# Appalachian LCC Steering Committee Meeting and Workshop Notes – Day 1

**Setting the Stage - Danny Lee (USFS):**
There is no forum other than the LCC that allows me interaction with so many stakeholders in an area I care so much about. But the question remains, what are we going to do? Now agencies are taking the lead and providing assistance. We may want to adopt a Militia Model that focuses on high priorities that we should focus on that no one person or entity can do. The promise of the LCC is that there is not one person or agency that can successfully achieve conservation on this landscape scale. We need coordination to tackle the major problems as a collaborative gap.

**Conservation Framework – Ken Elowe (USFWS):**
Our conservation framework includes selecting priorities, developing a conservation design and tools, adoption of the conservation design, delivery of fundamental tools to aid in conservation, and finally evaluation and assessment of the framework and how it is being applied. Furthermore, the conservation framework is a communication tool.

**Mike Piccirilli (USFWS) –** There needs to be an incentive for partners engaged with LCCs. A trust must develop in regards to what they are investing in and what return they will get on their investment. As a body we should think how we can get greater engagement from partners, especially states.

**LCC Designation Priority Resources – Paul Kazyak (AppLCC/Maryland DNR):**
LCCs have identified priority resources in many ways. Some have used species as their priority resource, others landscape processes, and others either ecosystem types (broadly defined habitats) or ecosystem services ( flood control and clean water). For cultural resources generally, LCCS have identified historic/archaeological sites, art, folklore, and socio-culture landscapes as priority resources.

**DOI LCC Focus – Daniel Odess (NPS):**
With the National Academy of Sciences tasked with evaluating LCCs, we need to articulate how things are working. What is the responsibility of agencies within LCC? Objectives of the LCCs is to work at the landscape-level and work towards broader objectives of the partners involved. Now a new DOI Secretary Initiative plays into this.

Secretarial Order 3330 – Mitigation Approaches to Landscapes - looks at the objectives of conservation and focuses on mitigating towards broader conservation objectives. Where are the critical resources/habitats/biggest returns when doing mitigation?

In addition, the Secretary is interested in unlocking private capital – mitigation banking involving credits for example. Some committees could identify conservation needs not met/parcel of land open to development but serving as critical habitat. Industry could purchase that land, participate in a conservation easement with TNC say, and then they will earn credits to do development elsewhere.

**Cultural Resources Overview – Perry Wheelock/Jennifer Talken-Spaulding (NPS)**
National Park Service is the lead agency responsibility of and advocacy for historic preservation. Historic preservation, civic engagement, outdoor recreation. Five resource types – archaeological, cultural landscapes, historic structures, museum collections, ethnographic.

Landscape-level Planning for National Park Service/Cultural Resources – Scaling Up – build community of practitioners – large national goal – 3 projects – Chesapeake Bay, Glacier National Park, Southwest. Other hot topics include climate change, new thinking about traditional ecological knowledge, data management.

**Intro to Cultural Resources GIS – Deidre McCarthy (NPS)**
Add data from National Park Service into modeling for landscape conservation. David Whitehurst (VDGIF) – Hopefully we could look to cultural people to acquire that data.
**Perry Wheelock (NPS) –** Colleagues at state level, state preservation office are key people to get that data access.
**Rob Baldwin (Clemson)–** Good to hear you are moving towards larger-scale datasets that we can use for modeling.
**Evan Crews (TVA) –** TVA is in the middle of putting cultural resources data into GIS format.

**National Heritage Areas – Martha Raymond, Allen Sachse (NPS)**
30th anniversary of National Heritage Areas – remarkable in that it is a political process to establish these areas. There is value in bringing all parties to the table, recognizing the resources and information out there, generating conversation and networking. But for complete usefulness to the LCC, we need to figure out how to integrate and implement these NHAs into landscape conservation and design. A way to integrate with LCCs is through communications, with messaging that states NHAs are part of larger landscape. We envision opportunities that exist to add value and augment LCC objectives. Key why NHAs work is that citizens understand their community exists next to other communities, part of whole. Fill in gaps and create synergies among communities.
**David Whitehurst (VDGIF) –** One example I see is with the National Coal Heritage Area, expanding it or incorporating it to include the Tennessee River Watershed.
**Perry Wheelock (NPS) –** 19 of 49 NHAs within Appalachian LCC
**Daniel Odess (NPS) –** LCC could look at the NHAs as a model to work and achieve their objectives.

**Heritage Resources – Traditional Cultural Properties – Jennifer Talken-Spaulding (NPS)**

We all have some place that is significant. Others do too, so be open-minded regarding the sacredness of a place. Use, value, knowledge of place to incorporate into our planning. Reveal valuable traditional environmental knowledge. Several LCCs are driving research from tribes. Utilizing traditional knowledge. Local knowledge – tribes, heritage associations, land trusts. If you tell one story, you tell a hundred stories.

**Mark Thurman (TWRA) –** Sense of place is very local. Landscape conservation is large scale. How do you integrate those scales?

**Dan Odess (NPS) –** Tensions between place-based knowledge and scientific knowledge. If you understand tribal knowledge you can go back quite a way.

**Jennifer Talken-Spaulding (NPS) –** There is always the opportunity to understand and learn from the people around you.

**Facilitated Discussion on Day's Session and What's Next Discussion for Cultural Resources – Beth Porter(NPS)**

Major action items and highlights from discussion include:

➢ Review data needs in light of cultural resources discussion,
➢ There should be a role for the LCC to bring together local residents, industries, and conservation and act as a neutral convener
➢ LCC needs to set its policy direction first, which should come from facts matched with the values
➢ Understanding local values can help guide strategy
➢ Cultural resources inclusion can help LCC broaden its stakeholders
➢ There is more "stuff" out there that people value and the LCC should know what it is in order to set priorities
➢ Look at the common ground between biological and cultural, this could be a first step
➢ Potential Strategy:  Take an eco-regional approach.  Focus on a more focused area within the Appalachia LCC (say Appalachia coal country or Chesapeake Bay Watershed.) Determine the appropriate scale on which to assess the existing natural resource data sets and then match up with the cultural resource data sets on that scale.

Additional highlights and comments from discussion:

➢ Get local buy in early
➢ Hunting/fishing needs to be looked at in the larger context of cultural, recreational, and healthy populations
➢ How do we deal with Place vs. LCC scale
➢ How do we convey why the LCC boundary is important
➢ Build on a local sense of place and move to a larger scale
➢ Defining trade offs is important

- There is value in working together in a non-regulatory environment
- Inherent conflict between locals and those who own/control the land
- Legacy of loss of land to the feds
- What sense of place will the Appalachian LCC promote
- Need to know what the common interest is for people of the Appalachian LCC region
- We will always need more information, but we need to make the best use of what we've got now
- Every state has an historic preservation plan (updated every 5 years), this is a vital resource for the LCC
- We need to know more about the groups that are involved with these resources.  Where are the friends groups?  Where do the birders go?
- The concept of historical significance is critical:  what does "significance" mean?  It reflects values.

# Appalachian LCC Steering Committee Meeting and Workshop Notes – Day 2

**Introduction and Recap of Cultural Resources Discussion - Daniel Odess (NPS)**
When we talk about Historic Resources we really are talking about heritage and the significance those resources have to a people's culture.

**Design and Planning Responses to Marcellus Shale Development – Tim Murtha (Penn State)**
Decision to use resource in certain way (in this case developing natural gas) has created a niche and a new type of landscape in a way. Landscapes are our autobiography. Cultural resources become the wedge to discuss natural resources. Cultural resources and roads have an important role to play. Construction, active sites, changing landscape. Hundreds and thousands of trucks on the road, shipping water from the Susquehanna to sites – damaging roads. With the gas drilling there has been Aesthetic, Visual, Scenic reduction value.

Site to see all this work is Marcellusbydesign.psu.edu

Predict and show where drilling occurs, show how choice of placement affects landscape. Compare existing impacts with future scenarios. Illuminate projected changes in visual quality. You can capture 80% of what people care about by understanding what most people care about. Pick and choose scenarios – baseline scenarios and other opportunities about resources.
**David Whitehurst (VDGIF) –** We should focus on this work and how it can fit in with what we are trying to accomplish for landscape planning in the Appalachians.
**Tim Murtha (Penn State) –** I encourage you to run models of potential outcomes of various values over 20-30 years, package those to communities to see if they are

valid. Additionally, opportunities exist such as crowd sourcing. You can acquire public data to identify favorite location. For example, using Panoramia, we found the most popular vista in the region. When photos are uploaded we can see the number of likes. You can also acquire information from Twitter, which can factor into value-based models.

**Thomas Minney (TNC) –** Us around this table have certain values such as intact forests, watersheds. The general public may have some of these values but not all. How do we bridge those areas where are values don't match up?

**Tim Murtha (Penn State) –** I would focus on where they don't overlap – either temporally and spatially.

**Thomas Minney (TNC) –** But how do you identify those non-shared values. We grope around on these values instead of fully identifying.

**Ken Elowe (USFWS) –** I believe Communities become more articulate when they recognize loss, recognize what they are afraid to lose. Can you extract modeling to span 15 state area.

**Tim Murtha (Penn State) –** I wouldn't be here if I didn't think so. This is a first approach – we are getting to where we can paramaterize cultural resources. The next step would be to do it in an area that is not Marcellus.

**WNC Vitality Index – Jim Fox (UNC Asheville) and Angie Chandler (NPS)**
The State Legislature wanted to develop scorecard of how region was doing, taking the natural, human, built, economic spheres and tie all these factors with climate, fire, forests, water, economy, and culture. First you have the natural base layer; then human sphere is on top of that, coexisting with natural bounty; on top of that is the built environment (infrastructure, homes, businesses); and finally economic sphere. We conducted regional assessments to ensure sufficient management of features – infrastructure residential and commercial development, food production, energy, recreation. The Index was created to allow planners, decision makers, and the public information necessary to inspire discussion and craft decisions on issues impacting natural areas and getting towards sustainable growth. Vitality Index brings objectivity to communities. Before we were making decisions in isolation. We are now uniting the various silos into a landscape. We are also now taking a lot of these metrics and expanding to whole Southern Appalachians.

**David Whitehurst (VDGIF) –** What types of cultural resource databases are available to you?

**Jim Fox (UNC Asheville) –** We created a rich database of a lot of cultural locations. We started to integrate partner datasets, then others began bringing data in as well. State agencies provided most of the data.

**Jim Fox (UNC Asheville) –** It is critical to have a narrative around the datasets. Explain what users get out of it and make sure to link datasets together.

**Angie Chandler (NPS) –** The pamphlets we developed are vital to express to people the narrative of the data and how it all fits together

**Conservation in the Appalachians – Rob Baldwin (Clemson)**

There will be instances for discussion this afternoon to incorporate more cultural resource perspective into this project.  Seeking input in a decision-making framework; input on priority resources, methods/approaches, etc.  Want to move toward some action.  Conservation Planning & Goals - culmination of year-long spatial conservation planning process. <u>Need to clarify terminology, describe choices, solicit input, ask what data are lacking, and finally develop groups of technical experts for iterative feedback loops. Initial processes involves "board of governors" but will need technical expert groups to make decisions, share data, supply detailed knowledge. Need the right data to answer the right questions.</u>

STRAW MAN CONCEPT - prepared by smaller number of people to jump start discussions with a document that is likely to contain many, but not all aspects initially.  This project initially developed to identify targets with available data sets that address themes; priority resources frame a conservation problem and are represented by targets that can be mathematically included in a conservation solution. Current modeling effort is provisional, based on priorities supplied to the vendor to date.

TODAY -  this is a workshop to present progress to date, Straw Man; run new models based on Steering Committee input; define data sources for inclusion; discuss a process for deciding priority resources; define technical team; delineate benchmarks for the 1-year time frame.
**Daniel Odess (NPS) -**  Transparency of Model?
**Rob Baldwin (Clemson) -** Software is open source, free, and we will attempt to explain some of the back-workings of that today.

Brief overview of context of Appalachians: Proximity to urban areas; network of public lands (most multiple-use); "protected area" language is diverse (ref. USGS GAP system for classifying protected areas); 85-87% private lands; example of R4 National Wildlife Refuge with diverse lands ownership over 30 sites in NC, including management agreements, easements, etc. 4500 easements in AppLCC (1% of land area); generally, easements are at lower elevations, close to human habitation, on more biologically productive lands according to Paul Leonard's evaluations to date. Open Space Inst. w/ TNC are identifying climate resilient landscapes (funded by Doris Duke Foundation) through modeling effort.  Dr. Baldwin is on their team. Management is huge challenge of land conservation in Appalachia: disease, fire, recreation, harvest, invasives, etc.

AppLCC Assets & Challenges from geopolitical perspective: 15 states, SWAPs JVs, Regional NGOs (SAMAB), etc.  And, we need to look to these to see what has already been done; cumulative effect of all of this planning; essentially add up what's already being done for a "no regrets" approach that uses cumulative priorities to launch.

**Clyde Thompson (USFS) -** Is hunting considered "conservation"?

**Robert Baldwin (Clemson) -** Yes, it's a tool, as are habitat restoration and other practices.
**Mark Thurman (TWRA) –** I Noticed state-owned lands were not included in protected areas map show in slideshow. Also, TVA, COE, etc.?
**Paul Leonard (AppLCC) -** Yes, they were all included in assessments but slide may have only show federal layer.

**"No Regrets" - Paul Leonard (AppLCC)**
"No Regrets" definition: ID high value conservation areas for which there may be a general consensus as to their importance.  Not included - vulnerability/stressors + all possible datasets + consideration of data gaps articulated by previous work. AppLCC staff did an exercise of stock-taking from existing conservation plans of national or regional areas, so-called "103 Report" (see AppLCC website http://applcc.org/cooperative/sc/sc-past-meetings-and-materials/sc-meeting-workshop-april-22-24-2013/sc-programmatic-alignment-work-group/regional-programs-and-initiatives/103-report/view and for appendices to this document http://applcc.org/cooperative/sc/sc-past-meetings-and-materials/sc-meeting-workshop-april-22-24-2013/sc-programmatic-alignment-work-group/regional-programs-and-initiatives/103-report-appendices/view).

**Goals for this project:**
1) Spatially explicit
2) Fits into a major conservation Theme for AppLCC
3) Balances course- and fine-grained priorities
4) Covers most of the LCC geography

**Steps:**
1) Approached partners about existing priorities/areas and set up data sharing agreements (JVs, NGOs, multiple States, SWAP collaboration). Fine-grained datasets represented major habitat types (or AppLCC Science Needs Portfolio Themes http://applcc.org/cooperative/science-need-portfolio/2013-science-needs-portfolio/pdf-thematic-areas/2013-sn-portfolio-full-report/view), such as Grasslands, Wetlands, etc.
2) GIS layers were approached as overlays; Areas represented in multiple [agency/organization] Plans given a higher value. Scores 5-8 represented 3% of the Landscape; Scores 2-4 79%; Scores 0-1 18%. Many protected areas were found to be within or adjacent to the highest overlap areas. (Scoring is additive, i.e. score of 8 is maximum overlay, and represent assumed consensus of importance).
High concentration in central Apps and southern Blue Ridge. Can be used as basic input for further systematic conservation design.

**Thomas Minney (TNC) -** Difference between a plan and a map. Concerned that the no regrets map may be no be totally accurate?
**Robert Baldwin (Clemson) -** Yes, that's one reason why this is "No Regrets" phase of a continuing process.
**Gwen Brewer (MDNR) -** Did you include all priorities, or only highest?

**Paul Leonard (AppLCC)** - Yes, we did use scale continuums; so we did have to interpret and used top 50% priorities as cut-off for this exercise.

**Dan Odess (NPS)** - Plans like to live in protected areas so bias in counting plans that weight to existing protected areas.

**Paul Leonard (AppLCC)** - Yes, there is a lot of adjacency but scores are relatively low for protected areas – at least not as high as one might assume.

**Dick Cole (ACOE)** - In water resource planning we try to see if we can forecast what will happen (e.g. protected into the future?) but that might not be true of all areas. Secondly, this is a pretty course-filter approach that does not include many resources; e.g. areas along stream corridors; can't see fragmentation.

**Robert Baldwin (Clemson)** - It's a scale issue.

**Danny Lee (USFS)** - All federal protected lands are covered by a plan; did you include those?

**Paul Leonard (AppLCC)** - No, we did not go down to the site-specific plans.

**Robert Baldwin (Clemson)** - This is a great scaling discussion. Always will be an issue, but as we get into MARXAN discussion, some of this will become clearer as far as the approach we've used.

**Paul Leonard (AppLCC)** - The way I think about this, it's a starting point. Completely in need of partners' collaboration and input; more data!

**Robert Baldwin (Clemson)** - So is there consensus that we should continue to bring in finer scale data?

**Ken Elowe (USFWS)** - When we first envisioned this No Regrets, we envisioned it as conservation benefits that were widely shared and could be essentially assumed as priorities. The question of whether we should continue depends on what is our potential for doing conservation design based on conservation targets identified and timeline for this.

**Evan Crews (TVA)** - Observations: We need to decide if we want to use best available data for subareas with finer resolution, not available LCC-wide.  No Regrets seems that there are areas of high conservation value that are not in protected areas, don't have a stakeholder advocate with a plan and that seems to be an obvious gap in this approach.

**Planning Approaches – Robert Baldwin (Clemson)**
Overview of basic conservation planning and assumptions of MARXAN; terms like "planning" and "design" then turn over to Paul to continue planning process. Issues of scale of analyses for planning. Planning leads to design, and is a scientific process in a social context.  Iterative.  Paraphrase one definition: A comprehensive spatial strategy outlining what conservation actions to take and where. Basic design goal is a system of cores, corridors, and buffers that are targeted to meet specific conservation outcomes.  This is basic framework in conservation literature, but it's far more complex than this in execution. Our approach will combine coarse and fine filter approaches to conservation design.

**Ken Elowe (USFWS)** - Regarding "adequate size" are we missing objectives to define this?

**Robert Baldwin (Clemson) -** That's a terrific point. Yes, we are ultimately concerned with a metric but it's also very difficult to get there. We can talk about how to determine patch size. I'm open to that and would love to get there. Right now, we do not have the resources to do that, but it can be done.

**Thomas Minney (TNC) -** We also need to include natural disturbance processes as they are very important.

**Robert Baldwin (Clemson) -** Yes, there is a lot of work to be done in these areas.

**David Whitehurst (VDGIF) -** Question for NPS - Would this type of approach be applicable to cultural resources.

**Perry Wheelock (NPS) -** Yes, certainly this has applicability, maybe not all aspects, but definitely yes.

**Robert Baldwin (Clemson)** - History - 20 years of conservation planning and Rob went through 3 examples: 1) TNC Ecoregional Assessment; 2) USGS CSC Habitat connectivity model for a single spp (black bear) based on species-specific resistance (also done by Paul Leonard); 3) many global examples.

Criticisms - Large-scale mapping tends to be coarse and lacking in local relevance, ignore social constraints, accepts software operations even if obscure, relies too much on expert opinion, accepts map products as "the truth" rather than scenarios.

These outputs are filled with assumptions that we need to remain aware of. Challenges – Bridging fine-coarse filter gap (need better species-environment data); terrestrial systems favored and aquatic systems data and aquatic-terrestrial linkages needed. We need to engage in a serious, focused process that leads to a general consensus. This work to date has jump-stated the conservation design process, but we need to revisit priority resources and goal setting.

**WHAT DOES THE AppLCC NEED TO DO?**
Make institutional decisions about what are the priority resources. Devise measureable conservation targets. Model chosen = MARXAN – site selection algorithm - open source; free; can be used for terrestrial and/or aquatics. This modeling approach optimizes or "seeks efficiencies."

**Paul Leonard (AppLCC) -** MARXAN solves "a minimum set" problem. Want to get maximum set at minimum cost, but cost does not exist in many instances. We can use surrogates for cost, which we're doing. We can drive the model to solve biological and cultural challenges as once. Targets are set by participant's contingent on available data. Participants CAN USE WHAT TARGETS AND AT WHAT LEVELS. These are judgment calls; we have to do sensitivity analyses as another step in this process. Does NOT seek to optimize a connected network (needs to be coupled with habitat connectivity process). In order for this modeling effort to make sense, we need to execute the step of identifying priority resources.

**Dick Cole (ACOE) -** Is there a limit to the number of priority resources?

**Paul Leonard (AppLCC) -** Computationally speaking, there is no limit.

**Robert Baldwin (Clemson) -** We get into things like surrogate or representative species as numbers get "too large" and there are other things we might want to

include beyond species, habitat types…less than 20 might be ideal. What do you guys think?

**Todd Fearer (AMJV) -** For birds, we found that it was not a rigorous process that leads to decision they were comfortable with regarding what was a good surrogate. Regarding priorities, number we should have, whether to develop a hierarchal approach – maybe we need to step back and decide how we'll decide? Are they being monitored, does it fit in a spatial context, etc.

**Ken Elowe (USFWS)** – In NALCC, they have done some of this and might be able to jump-start us here.

**Lars Pomara (AppLCC/USFS)** - We need to look at species and their constraints, and plan for that. Can't go down the micro-road but there are useful approaches of mapping that display landscape dynamics at broad scales.

**Dan Odess (NPS**) - What is timeframe you are planning for? How do you deal with uncertainties? Area with greatest lack of confidence are ephemeral habitats/areas. Do we need to name some aspects that are highly uncertain and we do not want to analyze at this time because that analysis will not lead to sound decisions?

**Robert Baldwin (Clemson)** - That's another boundary that we need to always consider – uncertainty. How you value a priority need to be balanced against your confidence level. The more we can articulate the timeframe, the better the product will be.

**Mark Thurman (TWRA)** - Timeframe was something that I wanted to also ask about, and want to ask Todd how JV will benefit from this LCC modeling effort. Is this LCC project additive?

**Todd Fearer (AMJV)** - Yes, value added is with respect to broader LCC conversation, our focus is birds and desired future landscape vision is where it steps beyond birds. We can layer these priorities.

**Robert Baldwin (Clemson)** - We can represent multiple targets and goals in this modelling process.

**Todd Fearer (AMJV) -** This is a step in SHC process; it's iterative and is not meant to be a static product. As we think through it, we should remember that it's a cyclic process and not an end-game – addresses some of the timeframe questions, and others.

**Modeling Runs – Paul Leonard (AppLCC)**
What Does MARXAN Do? Utilizes complementary (areas chosen so that each complements targets/goals already in place). Start with data that are available for all or nearly all of the geography. Cover major themes.
STRAW MAN 1
STRAW MAN 1 used several course layers that were ecosystem, theme focused and one fine filter = National Register of HP Archeological Sites. Inverse relationship with rarity; simple inverse relationship (i.e. the more rare resource is on the landscape, the greater percentage we are attempting to represent it)
What "cost" are we minimizing? Clemson used a proxy for land value = census-block group Median Household income; assumption "it is more expensive to do conservation in areas where land values are high." Have to translate Resources and Costs in to a mathematically solvable conservation problem. Q: How do we

minimize the monetary cost of doing coarse-filter conservation? There is no optimal solution, so we start the model with areas that are deemed important.  Clemson chose to analyze 5-8 (3%) of the landscape to assume if anything fell into those areas then it was important to the LCC.

Post-hoc Prioritization – vulnerability can help further prioritize the geography according to an intuitive matrix that looks at irreplaceability vs vulnerability. Alternative Way to View vulnerability: Environmental Risk.  Use Risk Index as "cost" and thus drive the solution away from areas where conflict or risk is predicted to occur whole still meeting priority resource goals (e.g. climate change, road construction, energy development).MARXAN Limitations – lacks explicit inclusion of structural connectivity, but 3 possible solutions to this limitations being considered. Paul chose to use inverse of connectivity (i.e. fragmentation) as an inverse surrogate by using CIRCUITSCAPE model. First look at connectivity in AppLCC (1km resolution).

**Robert Baldwin (Clemson) -** We could include areas outside our boundary too if we wanted to look at connectivity to other ecological areas.  This model example is looking at structural connectivity.
MARXAN STRAW MAN 2:
Based on analyses of 6 states; partners in NE portion of AppLCC were able to provide more fine-scale datasets, especially for rare species. 11 species selected as representative by NALCC and those were used in this Straw Man.  Also, included 2 species that are unrepresented "special interest". Looked at minimizing fragmentation. Goal: minimize fragmentation; find solutions that include all secured lands under GAP status 1 or 2.

**Mark Thurman (TWRA) -** We have to get to the What? And the Where? We are a group of cooperators, and we all have priority areas in mind.  It seems it would be beneficial for each of us to bring those to the table and see where there is overlap; TN  has established "core opportunity areas."  These had anchor points on public land, etc.  It seems that we need to bring all that to the table.  The LCC's priorities can't be different than all of ours.
**David Whitehurst (VDGIF**) - If we analyzed at habitat level, then our partners could do the species-specific analyses.
**Perry Wheelock (NPS)** - If it's protected fully (ref. definitions of protected lands) then cultural resources would be protected also; and these would provide connectivity between cultural priorities also (just as natural resource priorities).
**Thomas Minney (TNC)** - We should develop a network of places that function for all.  No Regrets starts that process.  Years of experience tells me that at least 80% of priorities will be captured by No Regrets approach.  End result is a network that works as a baseline, and then we can fill it in.
**Ken Elowe (USFWS)** - LCCs should provide a regional context; what does landscape need to look like to be functional at that scale?  It won't mirror higher-resolution/fine-scale data – and it shouldn't.  It should better reflect (than what we've modelled in the past) how conservation links over large landscape of LCC.

**Daniel Odess (NPS) -** In the history of protecting lands, we keep passing the thresholds where we could have afforded to protect a place but we didn't, and now we cannot afford. That is an on-going process and as we think of the relative cost, there are things we could do now with difficulty, but will be out of our reach in as little as a decade (either due to cost of loss). Linked to that is value in preserving things close to where people are, so that people can connect to nature. This need will only become stronger, and LCC can help bridge that need for people/popn to connect to natural world.

**Model Refinement – Facilitated Discussion – Robert Baldwin (Clemson)**
We are going to do a demo where we ask each of you to assign a numerical score/value to targets by writing in a proportion you think should be represented in the "SC Value" column.

**Assessing Appalachian Ecosystem Services, Threats and Vulnerabilities – Lars Pomara (AppLCC/USFS)**
Just getting started, so this is a broad discussion. Conservation priorities: human benefits derived from natural systems; may be derived from highly transformed landscapes. Sustainability as long-term goal. Natural resources play a crucial role.

Project goals:
Inventory existing assessment efforts.
ID knowledge gaps and limitations of existing approaches.
Develop a framework for a comprehensive assessment: ID priority resources; ID threats and vulnerabilities; Assess prospects for sustainability.
Leading to Landscape Planning.
Integrate spatially explicit assessment leading to ecosystem service vulnerability for ecosystem planning.
Integrative assessment: What are the key resources? What are the key stressors? And, how are the ecosystem services upon which these resources are based vulnerable?
Spatially explicit context is helpful for analyzing these questions, and identifying key places where ecosystem services exist, and where they are vulnerable to drivers of change.
Upcoming: Workshops in Fall 2014 Northern states; Winter 2014 Central states; Winter 2014 Southern states. Participant input: key ecosystem services, completed and ongoing projects within the LCC; and an assessment framework. (Venues undecided, but one would be in Asheville, NC.)
Deliverables will be an online report, searchable database, online spatial database and viewer. Planning to publish as well.

**Perry Wheelock (NPS) -** Focus on Open Space as an important feature in landscape planning. Suggests include SHPOs in those 3 workshops.
**Lars Pomara (AppLCC/USFS) -** The place of resources is one element, but how that resource is used and where is another to consider in a spatial analyses.

# Appalachian LCC Steering Committee Meeting and Workshop Notes – Day 3

**Continuation Modeling Scenarios – Robert Baldwin (Clemson)**
We asked you yesterday to quantify potential priority resources; pulled out High and Low scenario from those results for analyses to be presented this morning.
Paul Leonard (AppLCC) - 3 Scenarios to be presented:  High, Low, No Regrets
"Best solution" covered 34% of geography in No Regrets analysis; 58% w Low; 80% w High. Plasticity means there are alt ways to achieve a priority goal.  Many mild range irreplaceability scores mean there were a lot of alt solutions.  Therefore, plasticity indicates options. In these 3 scenarios, No Regrets is the least plastic.  Low is Most Plastic. Interestingly, "tree hugger" or High scenario had mid-range plasticity.
CONCLUSIONS: Setting goals has significant impact on the landscape design, and this can be a drastic effect.  Need practical outcomes, and need to be able to prioritize. Setting goals should consider efficiency. Should be supported by analyses. Technical knowledge of target systems, species or other resources (e.g. cultural). Do we want to set boundaries for scenarios?  Is there too much or too little of the AppLCC to include in a design?
Is there an upper threshold (% landscape) that people feel comfortable with? Lower threshold (13% protected now)? 25-50% in literature

**Ken Elowe (USFWS)** - Our goals should reflect what society expects of us.  But we many never be able to accomplish that, however we need to be able to plan for that but prioritize.  To jump to what % is a completely arbitrary decision; we need to articulate what this exercise should represent; what will meet conservation need? Or, what can we reasonably accomplish?
**Will Duncan (SARP) -** We're tasked with bringing science capacity.  We need to remain objective and work outside the constraints on what we can accomplish.  At the beginning, we should stay open-minded and larger scale.
**Ken Elowe (USFWS) -** Let conservation design represent the goals as we feel we are responsible for sustaining, not what we think we can achieve.
**Danny Lee (USFS) -** General conversation is a good one but I have a different take; every pixel should be lit up; we ought to have a conservation narrative for every piece of land.  Not conserve here and not here.  Map needs to be specific about what we would target at different locations; different conversations depending on where we are on the landscape.
**Lars Pomara (USFS) -** I am mostly agreeing w Ken, but there are a variety of ways to use MARXAN.  It's not a good idea to get hung up on one map; we need a portfolio of maps that inform decisions in a spatial way.  Certain lands will "pop out."  If you cannot satisfy all of the goals, there are decisions that address which goals will drop out.
**Kendrick Weeks (NCWRC) -** I see a lot of potential for these tools to provide specific info about specific resources, as well as multiple resource goals being met by one pixel.  To achieve that, it seems we need to ID all of the resources.  I've always

had trouble w surrogate species approach; this approach is limitless as to analyses that can be done.  Why limit ourselves?  We don't have to do all that right now, but over time. I really think we need to scale up from science and implementation that's being done at state and other scales.  SWAPs will be done soon, and we can use those to develop individual models, species and habitat specific and then look at them "layered-up."  Then those that are interested in a particular resource can use that map to focus their work.

**Will Duncan (SARP)** - I like what Kendrick said.  A road map would help.  We roll out these maps that are broad in geographic scope, but they don't meet interests of end-users.  Maybe we need a roadmap of how this modeling effort will unfold; how data or expertise will be solicited?

**Thomas Minney (TNC)** - Regarding the idea of plasticity, we want to be able to find places to achieve plasticity but cannot always just move somewhere else.  What I'm hearing regarding mapping is that various people have various audiences they are seeking info for; we need to decide who the audience is: a special interest group, the public, conservation professionals?  I suggest that we need to focus on what we as professionals need first.  The decision-makers cannot deal with a map that shows every pixel as important.

**Kendrick Weeks, NC -** We could have a map just for natural resources, then for cultural, then another where they are combined.

**Thomas Minney, TNC -**  Regarding societal goals – part of the reason to have a group like this is to influence societal goals with our expertise (e.g. ecosystem services) then part of our responsibility is to "put that out there" for the public's benefit.

**Robert Baldwin (Clemson)** - There are several themes coming out regarding one or multiple maps and scaling.  Are we at AppLCC level or informing decision-making at local scales?  This is helpful.

**Bill Jenkins (EPA) -** I left yesterday wondering if we were going to articulate goals early in this process. Several things yesterday were helpful:  transparency.  Having those goals articulated early will help improve products and outcomes of eventual need to ID surrogate species.

**Rachel Muir (USGS) -** I'm synthesizing. I think what we are moving toward is a conservation portfolio, which can be expressed in maps, narratives, other tools.  I want to give some examples of where we have technical information that can be used to explain to the public why we do what we do.  For example, red knots and horseshoe crabs have to be together in one place and that location needs protection.  Those locations need to be placed on a map.  We know that the requirements for species, such as yellow perch (game spp) need <10% impervious surface or breeding is precluded.

**Robert Baldwin (Clemson) -** How does role of AppLCC differ from individual partners here at table?

**Rachel Muir (USGS) -** Our role is to ratchet the planning and actions to a larger scale to ensure we can sustain these populations at their full ranges.  We can then inform state or local managers as to their role in that larger-geography conservation.  There is one other element:  less scientifically based but broadly we

want green areas and open landscapes; if we can for example protect 20% of a landscape and then focus on maximizing benefits from that smaller geographic area.

**David Whitehurst (VDGIF) -** ID on a larger landscape what areas are important, clearly articulate that, and if it is done with integrity using sound science then it gives local interests a good foundation for their work. I do not think this group is going to be getting down to the local levels and special interests that I've been hearing from some this morning.  We can help them and provide support, but our mission is regional. If only 30% of population understand maps, then we will need more than maps in the end; we will need a portfolio of narratives and other interpretations as well.

**Robert Baldwin (Clemson) -** Our role is to do spatial planning.  The rest, a design portfolio, has to come from the LCC.

**David Whitehurst (VDGIF) -** My understanding of where we are is that Clemson will do the spatial planning, and we need to find some common approach to move forward here.

**Robert Baldwin (Clemson) -** We're talking about methodology, what are priorities, then setting goals.  Our demo was to show that if we're setting lofty goals then that has a big impact on your planning outcomes.  We hope to work with the technical group to have a more fine-grained discussion. MARXAN is trying to demonstrate multiple approach options.

**Daniel Odess (NPS) -** If we look at a pixel, we might have one or several landowners.  To be successful, we need to develop a tool that allows individual landowner to make decisions. Looking at a 15-state landscape is interesting but may not be helpful.

**Robert Baldwin (Clemson) -** At what level a decision is made is always an issue. The question or thought process is to put those local decisions in a regional context.

**Evan Crews (TVA) -** TVA is developing a cultural resource spatial tool with thousands of resources depicted.

**Ken Elowe (USFWS) -** This is a good and interesting discussion. I think we are doing a natural thing to jump to how we will use this, when we need to get back to what is the design. We need to articulate the goals and priorities; that will define the landscapes necessary to sustain those.  We can tailor that to meet the goals we have when we go back home.  It's good that we're thinking about how we'd use the tools, but we need to focus back on how we'd design that.

**Perry Wheelock (NPS) -** I encourage the natural resource managers to look for opportunities in areas such as Rt 15 where we know we have a cultural resource focus.

**Pat Ruble (WMI) -** New SWAP plans are coming out; our product should complement those and therefore I think we do need to think about end-use.  There are lots of plans in place, with substantial resources expended to develop those, and this design needs to support those.

**David Whitehurst (VDGIF) -** We're somewhere between goals setting, conservation design, and priorities.  The goal setting comes from all the work that the partners have done – that's where we get the goals. Our design should be based on the info coming from all those plans, and if it does not then we are not using that science and we are not supporting our partners.

**Kendrick Weeks (NCWRC) -** We have not put down a list of potential goals. What are potential goals?

**Rick Durbrow (EPA) -** We don't have a clear problem statement of what we're expecting this to do.  If that was clear then we'd be able to build on that.  The landscape approach will give decision-makers the bigger picture that they can consider when making local decisions.

**Lori Pelech (USFWS) -** Presented a proposal developed to allow LCC SC to agree to a process, but use their technical staff to ID priorities.

- Establish team of ~15 experts suggested by SC by Sept 15th; recommendations sent to Paul Leonard at Clemson
- By 9/26, LCC auxiliary staff will contact Technical Team members
- Team will set targets by Oct. 6
- SC will be asked for concurrence, and to facilitate the datasets needed (significant impediment to paying for this data, and this needs to be overcome)
- By mid-Oct, Technical Team will assess the quality and appropriateness of the datasets for use in landscape planning/design; are they high enough quality for modelling?
- A select number of species will be modeled for suitable habitat

*[**IMPORTANT NOTE:**  Later in the meeting, this schedule was thought to be too ambitious and tabled to be revisited.]*
ASK 1:  We are asking the SC's approval to charge D. Whitehurst [LCC Chair] with oversight for contacting states to get datasets needed.  This would include datasets for species previously obtained by NE R5 as well as additional species that might be priorities for AppLCC.
ASK 2:  Funding for 100 hours of a modeler's time [*no budget estimate given at this workshop*].

**Perry Wheelock (NPS) -** We need to seek cultural resources datasets and ID cultural targets in addition to natural resources.

**Dave Hartos (OSM) -**  Agree with previous comment, the SC needs to focus simultaneously on cultural resource datasets and assessments.

**Lori Pelech, USFWS -** The original proposal was specific for species; seen as an addition to process Rob and Paul are under-taking. *[The group did not vote per se on whether or not to include cultural resources in immediate modeling activities, but did seem supportive of collecting cultural resource datasets in addition to natural resource ones.]*

**Paul Johansen (WVDNR) -** You've seen a concept of how we might move forward.

**Bill Reeves (SARP) -** Why are we approaching this from a species standpoint?  This is a landscape committee/partnership.  At this landscape scale, why are we getting down to a species level?  We are not doing that in SWAPs.

**Ken Elowe (USFWS) -** The habitat work [in SWAPs] is for species.

**Rachel Muir (USGS) -** There are still habitats where we do not know species requirements. We can identify habitat but not species associated with it (e.g. calciferous fens).

**Gwen Brewer (MDNR) -** We need to add into schematic what we have and what we do not have. There is a bias to the rare species in state efforts. Need to check our biases. *[Suggesting technical team can do that.]*

**Mike Piccirilli (USFWS) -** Why are technical team members choosing species list but not priorities? What is role of SC? If States are involved, I would propose a partnership opportunity for LCC to match States and attract more Federal Aid funds to joint State-LCC goals.

**Todd Fearer (AMJV) -** If we are focused on habitats; what is source of habitat information?

**Paul Leonard (AppLCC) -** The habitat information base can be an issue. NatureServe seems to be best product. Yes, and there are other products available that we can discuss with those who want to get in weeds.

**Lori Pelech (USFWS) -** Yes, there are arbitrary lines that are obvious if you look at some of these mapping efforts; we need to understand the limitations of these.

**Gwen Brewer (MDNR) -** I do not want idea of functional landscapes to get lost, in addition to species and cultural resources; e.g. impervious surfaces, connectivity, etc.

**Bill Reeves (SARP) -** I need to be able to articulate where the funds will go, who will be doing the modeling?

**Ken Elowe (USFWS) -** If you choose to do this work, we'll figure out how to budget for that.

**Mark Thurman (TWRA) -** Do you need modeling or species expertise?

**Paul Leonard (AppLCC) -** Taxonomic and ecosystem expertise is what we need.

**Paul Johansen, (WVDNR) -** 1) Do we want Chair to vet the recommended list of participants for technical team? And, 2) What other partners besides States want representatives?

**Ken Elowe (USFWS) -** The timeline is not realistic. The *Ask* needs to come from the Chair to be taken as serious and a fruitful activity.

**Evan Crews (TVA) -** As people submit names, it would be useful for us to see the names so I know if our interests are covered; could create efficiencies.

**Paul Johansen (WVDNR) -** So, when people submit names, we want to see all nominations? Or before David (Chair) submits the names he vets them through SC?

**David Whitehurst (VDGIF) -** We can share whole list before we whittle it down.

**Will Duncan (SARP) -** We seem to have cart before the horse. What is our vision? What is roadmap? If we had that, then we'd be better able to know we have the right expertise on technical team.

**Robert Baldwin (AppLCC) -** Do you think the process of SC and TT identifying priority resources will cover that concern?

**Will Duncan (SARP) -** Possibly, but there were discussions of how to incorporate cultural resources and that must be part of it.

**Paul Johansen (WVDNR) -** Other *Ask* was for Chair to reach out to State Directors and ask for fees to be waived.

**Paul Johansen (WVDNR) -** Summarized outcomes

- ➢ SC members will submit nominees to LCC Chair for Technical Team (TT) to work with the SC on drafting a list of priority species; nominees can be from any source (not just States or Feds).
- ➢ LCC Chair will distribute nominee list to entire SC for comment, then select a group of approximately 15 for TT.
- ➢ LCC Chair will correspond with States, and other appropriate data sources (e.g. NatureServe), to obtain datasets of interest to the LCC, especially species occurrence data (and key cultural resource datasets?). Correspondence will include request for fee waivers.
- ➢ TT will utilize AppLCC Guiding Principles [see handout] for decision-making.
- ➢ LCC will begin to collate information and datasets for cultural resources; no decision yet to model these?
- ➢ TT will determine which datasets are of sufficient quality to support species-specific modeling; narrow list of species to a "few."
- ➢ Modeling estimated at 100 hours (but this did not seem to include KY and possibly other states with significant percentage within LCC boundary AND no costs were discussed, so this needs to be revisited).
- ➢ No specific line-item budget for species modeling work was discussed; funds to be distributed from FY15 LCC budget to appropriate partners who may include R5 USFWS, Clemson University, and others.

**Jean Brennan & David Whitehurst:** There will be an AppLCC SC call soon to keep these discussions going.