

## **APNEP Scientific and Technical Advisory Committee**

Room N110, National Computer Center, U.S. Environmental Protection Agency,  
109 T.W. Alexander Drive, Research Triangle Park, North Carolina 27711  
Summer Meeting Notes, July 22, 2009

**Committee Members Present:** Brian Boutin, Mark Brinson, Don Field, Joe Fridgen, Kirk Havens, Jud Kenworthy, Wilson Laney, Rick Linthurst, David Mallinson, Helena Mitsova, Milo Pyne, Stan Riggs, Tim Spruill, Ken Stolte, Laura Taylor

**Agency Liaisons or Staff Present:** Jeff Bruton (NC-DWR), Gordon Cashin (NC-DOT), Brian Chevront (NC-DMF and SAMFC), Kim Douglass (NC-NHP), Michelle Duval (NC-DMF), John Fear (NC-NERR), John Holley (NC-DLR), Kelly Ibrahim (NC-DSWC), Dianne Reid (NC-DWQ), Don Reuter (NC-DPR), Bill Swartley (NC-DFR)

**Guests Present:** Sheryl Bryan (US Forest Service, NC), Thomas Cochran (US Fish & Wildlife Service Fisheries volunteer, Raleigh, NC), Susan Cohen (DOD-Department of Navy, Camp Lejeune, NC), Mary Conley (The Nature Conservancy, SC), Carl Hershner (Virginia Institute of Marine Sciences, Gloucester, VA), Dwayne Jones (NCSU), Amy Keister (US Fish & Wildlife Service, South Atlantic Landscape Conservation Cooperative, Raleigh, NC), Deborah Mangis (US Environmental Protection Agency, National Exposure Research Laboratory, NC), Robert Mickler (Alion Science & Technology, NC), Mary Long (US Forest Service, Atlanta, GA), Sam Pearsall (Environmental Defense Fund, NC), Chuck Peoples (The Nature Conservancy, NC), Rachele Powell (US Forest Service, Croatan NF, NC), Roger Pugliese (SAMFC), Jean Richter (US Fish & Wildlife Service, Roanoke River NWR, NC), Brian Roth (Mayor of Plymouth, NC), David Welch (Alion Science & Technology, NC), Dorsey Worthy (US Environmental Protection Agency, National Exposure Research Laboratory, NC)

**APNEP Staff Present:** Dean Carpenter, Bill Crowell, Chad Smith, Todd Herbert

### **Call to Order: Wilson Laney**

- Tim Spruill convened the meeting at 10:10 AM followed by introductions. Minutes from the STAC spring meeting were reviewed and approved by consensus with no changes.

### **Welcome: Tim Spruill**

- Tim welcomed everyone, and on this fifth anniversary of STAC operations, wished to recognize the seven original members, which include Robin Dennis, Don Field, Kirk Havens, Wilson Laney, Stan Riggs, Richard Smith, and himself.
- Tim noted that APNEP staff is planning to incorporate Ecosystem-Based Management (EBM) principles into program operations, and that today's agenda will focus on EBM as well

### **APNEP Update: Dean Carpenter**

- Dean recognized a member of APNEP's Citizen Advisory Committee, Brian Roth (Mayor of Plymouth, NC). Lorry King, Deanna Osmond, Michael Rikard, Rafe Sagarin, Steve Smutko, and Nancy White are now all former STAC members whose terms ended or have resigned since the last meeting.

- Reide Corbett, Pete Kalla, Wilson Laney, Rick Linthurst, Dave Mallinson, Jerry McMahon, Helena Mitsova, Robert Reed, and Tim Spruill all agreed to serve another term.
- Dean confirmed the election of 3 new members: Brian Boutin, Matthew Flint, and Laura Taylor.
- The fall STAC meeting is scheduled for October 15<sup>th</sup> in Greenville, NC.

### **National Estuary Programs and Ecosystem-Based Management (EBM): Carl Hershner**

*\*note: presentations can be found in their entirety on the STAC website in the "members only" section. "Rough outlines" only are provided in these notes.*

- Carl provided a definition of EBM, from Wikipedia, and provided a consensus list of characteristics for EBM: it is regarded as place-based; focused on sustaining valued ecosystem services by protecting ecosystem structure and function; recognizes internal and external linkages of the whole system, and specifically considers economic, social and institutional aspects of the system. This is a consensus statement now signed by hundreds of scientists.
- Ecosystem-Based Management for the Oceans, a new book [Edited by Karen McLeod and Heather Leslie, published by Island Press, 2009, ISBN: 1-597-26155-5], indicates that EBM is about connections between society and the environment, and is place based, focused on cumulative impacts to ecosystem services, about trade-offs among multiple objectives, and is not ecosystem management. The distinction is that you are thinking about the complexity in the system, but you are not trying to manage everything in the system. You don't have to control everything in the system.
- Carl shared one of their conclusions: there is a changing perception of EBM, from conservation, through sustaining ecosystem services, into effective management. He noted that if we polled everyone in the room, we would probably get over 30 different definitions of EBM.
- Barriers to EBM in practice include: no formalized management framework; lack of baseline and integrated knowledge; communications/ existing resource management approaches; lack of demonstrated use and benefits; lack of buy-in by key people; lack of funding; etc.
- The Packard Foundation EBM priorities for 2009-2013 include: implement/demonstrate use in practice; improve stakeholder engagement; improve underlying science; implement/expand use in policy; improve/expand EBM tools, etc.
- Pathways to EBM seemed to fall into three strategies: science-directed, comprehensive assessment of ecosystem with management issues and potential outcomes forecast; stakeholder driven, with issues identified in facilitated convening, and information needs identified collaboratively; and manager/policy decreed, with a general approach adopted, and implementation left to management.
- Carl addressed where this leaves us in APNEP. He noted that most people stand up and proclaim they are doing EBM. He encouraged us, if we are serious, to consider whether this strategy is worth doing. There are considerable investments required to secure stakeholder involvement, scientific investment, and so forth. In the long run, it may turn out that single-species management is the best approach, but we don't know yet.

## **U.S. Environmental Protection Agency's Ecosystem Services Research Program and Ecosystem Based Management: Deb Mangus**

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- Deb explained the EPA mission. They regulate by medium: air, water and soils, primarily for the uses of humans. They also regulate by chemical: pesticides, new chemicals, air pollutants, and water pollutants. They also look at maintaining and restoring wetlands.
- Deb looked up the definition of EBM. The definition she found had eight core elements: nature's services, scientific evidence, geographic scales, ecological linkages, cumulative impacts, tradeoffs among human activities, adaptive management network of people, and information.
- A new direction for [EPA's Ecosystem Services Research Plan](#) for 2009-2014 resulted, and Deb shared the vision and goal. They have three major research questions: pollutant-based ecosystem service research (focuses on nitrogen); ecosystem based ecosystem service research (focuses on wetlands and coral reefs); and finally place based ecosystem service research (focuses on areas). Their five areas are Tampa Bay, Coastal Carolinas, Midwest, Southwest, and Willamette Valley.
- Deb reviewed what they will be doing in the [Coastal Carolinas \(CC\) area](#). They will address impacts on coastal ecosystem services from global climate change, human population changes and agriculture. They are looking at the coastal county communities for South Carolina and North Carolina, but they are including the entire Albemarle-Pamlico watershed.
- Deb briefly reviewed how the ecosystem services work would feed into EPA regulatory review. Ecosystem Services are being used in the NOx/SOx regulatory review. They are looking at the impact in four areas: supporting, provisioning, regulating and cultural.

## **The Nature Conservancy's Ecosystem-Based Initiatives: Mary Conley**

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- They have five strategies, but Mary focused on [Integrated Ocean and Coastal Management](#). The other four areas are sustainable fisheries, etc.
- Mary noted the potential consequences of no land-use planning. She noted that we haven't been doing any use planning in the marine environment. TNC has been looking into area-based management and planning. She noted there are new demands for ocean space and integrated information for regional decision making. There are user conflicts, and there are conflicts between users and nature (e. Conflicts tend to outweigh other aspects of planning.
- TNC wants to efficiently consider multiple species and their habitats, human uses and economics; they want to establish a baseline for partners or individual agencies to develop an EBM management network.
- Phase II of their work is decision support tool development. They want to overlay across all targets. They are exploring linking the coast to the marine environment. Mary showed us an example using seagrass beds and vegetated tidal marsh, and linking them to one ten-minute area offshore. This again is a regional approach.

- Mary noted that the finest scale of their work is with their Conservation Action Plans (CAPs). The one for North Carolina is the North Carolina Banks and Sounds CAP. The process is meant to be adaptive. Mary explained the process used. The process requires priority attention to the selected conservation targets.
- After the targets are identified, a threats analysis is conducted, and key threats are identified which affect multiple targets at a high level. For this one, sea-level rise, and housing and urban development were two major threats. The next step is to identify strategic actions, and one that came out on top was to support comprehensive EBM. Mary noted that Brian Boutin is here, and he will be working on the sea-level rise project which will deal with [Alligator River NWR](#).
- Mary addressed their future work. They will support state approaches and laws, regional and national ocean governance, regional marine spatial planning workshop, and southeast data collection and analysis. They will hold a marine workshop in September. They also want to bring some of the data down to the southeast.

#### **12:20 p.m. Lunch Break (EPA Cafeteria)**

**South Atlantic Fishery Management Council and Ecosystem-Based Fishery Management: Roger Pugliese** *\*note: presentations can be found in their entirety on the STAC website in the “members only” section. “Rough outlines” only are provided in these notes.*

- Roger showed the map of the proposed [deepwater corals Habitat Areas of Particular Concern \(HAPC\)](#). He noted that these are areas which will be established in the first Comprehensive Fishery Ecosystem Plan (FEP) Amendment. He explained how they collaborated with the royal red shrimp fishermen to delineate areas allowable for fishing. They also worked closely with the golden crab fishermen. Roger noted that all the spatial regulations are being included as well, in the document.
- Roger addressed the Interactive Map Server (IMS) which has been developed in collaboration with Florida, as one of the ecosystem support tools. This tool will cover all Council-managed species. The Florida Fish and Wildlife Conservation Commission have been on the cutting edge of the use of GIS and map server technology for use in resource management. Roger noted the other tools which are under development, such as the EcoSpecies, EcoFish and EcoResearch modules. The fish one will be sort of a south Atlantic version of FishBase. The State of Florida is moving all their databases over to an ArcServer system. The State of South Carolina is providing the core data from [Marine Resources Monitoring, Assessment, and Prediction Program \(MARMAP\)](#) and [Southeast Area Monitoring & Assessment Program \(SEAMAP\)](#). Roger noted that you can create sub-sections of the ArcServer for different user groups, such as coral scientists.
- The South Atlantic Governor’s Alliance has been formalized. Roger reviewed the mission statement and the four major priorities. They are healthy ecosystems, working waterfronts, clean coastal and ocean waters, and disaster resilient communities. Fisheries are under the healthy ecosystems component. Roger reviewed the structure of the group.
- Roger reviewed the future activities and timing. The Council approved the Fishery Ecosystem Plan last March. Comprehensive Ecosystem-Based Amendment 1 will be approved this

September. Options for CE-BA2 were reviewed in June. There are options under review for further place-based management measures. They will continue investigation into development of an ecosystem model, and integration of ocean observing data or products [from [Southeast Coastal Ocean Observing Regional Association](#) (SECOORA)] into the stock assessment process. Roger noted that it is desired to expand some of the species information. They were initially working on an Ecopath model, and we may now refine that approach to look specifically for snapper-grouper species, and/or specific areas such as Albemarle Sound. Roger noted that one big thing is to get the fishery scientists collaborating with the physical oceanographers. With the observing networks going in place, it will be critical to begin integrating a lot of that information into stock assessments. Roger noted that a lot of the program is there, it just needs to be integrated with the biology.

- Roger noted that the Council is being driven right now toward place-based management by virtue of the snapper-grouper closures. He noted that a lot of fishermen work across fisheries. He noted the Council has a specific timeline, relative to setting allowable catch limits, and that is tied to species which are overfished. The Council will look at the schedule again in September, but as of right now, must have measures in place by January 2011, so some of the ecosystem work has been delayed. But they are looking at place-based measures for management.

#### **U.S. Fish and Wildlife Service and Ecosystem-Based Management: Wilson Laney**

*\*note: presentations can be found in their entirety on the STAC website in the "members only" section. "Rough outlines" only are provided in these notes.*

- Wilson outlined his presentation as addressing: 1) why we are here; 2) the big picture; 3) where the FWS has been and where it is going; and 4) introduction to the five functional elements of [Strategic Habitat Conservation](#) (SHC), which is the FWS's current approach to their mission.
- Wilson reviewed the [National Estuary Program](#) and APNEP missions, and compared them to the narrower FWS mission. The NEP mission is to protect and restore America's nationally significant estuaries. The APNEP mission is to identify, restore and protect the significant resources of the Albemarle Pamlico estuarine system. The FWS mission is to work with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people. SHC is a strategy for improving the FWS role and in Wilson's opinion can be a mechanism for accelerating the attainment of the NEP and APNEP missions.
- The challenges to our natural resources are mounting and include: habitat fragmentation, urbanization, invasive, water resource issues, and alternative energy development. Overlying all of these is ongoing climate change.
- The FWS, as the sole federal agency totally dedicated to the conservation of fish, wildlife, plants and their habitats, has a unique role. It is unique because: the FWS has legal mandates which allow it to work across jurisdictional boundaries; it has shared responsibility with the states; it has the authority to conserve endangered species, interjurisdictional fish and migratory birds; it has an unequaled public land base in the form of the National Wildlife Refuge System; and has the need to catalyze a collective response by bringing the conservation community together. All FWS employees are being challenged to consider: what does a more integrated systems approach mean?; how does FWS as an organization need to work differently to achieve success?; and, what is the unique role of each employee in a more integrated, interdependent, system?

- In order to address the challenges, the FWS has undertaken a number of actions at multiple levels within the agency. At the national level, the FWS Directorate assembled a team of scientists from FWS and the U.S. Geological Survey (USGS) and empowered them as the National Ecological Assessment Team (NEAT), charging them to consider a new approach to doing the business of fish, wildlife, and plant and habitat conservation. The [NEAT report](#) produced by the team was approved by the Directorate in 2006. In October 2008 the FWS produced its report entitled [Conservation in Transition: Leading Change in the 21<sup>st</sup> Century](#). In December 2008 the FWS produced its draft [Climate Change Strategic Plan](#) and draft [Five-Year Action Plan](#). The FWS and its science partner, the USGS, joined forces through the Directorate (FWS) and the Executive Team (USGS). They developed a joint FWS/USGS vision, and a communications strategy. They facilitated action by the regions, and held workshops in FWS headquarters, and produced a SHC Handbook and began addressing issues of priority/focal species.
- Wilson noted that the FWS is still in the process of answering key questions. These include: Who is going to do what? No single FWS office will be expected to implement all the five essential elements of SHC. Capacity and capabilities required for full implementation exceed what the FWS possesses today. The FWS is considering what changes will be necessary within the agency, technically, institutionally and culturally.
- The next steps which FWS will take within the APNEP basin will include: the team's Technical Committee will complete their assessment of FWS trust species and their habitats; the team will meet with desired partners (done July 20 in North Carolina, with the second meeting in Virginia scheduled for August 13) to discuss SHC (Strategic Habitat Conservation) and desired collaboration; possibly hold a structured decision making workshop to determine common conservation vision and goals; and begin hiring staff either in late 2009 or 2010.

### **U.S. Forest Service and Ecosystem-Based Management: Mary Long**

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- Mary noted that the Salmon River Estuary is in Oregon. The other coastal National Forest (NF) is here in North Carolina, the Croatan NF. She felt that [Salmon River Estuary project](#) was a good one to showcase ecosystem management. It is an iterative and adaptive process. Mary introduced Cheryl Bryan, who is the Fisheries Biologist for National Forests in North Carolina. She introduced Rachelle, who is the Croatan NF Biologist, as well. Rachelle noted that red-cockaded woodpecker (RCW) is one of their key species.
- Mary showed a map of the project area. The long-term goal for the estuary and associated wetlands is to protect and perpetuate the fish, wildlife and scenic and research education values while allowing dispersed recreation use, etc. The management direction was to revitalize the estuary, free from the influence of man, which she noted was quite a goal.
- Mary reviewed the alterations to the landscape which had occurred, including highways, agriculture and an amusement park. There was also dairy production in the watershed. The area is very interesting and dynamic. They had to take everything into account and look at it from a large-scale point of view.
- Mary reviewed the past projects. Many areas were restored through removing non-native species, getting cattle off the land, and removing water control structures.

- The following issues were addressed: ecological viability of the river, transportation safety, fish and wildlife passage, recreation, and research and interpretation.
- Mary opened it up for discussion on how this applies to the Albemarle-Pamlico area and Croatan National Forest.
- Don Field noted that was one of the largest and most ambitious restoration efforts he had ever seen, and asked Mary if there was any estimate of the total cost. She noted she has seen many numbers kicked around, but she doesn't have a final figure. She noted that it was very much a partnership. The NGO's have access to funding that USFS does not. Recreational use, with no available restrooms, was another issue. Part of the process is just finding where the sources of funding are. Mary noted the project is online, and a report outlines how the project is being accomplished.
- Mary noted that a lot of the work they have to do is done because of the political situation. Sometimes the partners weighing in can cause things to be done.

### **U.S. Marine Corps and Ecosystem-Based Management: Susan Cohen**

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- Their objective is to support critical military training and testing lands along our national estuarine and coastal shorelines. They face three major issues: encroachment/development in surrounding areas; impairments due to anthropogenic disturbances, and increasing requirements for compliance with environmental regulations.
- Susan reviewed the program objectives. They conduct mission-relevant and basic and applied research in support of an EBM management approach. The base is about 150,000 acres, including water resources. The [Defense Coastal Estuarine Research Program](#) (DCERP) Team is very large. Susan showed a diagram with all the names on it, too many to capture in writing.
- Susan addressed the DCERP Technical Advisory Committee (TAC): they evaluate the science. Susan noted that SERDP is not the National Science Foundation. They have self-evaluation, as well as outside peer review.
- They are doing work in four ecosystems: terrestrial, aquatic/estuarine, coastal wetlands, and coastal barrier. They use iterative evaluation as their technical approach.
- Susan showed a map of their monitoring and research stations, which are widespread. Sites are moved and shifted as they gather information. Sites are removed or added.
- Susan showed a list of their monitoring activities by module. She ran through one of them, the aquatic/estuarine, to give us an idea how they work. Each module has a roadmap which shows the relationship between monitoring, research projects, and outcomes.
- They have a huge database, and it will be available, but their research team will be defining how it can be used.

- The question was asked how sea-level rise plays into base modifications? Susan indicated there is a lot of research on that. She noted there is a huge chunk of LLP research funding floating around. Rachelle indicated that is coming through the USFS, but it is all going to state forests. Susan noted that Camp Lejuene is situated very well for sea-level rise (SLR) studies. The military installations in the APNEP region, Dare County Bombing Range and Cherry Point, won't fare as well. Susan noted that if you combine SLR with shorelines that aren't holding up well, you can have some serious problems.

**Panel Discussion: Implementing Ecosystem-Based Management in the Albemarle-Pamlico Basin:  
Dean Carpenter and Carl Hershner**

- Dean reminded attendees that a Comprehensive Conservation and Management Plan (CCMP) is required for all National Estuary Programs. The one for this program was completed in 1994, and is the one under which APNEP is still operating. It clearly needs revision, for example to include prominent issues such as climate change and invasive species. The production of an integrated monitoring plan is tentatively planned. After that, they plan to develop an assessment product. There has been no comprehensive assessment of the A-P region since the early 1990's.
- Carl indicated that he would turn first to the other users and ask them what they have learned today. And, he would use Wilson's question: what can you contribute to the APNEP?
- Deb noted that the APNEP is huge, and she wondered how this can be tied to the offshore system. She noted that a lot of the offshore species spend a lot of time in the inland coastal system. How do we tie the two systems? With regard to Camp Lejuene, there is no major planned development, so how can you do the water quality analysis. With regard to the Croatan NF, you have to identify all the ecosystem services, and under APNEP's Climate Ready Estuary initiative, what do you want to maintain?
- Jud noted that the idea of the human dimension involved in our science and management is important, but one thing he didn't hear, which applies to APNEP, is that there was no discussion at all today about setting aside parcels of this ecosystem in complete preservation. It is almost like we are giving up, and only paying attention to the ecosystem. He asked that we take a look at how much of the APNEP is in true preservation right now, and how much would be in the future, and how much we will have in the future.
- Carl noted that the rationale behind this meeting today was to bring all of us together to consider how to get the capacity, and how to integrate everything. Carl noted that the answer is in part, that we can't afford to be overwhelmed by the concept of EBM. All that is required is that we don't just think about our issue, we just have to be open to considering it in the larger context. You have to be open to other influences. You should be open to EBM. One easy thing is to do, what Wilson says the FWS is going to do for you, is to look at all the goals and targets, and consider how to integrate them. Carl noted that we are uniquely positioned in terms of opportunity and interests.

**The meeting concluded at 4:30 PM.**