennings, Jimmy Johnson, Trish Murphey, Abby McNaughton

Call to Order / Welcome and Introductions / Meeting Notes Approval / Meeting Objectives

Dame: called the meeting to order, reviewed agenda and meeting goals.

- All members and other meeting attendees asked to enter their name and affiliation in the chat box
- Meeting notes from the STAC winter meeting were moved/second and approved with no objections

APNEP Leadership Council Spring (May) Meeting Brief

Laney: Leadership Council highlights

- Virginia Representative Luria's legislative assistant, Virginia Hagerott Schrock, briefed the Council on Rep. Luria's Albemarle Roundtable and the Virginia-02 director, Dr. Charles L. Stuppard, also in attendance
- Council also received a report on the winter STAC meeting

APNEP Staff Update and Member Reports

Carpenter: briefly reviewed APNEP staff and STAC member updates

- Acknowledged STAC members participation and highlights contributions
- Elaborated on the spring SAV survey and provided details

Crowell: Briefed on several of the items on which APNEP is working with Virginia, including a National Fish and Wildlife Foundation initiative on the Chowan/Pasquotank Basins, plus addressing Virginia Beach flooding issues.

Harmful Algal Bloom Assessment of Albemarle Sound

Liu: principal investigator of a North Carolina Sea Grant-funded research project, shared findings from a harmful-algal-bloom assessment of Albemarle Sound using satellite imagery (slide presentation to be posted on APNEP-STAC website)

- It is crucial to monitor and forecast HAB occurrence, movement and distribution in the system, which urgently requires a long-term (season) and short-term (daily) HAB forecast system
- Observations can be done by different methods, including satellite imagery, hyperspectral imagery, and water sampling
- Explained the toxicity forecast system

Dame: study shows the connectivity

Laney: what rivers are included in the "river discharge data?":

- Liu: Chowan, Roanoke and Pasquotank

Paerl: how is any SAV signal separated from any other chlorophyll signatures?

- Liu: compared observations from several different sources of data. That is one reason they divided the area into polygons
- Paerl: using the signal for the toxins from the blooms in particular. Thought that Stokes was also using a signal from phytocyanins
- Liu: satellite cannot detect diatom blooms
- Paerl: data all based on the chlorophyll a signature?
- Liu: using the cyanobacteria signature as well
- Paerl: important to point out that cyanobacterial signature is being used

North Carolina Oyster Blueprint

Fleckenstein: discuss elements of the new oyster blueprint and the major actions that will be undertaken during the next five years of its implementation (slide presentation to be posted on APNEP-STAC website)

- One of the only plans in the country that balance oyster farming with building oyster habitat
- Reviewed each of the eight strategies in the plan {see the plan for the full details}
- The full plan is available at the NC Oyster web site, along with a summary

Laney: frustration with the past oyster shell recycling program in North Carolina. For example, the Sunnyside Oyster Bar in Williamston ceased participation it the program due to the lax pickup

- Fleckenstein: explained a pilot project they are trying

- Laney: encouraged by the pilot and noted that perhaps some of our university engineering types could come up with a larger, secure, transportable container which would help

STAC Environmental Justice Assessment

Angermeier: based on initial discussions of the STAC Environmental Justice subcommittee, briefed members on a draft proposal outline to conduct an exploratory spatial analysis to investigate relations between indicators of human well-being and ecosystem health among disadvantaged communities with the APNEP Region (slide presentation to be posted on APNEP-STAC website)

- Subcommittee began with a 2021 conceptual paper by Charles Lee (EPA) and a 2021 empirical paper by Angermeier and co-authors, whose findings were summarized
- Subcommittee believes that we could begin by mapping environmental indicators, and demographic indicators. The potential workers could include current STAC members, recruited new STAC members, and extra-STAC partners in universities and elsewhere
- Some ideas for a tentative work plan. Discussed the geographic scope but realized that the Chowan Basin might be a good place to start, because of the 2018 agreement. Could do some mapping of status and trends, and do some diagnosis via statistical analysis, and forecast vulnerability, given environmental changes
- Ultimately, subcommittee foresees some deliverables, such as a STAC technical issue paper, APNEP metric reports, and some recommendations for action, perhaps

Laney: excited about the prospects. The past Ward Transformer site issue and Warren County as an example of a past environmental injustice.

Schwede: a good project to pursue. She could reach out to the EJScreen staff to see what plans they have

Somers: can arrange some training for the STAC and a presentation

- Dame: supported getting a presentation and some training

APNEP Monitoring and Assessment Case Study

Kenworthy: Kenworthy, technical lead of the SAV Team, reflected on the team's collective experience of implementing monitoring & assessment objectives, both intra-MAT and inter-MAT, as well as expectations for the next six months.

- SAV metric report: The assessment is based on only two points in time thus far, so it is hard to say much about any trend. After this next survey cycle, we hope to have a lot more understanding. The report is now on the web site.
- SAV monitoring plan: The plan was a challenging deliverable to produce because of the amount of water in North Carolina, as well as the diverse resource. We compartmentalized our planning into high-salinity and low-salinity components, creating separate subcommittees to deal with each, plus worked with a USEPA statistician on developing the survey and monitoring plan.
- Inter-MAT exchange: Will be discussing with members of the Water Resources MAT to ensure the SAV and Water Resources (future) monitoring plans are integrated.

Re-Activating APNEP Ecosystem Monitoring & Assessment Teams
Technical leads of APNEP's monitoring & assessment teams provided preliminary thoughts about re-activating their respective MATs during the second half of 2021.

Water Resources MAT
Moorman: will start by consulting with all of the Water Resources MAT members Team members. She has been working some with Nathan Hall on an analysis tool that she hopes will support the MAT and welcomes everyone's participation. The team has an indicator development process and initial focus will be on estuarine water quality conditions suitable to sustain the ecosystem services provided by SAV species. There are ten metrics, related to either water clarity (five metrics) and other abiotic stressors (five metrics). There are many opportunities to support other MATs in this process: Aquatic Fauna, Wetland Resources, Terrestrial Resources, and Human Dimensions are all expected to support.

Aquatic Fauna Resources MAT
Laney: met with staff (Carpenter and Ellis) and they have developed a plan forward to begin the preparation of monitoring and assessment plans for previously-selected indicators. They are beginning with Blue Crab, since it is tied to SAV habitat as well as water quality, but they will add additional species as time and resources permit. They will work closely with the NCDMF lead for Blue Crab, which is now Daniel Zapf. Several other indicator species which are also closely-associated with seagrasses (e.g., Spotted Seatrout; juvenile sea turtles) and may be good candidates for moving forward, since monitoring programs for them already exist and are being conducted by APNEP partners.

Wetland Resources MAT
Dame: reviewed the assessment question and noted that the primary indicator is wetland vegetation. The most important is areal extent by emergent wetland class. That fits in nicely with the SAV Team's Tier 1 approach. Their first task is to review what the partners are doing and identify the gaps. they plan to examine several of the datasets, including land use and land cover data from the USGS. STAC member Field is going to assist them with the remote-sensing aspect. They will use the same approach that was mentioned for the Aquatic Fauna MAT, using subsets.
Laney: asked about the National Wetland Inventory (NWI) mapping and whether or not that imagery would be useful in terms of determining trends.
Dame: the issue with the NWI maps was principally one of scale.
Whittecar: asked about emergent wetlands and whether that included pocosins, or just the ecosystems by the water's edge.
Dame: indicated that was to be determined. Bo said initially it will just be what's at the water's edge.

Terrestrial Resources MAT
Carpenter: STAC member Mordecai was the lead for the process that ended about 2.5 years ago. Carpenter had reviewed the notes from that era, done some filtration and come up with

the questions and focal indicators. The questions: how is coastal upland vegetation condition changing and why? How is coastal avifauna condition changing and why? How are estuarine shorelines changing and why? The potential focal indicators and metrics include: areal extent by forest class (maritime, longleaf/natural upland pine, natural upland/mesic hardwood); bird communities, and estuarine shoreline migration.

Air Resources MAT

Schwede: focusing on nutrients and climate. The issue of ammonia is one they need to focus on for the APNEP area. They need to ground-truth a model more. There are some new technologies out there for monitoring ammonia. Their questions are: How is atmospheric nutrient deposition on the watershed changing? And how is coastal climate changing. They have different groups working on the different issues and metrics. There are a lot of variables. Their discussions were useful in helping to identify where additional monitors are needed, where they should be placed, and how they would be funded.

Human Dimensions MAT

Carpenter: Former STAC member Dr. Burrell Montz was the lead of this MAT, but she stepped down in anticipation of retirement. Carpenter, based on the work done several years ago, came up with the assessment questions: How are ecosystem service supplies not addressed by other MATs changing and why? Are ecosystem service supplies fairly distributed from an environmental equity perspective? What is the level of citizen engagement in working on activities that support CCMP actions? Focal indicators and metrics could include recreational access, by boat, canoe and piers; cultural (sense of place, waterscape and landscape aesthetics; demographics by race and culture; and citizen participation. Monitoring usually would entail some sort of survey.

Angermeier: surveys are the typical tool; Census Bureau data also can be useful.

Carpenter: had asked Angermeier to provide guidance to this group, until a team lead steps forward.

Carpenter: STAC members are asked to supply their expertise to each of the teams. By working on metric reports in the future we hope to compile the status and trends and determine now to move the ball going forward. Dean hopes that we will have a more comprehensive and effective team reports in the future.

Public Comments and Action Items

No public comments.

Dame: Action items: 1) technical leads to develop meetings with staff; 2) MAT membership needs to be updated; 3) The EJ Subcommittee is to work with staff on developing a proposal for STAC action.

Dame: adjourned meeting and thanked everyone for attending.