

Southeast Natural Resource Leadership Group

May 28, 2008

Charleston, SC

Breakout Summaries and Report Out & Next Steps from Regional Directors and Administrators

Placeholder for Executive Summary

Next Steps (Regional Directors and Administrators)

These next steps represent early thinking of participating regional natural resource leaders. (Participating agencies: U.S. Fish and Wildlife Service, U.S. Geological Survey, National Park Service, U.S. Forest Service, Environmental Protection Agency, NOAA-NMFS, the Natural Resources Conservation Service (USDA), Federal Highway Administration, Department of Defense, U.S. Army Corps of Engineers, Federal Emergency Management Agency, Tennessee Valley Authority, the Southern Group of State Foresters, and the Southeastern Association of Fish and Wildlife Agencies.

- Develop talking points and white paper on climate for agencies focusing on what we know today about climate change establishing a common vision among our agency partners related to climate change (FWS, Jeff Fleming; NOAA-NMFS, Jeff Payne; SGSF, Mike Zupko; SEAFWA/GA, Mike Harris)
- Pursue virtual landscape conservation centers in the Southeast linked to USGS national climate wildlife center being developed. Establish interagency working group to define expertise needed such as modelers and hydrologists to inform decision making related to adaptation strategies managers can pursue and secure agency contributions related to expertise, people, planning and other resources needed (USGS Sonya Jones; FWS Jeff Fleming (We need to begin pursuing development of a regional adaptation strategy, which was an objective for the May meeting and referenced in the terrestrial breakout group's discussion.))
- SENRLG members and state agencies agree to follow up with meeting in St. Petersburg early fall (NMFS, Jim Weaver)
- Pursue workshops related to species migration and habitat fragmentation, and aquatics related to climate change
- Carbon sequestration – define best practices and develop guidelines and standards for review and approval identifying what a good carbon project looks like from a wildlife perspective (FWS lead with SEAFWA and SGSF)
- Pursue a collaborative vision through a leaders roundtable where regional leaders would set vision, priorities, and clear direction for staff, related to climate change (Haddad)
- Standing committee to share information among agencies and build on momentum of this meeting related to stronger collaboration on climate
- Consider whether a larger conference or several more targeted workshops will be pursued over next eight to 12 months

Terrestrial Breakout

Participants: Sam Hamilton, Jeff Fleming, Carol Price, Buck Kline, Cory Berish, Tom Peterson, Wes Nettleton, Bob Ford, Doug Parsons, Mike Harris, Guy Sabin, Mike Zupko, Burl Carraway, Greg Wathen, Todd Rinck, Nanciann Regalado, Susan Gibson

Identify/describe most critical issue:

- EPA (Cory Berish): habitat fragmentation; trying to find migratory pathways/corridors for species; states and feds need to work together to create larger connected blocks of land
 - Regional issues and impacts to multiple agencies; improved communication
- USFWS (Bob Ford): human induced changes vs. direct climate impacts; sustaining ecosystem/community integrity (high elevation in Appalachians, longleaf pine); invasives; linking large tracts of natural communities/habitat to allow migration
- SEAFWA (Greg Wathen): ecosystem functions; protecting, improving, & restoring habitat; improved science-based understanding of climate change over various time scales and at smaller scale
- (Carole Price):
 - Maps—consistent habitat classification scheme; good for modeling; already underway; also enables ecoregional assessments
 - Understanding how habitats will shift, and how that will affect management
 - also maintaining evolutionary processes
 - prioritizing habitats (ranking system) for the region
 - deciding whether or not there should be a “let it go” list
 - Land acquisition—planning/anticipating which areas should be conserved now (low cost) because of their potential value as change occurs
- SEAFWA (Mike): dealing with uncertainty in modeling; concerns about strength of models for investing in future solutions
 - Patches of habitat that are currently conserved & lightly managed (e.g. military lands and state forests)
 - Fire—increased droughts will lead to greater risk of wildfires; what can we do in forest management to deal with that; use Okeefenokee as an example for how to work with surrounding landowners to increase pres. Burning
 - Short term policies can have adverse impacts, need more macroeconomic focus
- U.S. Army Corps of Engineers (): military very interested in using lands as a context for interagency coordination; easements
 - improved access to interagency data is essential to understanding changes; coordination on metadata, will enable better modeling (strengthened protocols)
- FL Fish & Wildlife (Doug): operational recommendations for agency = strategic planning, how to inform agency; states are starting to work together already, but

agency approach is a hodge-podge; need stronger agency commitment to climate change

- Australia already has a national climate change strategy, which must be used by states if they want funding
- Creating a process for agencies to respond to issues; coordinating interagency response to impacts—ethanol as example, what a lot of people thought was a good idea has turned out to have very negative consequences; Congress and corporate farms are still backing—how can agencies work together to influence decisions?
- South Carolina Forestry Commission: dealing with uncertainty; agency realizes that regionally coordination is needed
 - Land use changes related to climate change, especially conversion of ag and forest to other uses; private forest landowners will be key to management, need to collaborate with them
- U.S. Forest Service (Tom): loss of open space will be compounded by climate change; most critical issue is lack of information for developing longer term (10-15 year) plans, what models exist for planning for the next 50 years or more? (invasives, insects, disease); finding the best available information
- U.S. Forest Service (Wes): agency has been slow to react
 - development of ecosystem services
 - With new Farm Bill, state forest agencies are forced to do integrated assessment plans; state-fed integration needs to improve
- VA Dept. of Forestry: loss of forest land base and ag lands; provide tools to assist natural migration = reducing fragmentation; markets for ecosystem services to provide economic incentives to private landowners
- National Park Service (Todd): habitat migration; how to protect future habitat; systematic approach to determine what areas need to be protected
 - Example: ocean preservation effort; approach of coordination among groups to identify needs
- DoD (Susan): primary mission isn't land management, therefore only work to date has been focused on impacts to military
 - Collaboration among fed and state agencies on regional efforts
 - Land acquisition
 - Leveraging resources, not only financial, but also data and personnel
 - Opportunities to reduce redundancy in research, monitoring, data collection, etc.
 - Coordinating policy, especially since every agency is currently trying to develop climate change policy; share what's being done by other agencies
 - Look long term (50 or more years down the road)
- USFWS (Jeff Fleming):
 - Modeling capability at multiple scales
 - Communication—how to create a unified message for all agencies, including identifying each agency's niche
- USFWS (Sam): climate change has been identified as the #1 issue facing agency, trying to develop a strategy by November 1, 2008; budget focused on resources, not programs

- Strategic landscape approach to conservation, ignoring administrative and program boundaries
- USGS Virtual Climate Center—similar to what other agencies are considering; lots of expertise, but modeling and strategic approach are still missing; would be improved by subdividing into multiple interagency virtual centers throughout the region that would link back to the larger one; would provide more meaningful interaction and information; one large center can't respond to all of the needs

Priority Issues: Fragmentation/Habitat Conservation Planning & Collaboration

- Fragmentation & Species Migration:
 - Existing efforts:
 - Forest Service 2009 Report on changing land uses
 - Best practices:
 - Existing system of public lands—create/improve connectivity; develop ways to prioritize management actions and identify corridors
 - Ecosystem-based mitigation
 - Short-term strategies:
 - Update/adopt existing prioritization frameworks
 - Establish a working group to identify species/ecosystems that are most vulnerable to climate change
 - Stronger models for species migration that at regional, state, and potentially local scales
 - Focus mitigation investments for improved results; make climate change part of the criteria—focus more on conservation, less on restoration
 - Communicating needs and collaboration that's taking place; identify missing pieces/partners
 - Identify existing information
 - Long-term strategies:
 - Develop datasets for abundance and distribution of sensitive species
 - Potential roadblocks:
 - Information gaps:
 - Downscale models to predict climate change
 - Additional partners:
 - Land trusts
 - Hunting/fishing groups
 - Additional expertise:
 -

- Recommendations:
 - Workshop focusing on details of habitat fragmentation and climate change in SE
- Sub-regional virtual climate change centers—tie into national centers; could aid in planning and design and help reduce redundancy
 - Existing efforts:
 - Forest Service
 - Potential roadblocks:
 - Incentives for involvement in interagency virtual centers
 - How would virtual centers be structured? As a funding source, or more for information sharing?
 - Expertise not represented:
- Carbon sequestration
 - Short-term strategies:
 - Guide to sequestration—best practices (types of trees)
 - Long-term strategies:
 - Planning for climate change—where should trees be planted based on models?
- Fire
 - Existing efforts:
 - DoD working with EPA
 - Study by Brookings looking at fire
 - State prescribed fire councils
 - Short-term strategies:
 - Policies that protect/allow fire as a management tool
 - Input on EPA fire plan—incorporate climate change
 - Advocate increased prescribed fire as a climate change adaptation tool
 - Work with agencies to incorporate climate change into fire policies/plan
 - Recommendation:
 - Pursue increased use of prescribed fire within climate change management strategies.

Adaptation Recommendations:

- Strategic conservation planning:
 - Long-term: Incorporate climate change into each agency's strategic conservation planning processes/policies, focusing on landscape conservation in the face of climate change.
 - Share with other partner agencies to improve coordination.
 - Ecosystem Services—carbon sequestration, for example
 - Short-term: Create a certification program related to ecosystem services on public and private lands (e.g., using native species versus exotic). Use Society of American Foresters recommendations as a starting point.
 - Long-term: Tie ecosystem services market to holistic ecosystem functions on public and private lands as part of overall conservation strategy.
 - Fire management in the face of climate change:
 - Short- and Intermediate-term: Science and policy symposium that focuses on fire and climate change—could work with Tall Timbers, since they already host an annual fire ecology conference.
 - Ecosystem migration and fragmentation
 - Short-term: Establish an interagency team to put together a workshop focused on species migration, fragmentation, critical wildlife habitat linkages, and improving knowledge base about climate-sensitive ecosystems.

- Sub-regional Virtual Climate Change Centers:
 - Short-term: Establish an interagency, interdisciplinary team to identify key expertise and capacity that will be necessary to do this and link the sub-regional centers to the USGS national climate center.
 - Identify information needs and build capacity covering terrestrial, freshwater, and marine habitat needs. An example would be modeling and GIS at multiple scales to help drive management decisions on the ground.
 - Increase collaboration and data sharing among agencies.
 - Develop recommendations for how many centers should be created, and how they should be structured.
 - Intermediate term: (by October 1, 2009) Establish at least one center in the Southeast.
 - Long-term: Build case for urgency and ultimate funding stream to address long-term capacity constraints.

- Modeling at multiple scales:
 - Short-term: Understand what is already being done, assess knowledge gaps related to species and habitat abundance and distribution, and establish timelines to develop needed data layers (i.e., existing multi-state

grant proposal for bringing global models down to regional and local scales is pending).

- Long-term:
- Establish an inter-agency climate communications working group to drive coordinated communications related to our climate work here in the Southeast. This group would also work to communicate the uncertainty inherent in climate change data and modeling as well as a case for the urgency of action and adaptation.
 - Short-term: As goals are set related to other recommendations develop integrated communications products and consider building a regional climate web page.
 - Develop communications materials to raise awareness among state and federal policymakers and opinion leaders
 - Long-term:
 - Develop communications strategy including other partners and stakeholders.
- Create an ad hoc climate committee among natural resource agencies to foster and enhance coordination on climate change activities.

Economic analysis of impacts of climate change and socio-economic impacts along with a human dimension assessment of opinions and attitudes would be something to consider.

These are the building blocks for a regional adaptation strategy.

Marine Resources Group

A. Challenge Statement

SENRLG agencies will collaborate to identify and monitor key marine ecosystem responses to climate change to proactively guide policy, management, and socioeconomic decision making in the region

- related challenge issues:
 - Common vision for the region with respect to impacts of climate change, outreach and common set of talking points. Change from static view of climate to incorporating dynamic climate considerations into management decisions.
 - Principles of what CC means to the region
 - Need for outreach, presented factually but with impacts to people
 - Grassroots movements and community dialog, socioeconomic effects, and applicable time horizons
 - Resilience at the local level
 - Policy analysis – analysis of existing policies in context of climate driven adaptive management

B. Definition of marine resources

Estuarine, coastal (near-shore, mean high water), and marine

C. What do we see as the big policy, management, socioeconomic issues for which incorporation of climate change considerations will matter?

- imperiled species (ex. sea turtles)
- imperiled habitats and changing habitats and ecosystems
- fisheries productivity
- (restricted) coastal development
- coral reefs
- changes in policy for sediment management
- recreation and tourism – changing trends depending on changing environments
- land and submerged land conservation, acquisition, and mitigation
- deepening and expanding ports – potential impacts of climate change
- freshwater inflow especially to estuaries and bays

D. Principals call to action

- Develop framework for collaboration
 - Determine who (what agencies) should be involved. Which agencies are working in marine environment?
 - What level?
 - Who comes to the party first?
 - Collaboration: *A voluntary, committed, integrated, and resourced partnership toward a common goal*
 - Timeline

- Empower group to identify marine ecosystem responses climate change:
 1. Need lead agency:
 - o Assess knowledge of ecosystem response including development of key climate sensitive indicators
 2. Technique or strategy: convene an expert workshop to develop/refine ecosystem response information, including indicators (consider multiple systems: FW, terrestrial, marine)

E. Additional context

How is the issue presently being addressed?

- All agencies are monitoring, but not necessarily related to climate change. Some monitoring likely relevant to CC, but not necessarily focused on CC.
- Monitoring animal abundance and distribution. Need to figure out if changes are related to climate change. Of changes we're seeing, which are related to climate change? If SST rises, what would distribution of species be?
- Incorporation of models (more needs to be done) to forecast and enable scenario development
- Frequency and magnitude of red tide events
- Coral reef monitoring – FL reef resiliency program.
- Ocean acidification.
- Local managers working w/agencies or institutions collecting for specific purposes.

What are best practices?

- Managers guide to coral bleaching (FL). Process for developing guide was a collaborative effort.
- Joint ventures for migratory birds (strategic habitat conservation and harvest management).
- Collaborative approach to watershed sediment management (Mobile Bay, AL)
- Work through existing fora.

Critical knowledge/research gaps:

- Establish a forum for taking this on (existing group?)
- What are the sentinel species/indicators of climate change?
- What is needed to monitor/integrate those indicators?
- Need fisheries independent monitoring programs – to collect species abundance and productivity
- Need to pin down big policy, socioeconomic, and management questions in marine environment
- Need to identify most vulnerable areas and prioritize areas spatially and temporally based on risk/vulnerability
- Identify and integrate existing knowledge across the region associated with climate change

F. How should we follow up?

- Principals consider and provide guidance on the big policy, management, and socioeconomic questions that should drive the knowledge gaps and regional efforts
- State agencies can work/lobby to ensure climate bill has each state's perspectives and needs addressed
- Secure funding or shuffle priorities

Freshwater Resources Group

Jess Weaver, Sonya Jones, Noel Hurley, Bob Perry, Edgardo Gonzalez, William Straw, Tom Baugh, Stephanie Fauver, Marshall Williams, Sue Cielinski, Claudia Hoeft, Chuck Sams, Scott Robinson, Kevin Moody, Dennis Barnett, Diane Duff, and Jenifer Schwarz

Priority Issues

- Water quality (stormwater mgmt) and quantity
- Health issues
- Conservation (energy efficiency)/land use
- Drought
- Education – how bring cc into discussion, humans are complicating things by moving to coast, etc., driven by big context issues, energy efficiency, demands
- Enhanced weather impacts, extreme events
- Power generation
- Competing demands – demand mgmt
- Floodplain management
- Comprehensive planning should include water resources– regional, local, state, tribal
- Regional planning – get on same timeline
- Climate variation – feast or famine
- Habitat - threatened and endangered species, riparian zones, freshwater species
- Migration/fragmentation
- Need info now! – science not always available
- Riparian zones
- Continuous monitoring – what to measure, units, methods (standards) – methodology/protocols
- Convince politicals to invest in science
- Land acquisition
- Uncertainty – how to address consistently
- Resilience – cannot prevent
- Long range planning
- Quality of life

Final Priority Issues

- Education
- Water quality
- Water quantity
- Ecological Issues
- Socioeconomic – land use mgmt, planning, zoning, incentive programs, related to education, vulnerability, cultural/traditional, brick and mortar projects,
- Research, Monitoring, Modeling

Water quality

- Stormwater issues
- Floodplain management
- Dissolved oxygen/eutrophication
- Water/wastewater treatment costs relocation due to SLR/intrusion
- Waste assimilation capacity
- Fragmentation - Dams/impoundments/bridges/culverts – discontinuities, storage
- Temperature
- Increased salinity - intrusion
- Sedimentation
- Ground water withdrawal
- Coastal plain mercury level increases
- Fish movement/urea concentrations
- Nutrients
- Population growth

Water quantity

- Stormwater
- Floodplain management
- Stationarity is dead
- Impoundments/offstream storage/interbasin storage
- Drought/extreme events (incl. ice vs. rain, rainfall intensities – will this become the norm?, deviation from norm)
- Saltwater intrusion
- Groundwater withdrawal/Aquifer storage and recovery (ASR)
- Ecological flows (4D) – 3spatial and 1temporal
- Geological sequestration (protecting aquifers)
- Population growth
- Water/wastewater treatment Cost/monthly bills
- xeroscaping
- Supply – for industry, other

Education/Outreach

- Government, businesses, general public, media, /engineers/community and land use planners, children, wastewater operators, resource managers
- Water use, production, recycling
- Web sites with cc elements
- Physical models – simple visual graphics/models
- What is already out there?
- Emphasize Urgency and consequences of inaction/action
- Sense of ownership for watershed issues
- Uncertainty – need to explain
- Make outcomes easy to understand
- Simple messages
- Incentives

Ecological Issues

- Corridors – species migration, species compositions
- Riparian zones
- Robust and resilient/vulnerability – how to describe, what does it need
- Landscape scale (floating scale) – scalable projects
- Time scales
- Connectivity – Road crossings/fish passages
- Imperiled species – beyond compliance, not just to avoid jeopardy - science for sustainability and recovery
- Habitat
- Invasives
- Wetlands
- Recreational/commercial fisheries – including sustain traditional species

Socio-economics (S-E)

- Ecosystem services
- land use mgmt
- planning/zoning
- incentive programs
- vulnerability
- cultural/traditional values
- brick and mortar projects
- business
- government
- revenues
- public access
- recreational use of waterways
- cost of living – water/wastewater costs/ag
- quality of life
- environmental justice

Research/Monitoring/Modeling

- Stationarity is dead
- Update bulletin 17B – flood frequency
- Decision analysis
- Quantifying impacts – positive or negative – of cons monitoring
- Effects of seasonal shifts
- Downscaling models
- Weighting models
- Climate effects network – monitoring
- Coordinate monitoring efforts

Final Outcome

Water Quantity

Research/monitoring needs:

- Better understand what flows will be with climate change (predict) realistic scenarios
- Monitoring networks – Accurate/site specific gauges for current flow – water quantity and biological
- Instreams flow required to maintain the system? – likely a range of requirements – we need process or analysis/guidelines/methodology applicable to region
- Predictive tools for species response to flows (geomorphology and biological)
- How does stream impairment affect biological/recreational/aesthetic endpoints?
- Temperature impacts
- Define where imperiled species are
- Cause and effect – impoundments, roadways, conservation (BMPs and other), influence diagram, $f(x) = y$
- Evapotranspiration
- How to quantify resilience? To put structures in lower impact areas
- Research on conservation practices – ag, home, etc.
- Better water use and loss numbers

Priority Next Steps:

Short Term

- State wildlife action plans – use summaries to identify priority sites and research needs, feds should let states know if they have work underway in these areas and vice versa – SE forest land assessment in GIS, with state action plans in works
- Virtual Center – Centralize our activities within a framework
- Review 401 and 402 state water quality certifications
- Better downscaled climate models – huge state need
- Weight competing models for immediate decisions
- Support and fund SARP efforts to define habitat

Priority Next Steps:

Long Term

- SE Water Resources Assessment – Section 5009 WRDA
- Monitoring networks – water quality, biological
- Predictive tools for biological response to changing flows
- Data management structure/repository