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APNEP Scientific and Technical Advisory Committee
Spring Meeting Minutes
April 27, 2011
Auditorium, Pitt County Office Complex, 403 Government Circle
Greenville, North Carolina 27834

STAC Members Present: Reide Corbett, Tom Crawford, Robin Dennis, Don Field, Joe Fridgen, Pete Kalla, Andy Keeler, Jud Kenworthy, David Kimmel, Wilson Laney, David Mallinson, Enrique Reyes, Tim Spruill, Don Stanley, Toddi Steelman, Silvia Terziotti, Jess Whitehead, Dorsey Worthy

Agency Science & Technology Liaisons: Bill Swartley (NC-DFR), Dianne Farrer (NC-DACS), Jon Blanchard (NC-DPR)

Staff Present: Dean Carpenter, Bill Crowell, Scott Gentry, Jim Hawhee, Todd Herbert, Jimmy Johnson

Guests & Invited Speakers: Connie Brower (NC-DWQ), Sarah Diamond (NCSU), Ricky Davis (NC BBS), Nikki Schimizzi (NC-DWQ), Lindsay Dubbs (UNC-CH-IMS), Rick Hill (VA-DCR), Todd Janeski (VCU/VA-DCR), Greg Garman (VCU)

Call to Order

STAC Co-Chair, Tim Spruill, briefly reviewed the agenda and noted that the meeting must end 30 minutes earlier than usual, because this building is going to be used for another purpose. He asked if there were any changes to the minutes: there were none. The minutes were approved as written. Tim asked for any public comments: there were none.

APNEP Update

APNEP Program Scientist, Dean Carpenter, thanked the Pitt County Cooperative Extension staff for the use of this facility. He recognized the agency liaisons that were present. He thanked the USGS, USFWS and NC Division of Water Quality for providing transportation for those who traveled here from the west.

Approximately one-third of the members' terms are expiring, and Dean thanked them for their service. Some may be returning for another term. Those whose terms end on June 30 are Robin Dennis, Joe Fridgen, Kirk Havens, Aaron Moody, William Porter, Enrique Reyes, Curtis Richardson, Wayne Robarge, Jess Whitehead, and Dorsey Worthy. Dean warned members that prior to lunch they must go outside for the traditional spring committee photo.

The STAC summer meeting is scheduled for Tuesday, July 26, also here. The fall meeting will be held on Wednesday, November 17 at the New Bern Convention Center. It will be an all-hands meeting to celebrate APNEP's new Comprehensive Conservation Management Plant (CCMP).

Dean noted the following science & technology activities during the past quarter: January 28, APNEP's Ecosystem-Based Management (EBM) Transition Team met and had a discussion of goals and outcomes. The South Atlantic Landscape Conservation Cooperative (SALCC) Steering Committee had their inaugural meeting in early February: this is a US Department of Interior initiative of which APNEP is a partner. Dean and Wilson attended. February 3, the APNEP Policy Board met: Wilson and Kirk attended and Wilson briefed board members on STAC activities. February 9, APNEP staff review of STAC feedback on draft CCMP actions with four STAC members ranking actions. February 16, Wilson and four other PB members attended the climate adaptation tool "COAST" presentation in Raleigh. February 17, Wilson, Dean and Brian Boutin attended the first SAV Partnership meeting of 2011. On February 24, the first SAV map was completed. Dean explained that in 2005, APNEP had funded the production of a synoptic map of the entire NC coast for SAV. The map is currently undergoing technical review. Bill stated that actually producing the map was a major step. Early March, Staff attended a TNC

workshop in Chapel Hill, along with Wilson and Kirk. Dean made a presentation at the joint A-P Ecosystem Services session with EPA-ORD. Late March, Wilson, Dorsey and Dean attended Dr. Paul Angermeier's Ecosystem Services workshop at EPA. March 28, the STAC Bylaws were amended and are now available on the APNEP web page. APNEP submitted a grant proposal to the SALCC. Wilson, Mike Piehler and staff worked on that proposal. The Policy Board will be meeting June 8 in Williamston, and the CAC will meet in May. Anne Deaton asked Dean to notify the STAC that the North Carolina Division of Marine Fisheries' Habitat programs are vulnerable, along with several others, and that will affect the ability to monitor many of APNEP's proposed indicators. Dean noted that Robin Dennis had notified us about some proposed cutbacks to North Carolina air quality monitoring programs.

Dean asked if there were any other issues. None were mentioned.

Water Quality Standard Setting for North Carolina Waters in the A-P Basin

Tim introduced Connie Brower, North Carolina Division of Water Quality Planner, to discuss water quality standard-setting in North Carolina, which he noted was a sometime perilous activity. Connie noted that for her talking to those with a science background is a rare opportunity. Normally they talking with politicians, or to the regulated community, and DWQ regulatory staff are not their friends. Connie introduced Nikki Schimizzi. Connie, Nikki, and Sandra Moore all work to establish water quality standards for the state. She noted that her presentation doesn't apply to drinking water, but only to surface and ground waters. Sandra is currently working on groundwater standards.

Connie reviewed her presentation outline. She welcomed questions if she had not provided enough details for her scientist audience.

Connie reviewed the Clean Water Act requirements. Standards provide limits for chemical, biological and physical components. Each water body classification carries an associated set of water quality standards. Class "C" and "SC" waters are "basic." Additional protections apply to other classifications such as Water Supply, Trout Waters, High Quality Waters, and Outstanding Resource Waters (ORW).

Appropriate toxicity data are used to calculate protective levels for both human health and aquatic life. No assessment of cost or feasibility of analytical determination is incorporated during standards development. Industry or municipalities often say that they can't treat to the required level. However, during the standard setting process DWQ staff members are required to be blind to feasibility when setting the standards.

A state employee writing regulations also must provide a fiscal statement. The fiscal statement is the most challenging part of her responsibilities, because she has no background in economics. Yet she must determine what it is going to cost all the water treatment facilities to provide that level of protection. DWQ must produce cost-benefit analyses, and they now have assistance in that regard from DENR. This year's changes in standards are likely going to be the most costly ever, because the changes this year were most significant.

Connie reviewed the Human Health Criterion. DWQ regulators are required to maintain a level which does not represent a significant risk of adverse effect to the general public. Consumption of water plus consumption of fish and shellfish is one criterion.

Surface water standards for carcinogens are calculated to a "one-in-a-million" cancer risk level. Surface water standards for non-carcinogens are established using a "reference dose", the concentration predicted to be a safe level of exposure. They can also incorporate child responses, if needed, but they don't have any standards which currently apply. Such standards are likely in the future. The issues for children are not in the groundwater rules, but they anticipate that a child provision will be added when those rules are revised.

Aquatic life criteria are based upon aquatic toxicity testing. Organisms are tested at varying ranges of concentrations to determine impacts, and are based on huge amounts of data. The standard incorporates protection for a wide range of species and trophic levels in the receiving stream.

Current aquatic life standards are expressed as chronic and represent protection from cumulative effects of longer term exposures (reduced growth, reduced reproduction, lethality).

There is currently no acute criterion. The National Pollution Discharge Elimination System (NPDES) permits are written with that in mind however. Connie couldn't say why that wasn't done in the past. The impact most often assessed is lethality. Generally, exposure to this level for one hour should not cause death. For permitting, this is associated with the "daily maximum." Connie noted that STAC member Pete Caldwell used to work for DWQ. If possible, DWQ staff prefers not to develop additional Total Maximum Daily Loads (TMDLs) for water bodies listed as impaired.

USEPA has indicated to the state during their Triennial Review that acute standards must be proposed. To date the North Carolina Legislature has made this exercise difficult. Acute standards will be proposed for substances except selenium and mercury.

One requirement is review of national criteria. USEPA has published revisions to federal aquatic life criteria, and these criteria values are much lower (more restrictive) than the present North Carolina standards. This has added to concerns from the regulated community.

Connie reviewed the standards for dissolved metals. Current standards are total metals. Dissolved metals better represent the bioavailable fraction. The dissolved fraction varies in natural waters. With the exception of selenium and mercury, DWQ will propose the use of dissolved metals standards, which has been a controversial issue.

Connie reviewed hardness-dependent metals. Decreased water hardness is associated with increased aquatic toxicity for some metals. Current numerical standards are based of the use of 50 mg/l hardness, which is the state average. However, that average figure was calculated by including saltwater stations, which by law cannot be included. When such stations were eliminated, the value changed. The state is predominantly less than 25 mg/l. DWQ has resumed hardness monitoring. The area of the state where the values are higher occur in the "concrete corridor" of the Piedmont, which includes Charlotte, Winston-Salem, Greensboro and Raleigh. DWQ has proposed a statewide default hardness of 25 mg/l in freshwaters. There may also be addition of formulas to the current regulations which may be used to calculate more localized criteria. DWQ is seeking EPA approval, but it likely won't be approved unless there is a minimum value for hardness.

Connie showed a table of the current and proposed standards. The standard concentrations are proposed to drop significantly. The permitees are very concerned and believe that they won't be able to remove lead and other metals to the required standards. DWQ is proposing to remove the chromium (total) standard and replace it with distinct Chromium III and Chromium VI standards, because EPA urged this revision. The iron standard is also proposed for removal. Background concentrations of iron are high in many areas of North Carolina anyway, thus streams which have no dischargers often exceed the standard. The saltwater standards have not been as controversial.

Connie moved to the biological standards. DWQ is proposing that no greater than 10 percent of data shall exceed 40 mg/l for chlorophyll a. There are changes proposed for trout waters and mountain streams.

North Carolina currently does not have nutrient standards. There was a North Carolina Nutrient Implementation Plan approved by EPA in September 2004 that proposed developing regionally-unique chlorophyll standards. DWQ drafted rules to establish nutrient "thresholds" and proposed to regulate total nitrogen and total phosphorus through NPDES permits, but these proposals were not well received. DWQ will host a Nutrient Forum to engage stakeholders and obtain relevant information. Connie hoped that some STAC members would be able to attend. Matt Matthews, the DWQ Surface Water Protection

Section Chief, will be organizing the forum. It will "take a village" to develop an appropriate standard. The forum was originally scheduled for fall 2011, but now has been moved to early 2012.

Connie addressed Emerging Contaminants and Pharmaceuticals and Personal Care Products (PPCPs). She noted that Mary Georgino with USGS has done a lot of research on these. For DWQ to propose protection levels, DWQ must have reference doses or bioaccumulation factors, and generally these are simply unavailable. EPA is working on toxicity studies. When toxicity information becomes available, simple formulas can suggest protection levels.

Another issue is how to remove PPCPs if they are present in the water. Technologies may not exist or may be too expensive. Some of the breakdown products may be equally bad or worse. There are no analytical methods approved for wastewater and ambient waters: methods need to be developed. Things under consideration include activated carbon.

The development of PPCP standards is unlikely prior to the completion of federal research. Ongoing research include EPA's Office of Water, National Health and Environmental Effects Research Lab; National Exposure Research Lab; computational toxicity; the Exposure Research Program, and many others.

Connie reviewed state activities. NC Division of Marine Fisheries' Habitat Section Chief, Anne Deaton, and partners have been meeting to consider how to keep PPCPs out of the water. They are analyzing the impact of PPCPs on fish and shellfish, via multiple agencies, DHHS, Agriculture, and many others.

Before she opened the floor to questions, Connie noted that DWQ regulators are facing enormous opposition. DWQ would be appreciative if STAC members and other scientists weigh in on the issues. DWQ has concerns that some standards are not conservative enough, and STAC input would help provide a balanced viewpoint in the public comment phase of regulation. Letters of opposition are running against letters of support by 100 to 1. A letter from the League of Municipalities claimed that the cost to the regulated community will be in the billions.

Don Stanley asked, with regard to the proposed chlorophyll a rule, is there potential for that rule to be manipulated by taking samples at a time of year when the levels are low? Is there a safeguard? Nikki noted that the actual chlorophyll a data are all taken by the state: they are not self-reported data. Don noted that Connie had referenced the Clean Water Act not requiring cost-benefit analysis, but yet the state does. Connie noted that the Legislature and EMC sort that all out. The result is sent to EPA, but the State Legislature can veto any changes. But EPA has the final authority for any changes, such as cadmium. The EPA can promulgate a protection level for North Carolina. It then will supersede any state rules. Don noted that you used to hear that we can't put a value on human life, but by virtue of standard-setting society does so every day.

Connie was asked if it can be demonstrated that present contaminant levels are having a negative impact on the aquatic ecosystem. Connie noted that some of the organisms used for testing are not charismatic, and it can be difficult to relate the interconnectedness of the food web.

Bill Swartley noted that there is some public confusion about the classification changes proposed. Connie replied that she doesn't do classifications, but communication has been an issue. Connie and other DWQ staff have been doing presentations for several years, but public hearings are often poorly attended. The Boylston Creek hearing was very well attended, but a great deal of misinformation was present. It is difficult to get the word out. DWQ use email listservs but have a shortage of funds to have notices run in local newspapers. Bill asked about chlorophyll, and asked if there was another route, which is to use state-administered buffer rules? Nikki stated that DWQ had a suite of regulations which would go into place in an entire watershed, including buffers, but that regulatory package was killed, along with the permit limit. Connie stated that Adrian would welcome any assistance after the Boylston Creek hearing. They would take any opportunity to get the word out. Nikki noted that for trout waters, they tried a lot of communications methods.

Connie noted that the chemistry behind determining water quality standards is not understood by the public. They don't understand that things change in the water due to the hardness and other factors. Concentrations are not static.

Jud Kenworthy asked about DWQ's responsibility in marine habitats. Connie noted that there are standards for saltwater as well as fresh. Saltwater standards changes have not been as controversial. She didn't think there were many sampling stations in coastal waters. Jud agreed and noted that there likely is not a representative sample. Connie noted that it isn't certain how many freshwater monitoring stations there will be, depending upon how the State Legislature acts.

Don Stanley noted that historically society has responded to water quality issues in a reactive way rather than a proactive one. People are responsive to a widespread identified problem. Are we in a situation where people just don't have enough fear of these contaminants? What is the big problem getting people concerned about these things? He noted that well-educated societies become more concerned about some of these invertebrate species, and that in the future we may have to be more concerned about the human species. Connie responded that she is concerned about all species, and that eventually as substances are accumulated up the food chain, they do cause problems. Don noted that Connie, like us, is just one voter. He asked why people in the State Legislature, and people in general, feel the way she does? Connie noted that the focus is currently on employment, to the exclusion of other factors.

Andy Keeler noted that historically, the concern about water quality came from the hunting and fishing community. Perhaps that is a place to seek regulatory support. Don Stanley asked about putting some value on these resources. Connie noted that DWQ has referenced some studies about societal values, but they are struggling with such benefits. Don noted that those are luxury benefits, yet as he ages he is more concerned about health issues.

Toddi Steelman asked why we don't have data for the proposed new standards. Connie indicated that EPA has the data; however, they don't publish them very often. The updated national recommendations were published relatively recently, and that is what has been used by DWQ for proposing the new regulations. Toddi noted that unless there is public awareness of a problem, it is difficult to get the public to respond.

Connie noted that a number of water bodies are listed as impaired for aquatic life. Some of these impairments could be related to water quality standards, but other concerns like erosion may also be a factor.

Don Stanley suggested that even if a linkage could be made between water quality standards and environmental damage, the state should not undertake a public relations campaign.

Connie noted that some of the municipalities are claiming that the waters flowing through their cities will never be clean. It would be more appropriate to speak with others about classifications.

Working Lunch: CCMP Development Update

Dean gave an overview of the proposed CCMP objectives and actions.

Dean walked the STAC through the five questions that guide CCMP development. The second question is: What is the status of the A-P Estuarine System? The STAC is leading a process of conducting a new assessment of the system. Upon its completion, the STAC will be in a better position to refine and produce an inventory and monitoring plan. Dean asked Lindsay to address the assessment logistics.

Lindsay noted that most should be familiar with the indicators and metrics. Various STAC members are writing chapters for the metrics. She thanked state agency staff for their guidance and support. APNEP is on track to have a completed draft by the end of June. She showed the list of indicators and associated metrics, and asked that STAC members to identify that are not listed be should be, and also

asked for volunteers to author chapters. Lindsay went through each of the sections and reviewed the authors.

Lindsay reiterated that if there are indicators that should be added to the list, there is still time to produce a chapter. She will assist in finding data to support their assessment. Authors should keep her apprised of their progress. The 2008 Heinz State of the Nation's Ecosystems report is being used as the model for APNEP's assessment. There will be a technical appendix that includes notes on data quality and quantity. The names of any agencies or people who should be acknowledged for their guidance and support should be included. Summary data should be submitted in the event that figures need to be reformatted, plus an estimate of the time authors dedicated to research and authorship.

Dean noted that this assessment will be focused primarily on the status and trends of the metrics, and not on diagnostics or forecasting.

Jud asked Dean to explain how this document will differ from the existing North Carolina Coastal Habitat Protection Plan (CHPP). Dean stated that APNEP is expected to furnish the indicators to support the CHPP. The CHPP is a planning document and does not provide an assessment function. The CHPP implementation plan explicitly identifies APNEP to do that assessment. Dean used submerged aquatic vegetation (SAV) as an example. The CHPP defines policy objectives, and the APNEP assessment will let them the progress in achieving those objectives.

Dean returned to the third question: what are the biggest threats to the A-P Estuarine System? Some of the national estuary programs (NEPs) had spent their Climate Ready Estuary grant funds to address on that question through ecosystem vulnerability assessments, but given the limited funding APNEP chose to spend it on outreach. The proposal currently submitted to SALCC would enable APNEP to build some capacity for forecasting and threat assessment. He hopes to reach the point where APNEP can identify the biggest threats to system vulnerability.

Dean moved to the fourth question: what actions should be taken that will move us from where we are today to a healthy A-P Sounds? Don Stanley noted that we should use "healthier" rather than "healthy." Dean noted that APNEP through its indicator-metrics and associated targets will define explcitly what "healthy" is. Sentiment from other members was to use "healthier." Don noted that would make things easier for us, moving along a continuum, rather than striving for some threshold.

Dean noted the list of action verbs in the CCMP strategies: identify, protect, restore, engage and monitor. Dean moved through each of the objectives and actions. The product under review is a staff product, so he reminded any APNEP staff member that they should feel free to weigh in if questions arise on a particular action.

Jud suggested that the Conservation Atlas be an online, living document. He noted that hard copies become outdated in time.

Silvia asked if habitat types were going to be ranked or categorized in some way. Dean stated that a lot of these tasks are the responsibility of APNEP partners. He didn't put it on the slides, but key partners are identified in the printed document (provided to STAC members prior to meeting). Bill will be speaking with senior management in the respective agencies, about their responsibility.

Dean noted that the CCMP is designed to promote a healthier ecosystem by 2020. Annual work plans will provide the details. All the actions are supposed to affect the outcomes. There is an ecosystem model, which syncs the two. Staff are currently discussing what sort of graphics can best convey the information. They wish to avoid the traditional wiring diagram if possible. Dean asked for any STAC members with any insights to please convey them.

It was noted that it will be hard to identify priority actions without having a list of threats. Dean noted that the EBM Team has developed a list of threats. The suggestion was made to include that list in the

document. Dean noted that the threats or "factors" were intermediaries between the actions and outcomes, as were agents. One way would be to just list the factors deemed critical.

Dean requested further written comments from the STAC.

Applying Volunteer-based Butterfly Monitoring Data Toward Understanding the Responses of Butterflies to Global Climate Change

Dr. Sarah Diamond, Post-Doctoral Researcher at North Carolina State University, Department of Biology, noted that she is a consumer of volunteer-produced data, rather than a producer. She reviewed the outline of her presentation. There are a lot of different ways to monitor butterflies. There are single-day counts, such as the Fourth of July Count conducted by the North American Butterfly Association (NABA). There are also recurring counts, which often involve once per week counts. There are some of the latter in the US, but not in the Southeast. Sarah explained the sampling protocols. There are multiple additional butterfly monitoring programs, including ones in Florida and California.

Sarah reviewed the quality controls on the data. Most of the volunteer butterfly monitoring data are freely available from the web upon request.

Sarah addressed why butterfly monitoring is useful. Butterfly phenology is one indicator of climate changes. She defined phenology for the group. With climate change, phonologies of many organisms are shifting. This provides empirical evidence for earlier spring events and later fall events.

The UK Butterfly Monitoring Scheme is an example of the utility of these sorts of programs. On a graph of the flight phenology of UK butterflies the date of first appearance was highlighted. UK temperatures have increased dramatically both in summer and spring. Graphs of the phenology of UK species from 1976 through 2008 were presented. All of the species tend to advance in their date of first appearance. Can species traits and shared evolutionary history explain the degree of phenological advancement? Sarah is reviewing models which employ such variables as diet breadth, overwintering stage and others, and shared a best-fitting model. Species that overwinter as adults tend to advance more than other stages. Species with narrower diet breadths also advance more. Species that have earlier annual dates of first appearance advance more. Species that occupy less habitat advance more.

Sarah reviewed the implications of their research. From a basic research perspective, the work identified patterns between phenology and life history. It suggests testable hypotheses for the bases of these patterns. From an applied perspective, it can identify those species that will respond most strongly to climate changes.

Sarah and Rob Dunn are developing an "ants in your backyard" citizen science program. This entails baiting for ants in your yard and house. Samples are taking using kits, and they will be processed in the Dunn lab at NCSU.

Don Stanley noted that if Sarah would provide him with a thousand of the kits, he could capture many of the fire ants in his backyard. Don noted that the message for him is that these sorts of programs are inexpensive, and can yield meaningful results. Don suggested that major environmental organizations should put more resources into encouraging such citizen monitoring. Sarah concurred.

Jim Hawhee noted that showing the public impacts to butterflies can resonate. The new Nature Research Center will have a citizen-science component and that citizen monitors can be recruited in this forum.

Dean thanked Wilson for working with him on developing the volunteer monitoring section of this meeting. He noted that during planning, APNEP is looking closely at remote sensing and the use of citizen-volunteers to bolster monitoring capacity.

Wilson asked Sarah if the surveys were rigorous enough to track population-level changes. Sarah indicated that she thought the NABA program might be useful in that regard.

Silvia wondered about controlling such variables as the experience of the observer. Sarah noted that they tried to control the mix of surveyors, but if they were all inexperienced, that could be problematic.

Ricky Davis noted that the intent is to have an experienced observer paired with a less experienced one. Over the years, you can come up with some pretty good data.

Two Long-Standing Monitoring Programs for Birds

Ricky Davis, North Carolina Coordinator for the U.S. Geological Service's North American Breeding Bird Survey (BBS) and North Carolina Editor for Audubon Christmas Bird Count (CBC), noted that outdoor enthusiasts first tend to become excited about observing birds, then butterflies, then odonates (dragonflies and damselflies). He noted that anything that flies attracts a certain segment of society. The BBS began in 1966. Ricky surveyed his first route in 1976. He explained how the BBS is conducted, during the height of the breeding season. Observers must base their data on hearing, more than sight. Each route is 24.5 miles long with observations at 0.5-mile intervals. At each interval, a three-minute point count is conducted. The BBS data are used by agencies, state Natural Heritage Programs, BBS Atlas projects, educators, and hundreds of scientific studies. Weather and location, as well as observer bias, all affect the data collected. Northern bobwhites have declined by 70-80%. The BBS can detect population changes in both narrowly-occurring and widely-occurring species. Some species are very localized in the APNEP region. The counts also may reflect habitat changes which occur during the years the routes are surveyed. BBS routes in the APNEP area were displayed. In North Carolina there are 89 active routes statewide, 35 of the 89 are within the APNEP area. All routes are currently assigned. There are 26 observers.

Another long-term data set is derived from the CBC. Ricky noted that the North American Butterfly Association (NABA) uses the same circles as the Audubon Christmas Bird Count. Some species can dependably be located in the same localities. The CBC has been conducted since 1900. There are over 2100 counts from North America to South America, with thousands of volunteers. Ricky explained how the circle is covered by the observers. All birds are individually counted for this survey. Some individuals may be counted more than once. Some statisticians are challenged by the uncertainties in these data. Blue-gray gnatcatchers, which are uncommon in APNEP during Christmas, in contrast to robins, which are very abundant in the Coastal Plain during the winter. A map of CBC survey stations was displayed. The counts have varying histories. Some areas have never had a count. There are a number of counts in the Tidewater area of Virginia. There are 49 count circles statewide, 18 of which are in the APNEP area. The number of participants varies from 6 to 30 on the respective counts, all volunteer-based.

Don Stanley asked about long-term CBC trends. Ricky stated that the big conclusion was climate change. Birds are responding as well as butterflies. A lot of birds are wintering farther north, such as the blue-gray gnatcatcher. Changing temperature and climate have caused new trends to appear in the bird counts. In terms of breeding, some of the southern locations are getting rather nebulous.

A CBC survey circle encompasses some 200 square miles, so a question was asked about coverage. Ricky noted that obviously some of the area is not surveyed. The birders do tend to look in areas where birds tend to occur. Ricky noted that the observers can't trespass on private property, and the survey is a "count" not a census. The Christmas Bird Count data are available through BirdSource. There is a lot of research based on the CBC.

There are 111 years of data for some of the count sites. There has been a lot of analysis of the data. Some feel the data are worthless, but that opinion is changing as more research is conducted. The point was made that the BBS transects are fixed.

Wilson asked Ricky to say a few words about Ted Simons work with "bird radio." Ricky explained Ted's work looking at age, experience, and estimating the uncertainty associated with these variables. Ted's work has helped to define the uncertainties. Ricky noted that when you get his age, you realize that your ability to hear high pitches begins to decline.

Amphibian Monitoring within the AP Region

Jeff Hall, Partners for Amphibian and Reptile Conservation Biologist, North Carolina Wildlife Resources Commission, prepared a presentation for the STAC on volunteer-based frog monitoring programs, including the North American Amphibian Monitoring Program (NAAMP), and FrogWatch USA. Jeff is giving a workshop in Wilmington, so Wilson made the presentation on Jeff's behalf.

Wilson discussed why monitoring frog populations are important. Among other considerations, they can serve as indicators of ecosystem integrity, there is public interest, and they are relatively easy to monitor. Maps shown in the presentation demonstrate that there high species richness for amphibians in the southeastern US. Maps also demonstrate a negative correlation between land cover and amphibian richness.

Frog calling surveys are created to give an estimate of relative abundance in an area, which can help determine if populations are increasing or decreasing. They also create public interest in amphibians and the environment that supports them. Frog monitoring protocols generally include sampling at night by listening for a specified period of time, then recording calling intensity. Other environmental variables are also recorded, including the type of habitat, origin of wetlands, origin and permanence of water, use of land adjacent to and in the wetland, and coordinates for the site.

Wilson closed by covering the specific sampling protocols for Frogwatch USA and NAAMP.

Todd Herbert asked about using recording devices for the frog survey. Wilson noted that he would convey that question to Jeff, but noted that recordings could yield some unexpected results.

Silvia Terziotti asked if the frog calling surveys provided training for volunteers. Wilson was sure they do.

APNEP Media Options

Jim Hawhee, APNEP Community Specialist, noted that the APNEP web site has a special section for scientists and for the STAC. It contains all the biographical sketches and contact information. STAC alumni are also featured there, as well as documents, research reports, and publications such as Technical Issue Papers. Every STAC presentation given since 2004 has been posted.

The APNEP emailing list is used for grant announcements and major developments as well as the quarterly newsletter. All media options are accessible from the web site. You can sign up and unsubscribe from there as well.

The website has a calendar, and items can be sent to Jim for posting. This can be anything from international meetings to volunteer opportunities.

The site also has a news feature. Jim clips stories from around the APNEP Region and posts them on the site. The news is usually up by 10 AM on weekdays. Jim will accept news items from the STAC members for posting. Jim noted that an RSS feed is available for these clips as well.

Jim moved to social media. The specific benefits of Facebook, Twitter, and LinkedIn vary. Facebook is the most popular networking site with 150 million users, 70% of whom log on daily. APNEP's page contains information for the public, with posts no more than once or twice per week. Jim reviewed the use and utility of Twitter. Posts are limited to 140 characters, compatible with mobile phones. It is recommended for personal or professional use. You can follow organizations of interest, general news, or science features (NatureNews, etc.).

LinkedIn is a professional networking site which allows users to post updates, view professional credentials, and find connections with other professionals. Jim recommends it for status updates, discussion groups, connecting with new colleagues, and reading news clips.

Jim has created a group for APNEP Science and Technology. APNEP can use the subgroup to notify staff and the STAC of publications (yours or others), discuss research ideas and findings, or seek experts in a specific area. Discussions can be automatically sent to your e-mail account. Other subgroups can be created as requested. Jim noted that this is a way to work together without having staff to facilitate. Jim encouraged us to join.

Jim summarized. These tools are provided to encourage the STAC and other members of the management conference to wear their APNEP hats more often. He noted that members use of these tools will help APNEP maintain a polished online presence and a vibrant and close-knit community. Social media will continue to evolve and APNEP's offerings will likely evolve as well.

Action Items

Co-Chair Spruill asked if anyone had anything else? No other items were forthcoming. Dean will remind STAC members of the action items which originated in today's meeting. The meeting was adjourned at 2:17 pm.

Staff Note: All presentations from this meeting are available online at www.apnep.org.