

The Present and Future Possibilities of Landscape Scale Conservation: The Appalachian Landscape Conservation Cooperative (AppLCC) Ethnographic Study¹²

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Executive Summary

Introduction and Overview:

The Landscape Conservation Cooperative (LCC) program was created under a secretarial order to develop regional conservation partnerships – under the Department of the Interior – that aimed to coordinate regional conservation planning in response to climate change impacts. Because they were partner-driven efforts, each of the 22 LCCs followed a distinct trajectory and implemented diverse projects, meaning that there is value in exploring how specific LCCs, such as the AppLCC, approached regional conservation. This study assesses the successes, limitations, and impacts of the AppLCC, with the aim of providing insights for future regional conservation partnership.

Methods

The results presented here are based primarily on 18 semi-structured key-informant interviews with current and former Appalachian LCC (AppLCC) steering committee members. Interview questions were developed through an iterative participatory process with AppLCC key informants, and interviews were conducted during November and December of 2017. Additional qualitative insights have been gathered through participant observation, including attendance at AppLCC meetings, assisting with AppLCC projects and administrative work, and participating in webinars. Finally, digital and print LCC documents also inform this study.

Summary of Results:

¹ Funding for this study was provided by the Appalachian Landscape Conservation Cooperative through the Wildlife Management Institute, The National Park Service, and the Hamer Center for Community Design (Penn State).

² This executive summary provides an overview of the larger report that can be found here: Brown and Murtha 2018 (https://applcc.org/research/applcc-funded-projects/integrating-cultural-resource-preservation-at-a-landscape-level/natural-resources-fellowship/executive-summary-present-and-future-possibilities-of-landscape-scale-conservation/at_download/file) and accompanies interactive graphics that can be found here: Brown 2018 (<https://maddiebrown.github.io/LCC/LCChome.html>).

The study offers a rare integrative perspective at what is a crossroads for the Landscape Conservation Cooperative (LCC) program. As described in a recent review (NASEM 2016), all 22 of the LCCs evidenced substantial progress and clearly demonstrate the need for landscape scale conservation design and planning. Our study focused on the organization of the Appalachian LCC (AppLCC) in an effort to understand how this progress can be transferred to the future of the LCCs or similar landscape scale conservation efforts. We also examine some of the challenges facing LCCs and similarly scaled programs. The results of this study are organized under five key themes:

1. Natural Resources;
2. Cultural Resources;
3. the AppLCC Organization;
4. the AppLCC Partnerships; and,
5. the idea of the LCCs.

For each of the above themes, we summarize some of the key observations. For further discussion, please see the full report.

Natural resources

Although the LCCs were created to conserve regional natural and cultural resources in response to climate change, the LCCs' work has thus far focused primarily on natural resources, and more specifically on the conservation of key species and habitats as evaluated from a federal USFWS perspective. This emphasis is reflected in both the types of projects funded by the LCC and the core partners included on steering and technical committees. The AppLCC's approach to natural resource conservation focuses primarily on developing large-scale models and conservation planning tools. The primary science deliverables for natural resources include: 1) the landscape conservation design (LCD) for terrestrial and aquatic natural resources; 2) the riparian restoration tool; 3) species vulnerability assessments; 4) karst mapping project. Perhaps more important than specific science products is the LCC's progress towards shifting the focus of natural resource conservation from a site- and species-centric approach towards landscape-level thinking.

Partners were asked to describe the main threats to conservation in the Appalachian region. The main stresses mentioned by AppLCC partners include: 1) habitat fragmentation, 2) issues related to fish and wildlife species conservation, 3) climate change, 4) poor water quality. Residential development and other human impacts are viewed as the main drivers of ecological degradation.

The AppLCC is considered by many partners to be a conservation support and information delivery entity, rather than a direct resource manager or implementer of conservation. The perceived purpose of the AppLCC is to provide information about large landscape issues that the partners can then use to implement projects. Despite perceptions of the AppLCC as a conservation support entity, their initial projects filled a broader gap in landscape conservation planning. The partnership productively developed a process for defining landscape scale conservation for both cultural and natural resources, as well as a scientific framework for regional conservation planning. Upon completion of these models, the AppLCC will be able to transition its work to more directly support conservation initiatives.

Cultural Resources

When considering cultural resources as theme, it's important to acknowledge that the Appalachian LCC (AppLCC) is unique in its approach to integrating cultural resources both within the landscape

conservation design and at the landscape scale. Other LCCs integrated cultural resources at different scales and through different procedures (NASEM 2016). The AppLCC supported a pilot study to model cultural resources using approaches similar to those established by the completed Landscape Conservation Design for natural resources (Leonard et al. 2017). Such a process has never been previously conducted for cultural resources. Rather than integrating cultural resources into the LCD from its initiation, instead, the natural resource conservation focus of the AppLCC led cultural resources to begin to be integrated into their conservation planning projects only after the natural resources LCD was completed. Simply, the conservation outcomes and actions were limited from the perspective of cultural resources. The lack of integration of cultural resources into certain LCC activities does not always indicate a lack of awareness about or interest in cultural resources among cooperative partners. Partners espouse strong opinions about the threats to cultural resources in Appalachia. The majority of threats named are similar to those threats to natural resources, pointing to potential consolidation of effort for integrated resource conservation. These threats include: 1) energy development, 2) commercial and residential development, and 3) climate change. A fourth major threat identified is one that is unique to cultural resources, namely, the threat of cultural and economic change.

Most partners interviewed reported that their work involves cultural resources. Indeed, many partners provided detailed accounts of the various cultural resource projects they worked on throughout their careers. Descriptions of AppLCC cultural resource-related work were less detailed, with most partners primarily sharing a positive assessment of the AppLCC's work, without details about what has been completed. Sentiments seem to be that the AppLCC has made a great start, and in fact is the LCC which has made the most progress on cultural resource conservation, but little on-the-ground conservation work has been completed. Partners remain optimistic about the future progress that the AppLCC will make towards integrated natural and cultural resource conservation.

Future project ideas involving cultural resources include: 1) encouraging new sources of income (e.g. ginseng and morels); 2) using AppLCC tools to prioritize areas for outdoor recreation and tourism development; 3) assessing the local economic impacts of the AppLCC's work; 4) form a dedicated cultural resources committee; 5) develop a case-study pilot project for local level cultural resource conservation; and 6) develop a standard lexicon for cultural resources, similar to the ones developed for natural resources.

Organization

Although the AppLCC is generally considered successful, there are some areas where it could improve. Partners felt that the scope of both the AppLCC's work and the partnership base could be expanded. This would incorporate more diverse perspectives into the AppLCC and allow it to increase its positive impact on all aspects of conservation in the Appalachian region. A second major limitation of the AppLCC is the lack of clarity about the LCC's purpose and goals. Partners felt unsure what the LCC was meant to accomplish and how they could contribute towards these goals. Finally, the AppLCC did not emphasize communicating the value of their work or the utility of tools and science to either the general public or other groups outside the core LCC partners. This has impacted the breadth of the impacts of AppLCC activities, largely restricting the impacts to those who are already involved in LCCs. All of these limitations of the AppLCC and LCCs more generally are opportunities for growth and improvement in future work.

The efficacy of the LCCs as conservation institutions seems constrained by the lack of jurisdictional authority possessed by the LCCs. The LCCs lack regulatory power and generally do not make decisions about on-the-ground conservation. In addition, some tensions may arise between regulatory and management agencies, and there may be some worry that LCCs will become major decision-making body, rather than individual USFWS regions. In some cases, there are also unclear distinctions from LCCs and Joint Ventures (JVs). In all these examples, the unclear role, jurisdiction, and authority of LCCs limit the efficacy of their work and level of partner engagement.

Partner opinions about the role of the LCCs differed, but generally focused on the idea that LCCs are support agencies rather than conservation delivery agencies. Partners agreed that a main role of the LCCs is as a forum for relationships and cross-agency communication. In addition, the LCC is seen as providing information and science to support partner conservation efforts and to make the partners' jobs easier. It was important to numerous partners to state that the LCC is not meant to conduct on-the-ground research, but rather leave implementation up to the states and other partners. Partners were split on whether they identified as part of the LCC or outside the LCC. Moreover, numerous partners expressed frustration at the unclear role of the LCCs.

Finally, the culture of the AppLCC is clear and shared. Partners view the overall LCC as hardworking, resourceful and cooperative. Consistently, partners championed the efforts and outcomes of the AppLCC especially in the context of little funding and resources.

Partnership

Perhaps the greatest loss without the LCCs - and the AppLCC in particular - will be the loss of the partnership itself. Through the AppLCC, partners built novel relationships, forged new collaborations, and participated in a forum for sharing ideas with other regional conservation leaders. Partners appreciated the ability to bring together diverse perspectives to advance conservation, align the interests of different groups, and share information. Another novel aspect of this partnership is its self-direction. Although partner perceptions of the degree to which the LCCs are self-directed vary, in general, the ability to determine project priorities that align with partners' goals is considered a unique benefit of the LCCs. While partners appreciated the opportunity to participate in a regional conservation partnership, the partnership aspect of the LCCs was not without challenges. In particular, some partners felt the LCC's membership could have been more diverse. In addition, some partners expressed concern over the uncertain role of partners within the partnership.

Some frustration was expressed at the decision-making process for LCC projects. Oftentimes the LCC hired contractors to complete scientific work rather than relying on the data or expertise of partner agencies. Some felt the LCCs could increase efficiency by directly working with federal agencies who already possess certain resources, rather than recreating the resources via paid external contractors. Other issues related to the role of partners within the LCC include some perceived tensions between federal and state agencies, tensions over funding, tensions between regulatory and management agencies, and tensions between scientists and administrators about decision-making at the higher-level LCC network level. Moreover, the way in which LCC borders are defined may promote single agencies to hold greater influence than other partners over the activities, structure, and processes of particular LCCs.

The idea of LCCs

Perhaps the most enduring aspect of the Landscape Conservation Cooperatives is the idea the program brought to the center of conservation discussions. Clearly there is a need for landscape scale considerations of conservations for cultural and natural resources (NASEM 2016). The idea of the LCC is shared, strong, and enduring.

The AppLCC faces a number of challenges both internally and externally. Interviewees were asked to describe the main challenges they face in participating in the AppLCC's activities. Additional challenges that the AppLCC faces as a cooperative are also identified. These challenges encompass several categories: 1) challenges for the cooperative's existence; 2) challenges to partner participation; and 3) challenges to cooperative meeting its goals. Within each of these categories, interviewees identified several primary types of challenges, namely the lack of: 1) funding; 2) time; and 3) political or organizational support.

The main losses without the AppLCC include: 1) the partnership itself, 2) landscape-level conservation efforts, and 3) the science and tools produced by the AppLCC. Overwhelmingly the benefits of the partnership itself are considered the greatest potential loss without the AppLCC. The partnership has been a leader for conservation in the Appalachian region and provided an important platform for building consensus and relationships among conservation practitioners throughout its geography. Without the partnership, the partners will revert to working in isolation. The effects of this will include a loss of efficiency in conservation efforts. LCCs enable large-scale effects and efficiency for products. Moreover, the regional conservation products are made more successful through the collaborative process by which they are created. Consequently, a major benefit of the AppLCC for advancing regional conservation capacity is that its products are often collaboratively developed and extend beyond the scope of any single agency's work. As one partner put it: "The LCCs have served as both a clearinghouse and forum for good data production. The LCC is not a monolithic entity, but a place where people can come to discuss these [conservation and data needs], we need that forum, that's important"

A primary loss without LCCs will be a loss of coordinated efforts towards landscape level climate change planning. The LCC Network was one of the only entities in the United States to implement climate change planning at a large regional scale, and without them little future progress will be made. As one partner put it: "Those issues aren't going away, so without the LCC, it would be less efficient, costlier for each unit of mission success." As such fragmentation of efforts to plan for climate change and other conservation issues may be a significant impact of the loss of the LCCs. In addition, natural resource management in the United States is often divided according to species, land use or environmental issues. These individual management units largely work in isolation, or in task-oriented partnerships. The LCCs instead offer a platform for holistic landscape conservation and enable partners to operate beyond political boundaries.

Conclusions

The LCCs mark a major milestone for large landscape, multi-stakeholder conservation in the United States. Landscape-level conservation will become even more important in the coming decades as ecosystems increasingly experience impacts from climate change, land conversion, and population growth. This points to the important role of LCCs in laying an ideological foundation for operating at a large landscape level among federal and state agencies in the United States. The same foundation may also inform landscape conservation efforts among local government, industry actors, and NGOs. These

LCC partnerships brought diverse conservation partners together to coordinate their efforts and goals to promote conservation across the region. The AppLCC in particular also contributed valuable datasets, decision-support tools, and conservation science for the Appalachian region. Moreover, the AppLCC uniquely supported projects integrating cultural and natural resource conservation. The LCCs also faced challenges that limited the overall effectiveness of the partnership. As such, the AppLCC was sometimes limited by a lack of clarity about the role of the LCC among partners, as well as by a lack of funds or external organizational support. Consequently, future regional conservation partnerships might benefit from incorporating additional diverse partners and working on more diverse conservation issues. The LCCs offer insights for both existing and future paths to advance landscape-level conservation.

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AppLCC Partner Interview Report

INTRODUCTION

The Landscape Conservation Cooperative (LCC) program was created under a sectorial order to develop regional conservation partnerships, under the Department of the Interior, that aimed to coordinate regional conservation planning in response to climate change impacts. Because they were partner-driven efforts, each of the 22 LCCs followed a distinct trajectory and implemented diverse projects, meaning that there is value in exploring how specific LCCs, such as the AppLCC, approached regional conservation. This study assesses the successes, limitations, and impacts of the AppLCC, with the aim of providing insights for future regional conservation partnership. The report is presented in five primary sections: 1) natural resource conservation; 2) cultural resource conservation; 3) LCCs as organizations; 4) LCCs as partnerships; and 5) the idea of the LCCs.

METHODS

The results presented here are primarily based on 18 semi-structured key-informant interviews with current and former Appalachian LCC (AppLCC) steering committee members. Interview questions were developed through an iterative participatory process with LCC key informants. Interviews were conducted during November and December of 2017. Additional qualitative insights have been gathered through extensive participant observation, attendance at LCC meetings and webinars. Finally, digital and

print LCC documents also inform this analysis. To protect interview participant anonymity, interviews were not recorded. Therefore, all ‘quotes’ represented in the following document are paraphrased from interview notes. These quotes can be taken as general sentiments rather than specific formal statements given by interviewees.

This work aims to both offering recommendations to the LCC and generating broader observations about multi-stakeholder landscape-level conservation partnerships. Although partners interviewed were primarily associated with the AppLCC, many partners are also involved in other LCCs and conservation partnerships. Consequently, in some cases, their commentary is specific to the AppLCC, while in others the comments are more generally applicable across LCCs.

A. Natural Resource Conservation

CONSERVATION FOCUS OF THE APPALACHIAN LCC

Partners in the AppLCC had strong opinions about what types of conservation issues the LCC should and should not focus on. Many stated that the LCC should focus primarily on landscape-level conservation issues as well as issues that are better addressed through collective efforts than by one agency alone. Endemic species surveys and small-scale projects are considered outside the domain of LCC actions. This commitment to landscape-level projects is also mirrored in the positive appraisal of the LCCs as a strong force for promoting landscape-level thinking across North America.

I. LANDSCAPE-LEVEL THINKING

Many partners agreed that a major benefit of the LCCs for promoting conservation is their work towards shifting conservation actions towards a landscape-level approach. An important outcome of AppLCC activities has therefore involved expanding conservation practitioners’ perspectives towards adopting landscape-level thinking. Landscape-level thinking involves broad foci at ecological, spatial, temporal, and jurisdictional scales. According to many partners, the landscape-level focus of the LCCs is unique among conservation partnerships in the United States. Partners believe in the importance of conservation at a broader spatial scale and believe there is a need to think beyond political borders in order to conserve species. The LCCs are a forum for partners to think about how their work fits into a broader regional conservation context. Moreover, LCCs align well with the need to think about the downstream effects of individual decisions and projects.

The LCCs emphasize conservation actions for whole ecosystems. According to partners, participation in LCCs has helped agencies move beyond thinking only about species to adopting a broader ecological perspective in their work. Moreover, there is increasingly recognition that individual species conservation efforts also benefit from a landscape approach. Additionally, in recent years, there has been a shift away from the previous ecological paradigm of stability and repetition in ecosystems, to thinking about change and instability. This shift towards future instability will be critical to address coming changes to the climate.

Partners mentioned numerous examples of landscape level work that is ongoing or planned by both individual partners and the broader AppLCC partnership. Much of the individual partners’ landscape-level work mentioned involved additional partnerships and joint projects such as SECAS, the Gulf Hypoxia project, and the SE Natural Resource Leaders Group. There is a general consensus that landscape-level work can help consolidate the efforts of individual agencies and conservation

practitioners to better promote large landscape conservation. In addition, many partners identified the importance of working in partnerships to achieve a regional perspective. The AppLCC has worked on landscape level conservation through both specific projects (e.g. the energy forecast model, habitat classification system, and Chytrid fungus workshop) and by aligning the interests and goals of numerous conservation groups. For example, the LCD offers an outline of the regional conservation priorities. Furthermore, the LCCs enable broad scale conservation planning, through projects such as the joint habitat classification system, which began in the North Atlantic LCC and is currently being expanded to encompass the area overseen by the AppLCC. These multi-partner groups offer a more diverse and resilient approach to landscape conservation, since each group may be able to accomplish different types of conservation actions. Moreover, nested partnerships are able to tackle conservation at multiple scales.

Some partners felt that the LCCs have not always been successful in their large-landscape approach. For example, some issues, such as largescale precipitation pattern shifts, occur at a scale larger than the LCCs. To address such issues, coordination between multiple LCCs will be required. Additionally, although the LCCs were primarily created in the context of climate change, some partners felt that although the LCCs were meant to focus on climate change, they in fact focused on other issues. The future emphasis of the LCCs will need to be clarified to improve conservation outcomes.

How the LCCs advance landscape-level thinking across multiple scales

- 1) Ecological scale
 - a) Has helped agencies move beyond thinking just about species to adopting an ecological perspective
 - b) Shift away from previous ecological paradigm of stability and repetition in ecosystems, to thinking about change and instability
- 2) Spatial scale
 - a) LCC tools enable states to think at a broader scale rather than specific sites, promote regional decision making.
 - b) Need to think about the downstream effects of individual decisions and projects
- 3) Temporal scale
 - a) LCCs think about long-term future of ecology, where species will move, etc.
 - b) Need to think about coming ecological changes
- 4) Jurisdictional scale
 - a) LCCs have demonstrated the need for landscape-scale partnerships
 - b) Keep big picture in mind when taking smaller geographic actions
 - c) Need to think beyond political borders to conserve species
 - d) *“The LCC gets people thinking across ecological boundaries rather than political. Transcends political boundaries”*

Quotes related to the AppLCC’s landscape approach

- *“The single greatest change that has occurred in conservation over the last 8-10 years is a shift away from thinking at local scales to thinking about interconnectedness and large-scale framing of problems. This large landscape idea is a product of bringing people from multiple states and areas across the region and sitting down and thinking about a whole portfolio of needs within the region of LCC. Can get out of particular silo and see how neighbors are doing things and the interdependence between what neighbors are doing and own actions. Shift in big thinking that also influences on-the-ground decisions.”*
- *“Very little point to maintaining biodiversity of mussels if you can’t control what is being dumped into headwaters.”*
- *“Can’t lose sight, if you want to conserve wildlife biodiversity in US, it has to be at the landscape level.”*

II. LANDSCAPE LEVEL WORK

<ol style="list-style-type: none"> 1) Work by partners <ol style="list-style-type: none"> a) Working in partnerships is important for gaining a regional perspective. b) SE Natural Resource Leaders Group c) SE Ecological Framework: developed plan for hubs and corridors for the region d) Gulf Hypoxia and SECAS work e) Grant from USFS on collaborative restoration, working on prescribed burns in Southern Appalachia f) Connectivity work 2) Work by AppLCC <ol style="list-style-type: none"> a) AppLCC works on a smaller scale than other LCCs b) Blueprint gives an outline of the conservation priorities in the region c) LCCs work on science at a broader landscape scale d) Energy forecast model e) Habitat classification system for New England was developed by the NALCC, and is now being expanded with AppLCC to encompass entire area f) Chytrid fungus workshop g) LCCs are main group thinking at a landscape scale 3) Has brought together smaller conservation action plans under a large umbrella <ol style="list-style-type: none"> a) Consolidation of effort at a regional scale 4) Why promote landscape-level work? <ol style="list-style-type: none"> a) A landscape approach also promotes the conservation of individual species b) Nested partnerships can tackle different needs c) These partnerships bring multiple agencies together to conserve natural resources
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III. TYPES OF ISSUES APPLCC SHOULD FOCUS ON

Interviewees were asked to name the main types of conservation issues that the AppLCC partnership should focus on, both theoretically and in the next five years. Most participants agreed that the LCC should focus on landscape-level issues, defined as those crossing state boundaries and that can be best addressed through partnership efforts, rather than an individual organization. The main focus of the LCC therefore should be to promote this type of thinking and develop landscape-level conservation strategies. Indeed, the ability to bring together diverse partners across a large spatial extent is seen as a primary unique role of the LCCs. The following table outlines some of the conservation issues that partners felt the AppLCC should focus their efforts on.

Federal	State
<ol style="list-style-type: none"> 1) Implementing the Blueprint 2) Specific issues <ol style="list-style-type: none"> a) Fragmentation b) Connectivity both aquatic and terrestrial c) Aquatics d) Forest health e) Pollution f) Invasive species and disease g) Climate change h) Water availability and quality i) Migrating birds j) Biodiversity conservation k) Watersheds that cross jurisdictional boundaries 	<ol style="list-style-type: none"> 1) Overarching issues such as climate change, water availability, etc. that can be best addressed by a higher-level partnership <ol style="list-style-type: none"> a) For example: energy forecast model is more meaningful at large spatial scale. Water flows model is also more meaningful at large scale. 2) Issues that cross state boundaries 3) Specific issues <ol style="list-style-type: none"> a) Landscape level issues, not specific issues b) Climate change, sea level rise, habitat change c) Water resource management d) Invasive species and diseases <ol style="list-style-type: none"> i) White nose, Hemlock Adelgid, Emerald Ash borer e) Terrestrial Connectivity <ol style="list-style-type: none"> i) Species that need large landscapes

l) Farming and timber regional policy development 3) Can influence decision-making and development as a “landscape conservation group” thinking about larger impacts and providing information to decision-makers 4) Use existing tools to implement conservation on the ground. 5) Keep big picture in focus, work on promoting landscapes that will be ecologically resilient and high functioning over the long-term 6) Integrate cultural resources into LCD	f) Habitat diversity at the landscape scale g) Future energy and housing development forecasting 4) Compile and synthesize information 5) ‘Science needs’ work a) Identifying science needs b) Map important areas c) Delivering science, filling gaps d) Integrating cultural and natural resources e) Landscape conservation design f) Tools for partners in the region g) Exploratory case studies of on-the-ground conservation 6) Connecting communities of practice 7) Conservation planning a) Identify important areas for climate change resilience b) Identify needs and threats for region c) Work on a landscape scale 8) Conservation targeting and implementation
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IV. FUTURE PROJECT IDEAS

- LCD-RELATED PROJECTS
 - A next step should be to take the LCC products out and use them to promote conservation in the Appalachians
 - Use LCD to identify priority areas and focus partner activities there
 - Follow the Blueprint/LCD
 - Develop LCD at finer scale
 - [LCDs] have worked well at the landscape scale but some species, mussels, snails, etc. need a finer scale. [This] could assist with organizing smaller scales across the region
 - Take accountability for improving conservation outcomes in areas that have been identified as priorities by the LCD.
- CULTURAL RESOURCES
 - Integration of historical and cultural resources and human health in activities
 - Develop a cultural landscape conservation plan
- OUTREACH
 - Create LCC ambassadors responsible for more local geographies to bring tools to communities and gather bottom-up input
 - Communication to agencies about climate change
 - Communicate value of existing LCC products
 - Should communicate the existing products of the LCC to practitioners and communities
- DEVELOPMENT AND COMMUNITY PROJECTS
 - Regional economic development activities to promote non-extractive economic aspects of natural resources, such as ecotourism
 - Need bottom-up, community-led projects and planning
 - Think about the Post-coal transformation of Appalachian communities. LCC could use tools to prioritize areas for outdoor recreation or tourism economic development
 - LCC could assess the economic impacts of their work on local communities. Communicate the economic implications of their work for both cultural and natural resource conservation.
- CONSERVATION PLANNING
 - Develop adaptive management strategies to help prevent the spread of invasive species impacting salamanders, or to help address climate change issues
 - Could work with partners to identify the 6 most essential ecological elements in the Appalachian region, such as hydro-geography, landscape condition, and disaster resilience. Then could assess how each partner organization is impacting the landscape along these indicator elements. This approach could be applied to both natural and cultural resource conservation. Cultural resource indicators might include the impact on native plant species, social/cultural systems, and economics.
 - LCC should work on conservation targeting.

- SCIENCE DELIVERY
 - Watershed mapping and scoring
 - Cedar glades: mapping and modeling
 - Habitat diversity tracking: would benefit from knowing proportion of private/public lands, deforestation on each, different types of habitat. Knowing this would enable species status evaluations and monitoring plans to ensure mobility to be optimized.
 - Focus on biological aspects of water flow aligns with EPA mission
 - One project would be to map water availability and develop a water budget model for Appalachia. USDA and EPA and state agencies would all need to cooperate on this
 - Work on projects related to SWAPs
 - Develop a standard habitat description system
- INFORMATION SYNTHESIS
 - Pool collective regional knowledge (in the vein of regional ocean governance structures)
 - Could develop a common website for the SWAPs
 - Synthesize or analyze the inventory or monitoring efforts that are ongoing in the region
 - This would help the states more easily use the information to guide actions
- MISCELLANEOUS
 - Work on projects that provide funding to states
 - Upper Cumberland: Coordinating regional conservation throughout watershed. LCC could help on projects with idea that the whole system needs to be healthy in order for species restoration to succeed
 - Regulatory environment may be changing. The LCC needs to think about how to get conservation done in this new regulatory context. Need to think about how industry and government will interact.

V. TYPES OF ISSUES LCC SHOULD *NOT* FOCUS ON

Many partners felt there are certain types of issues that the LCCs should not focus its efforts on. In general, partners agreed that many issues are too small scale for the LCCs to focus on, whether these are biological surveys, focus on spatially constrained endemic species, or the restoration of individual buildings or sites. On the other end of the spectrum, some issues were considered too large-scale to be relevant to LCC activities. Such large-scale issues include climate change and political issues. Finally, some partners felt climate change might be better addressed by the CSCs rather than LCCs and that the LCCs should stay out of decision-making and advocacy, particularly for controversial issues.

- 1) Small scale issues
 - a) LCC cannot focus on both the local and landscape level, the smaller projects should be implemented by someone else
 - b) Preserving individual buildings, but rather thinking about the resources beyond the “brick and mortar”
 - c) Local endemic species or habitat restoration. Instead, the LCC is the location where conversations about getting various entities involved to help plan the local projects may take place.
 - d) Local projects on specific archaeological sites
 - e) The LCC should not conduct biological surveys of specific areas, but focus on large landscape work
 - f) LCCs should stay out of management
- 2) Issues that are too largescale: climate change, political gridlock
- 3) Controversial issues: the LCC can provide information but maybe not resolve these issues.
 - a) Climate change may be covered by CSCs, not an LCC priority

CONSERVATION OUTCOMES

The LCCs were developed to address natural and cultural resource conservation issues at a large-landscape level in the United States. To what extent do partners believe the LCCs have advanced

conservation? About 94% (n=16) of respondents felt that the LCCs have advanced conservation. In addition, about 92% (n=12) of respondents believe the LCCs play a distinct role in advancing conservation. Partners from State Agencies tended to value the communication and information providing role of the AppLCC as its main contribution towards advancing conservation. The information provided by the LCC through its websites, communications, and broader activities enables States to communicate with one another and contextualize their work. Federal actors also mentioned the information provided by the AppLCC, but overwhelmingly focused on the role of the LCCs in building partnerships and promoting collaborative conservation work. In addition, they reported that the role of the LCCs in shifting conservation ideology towards landscape-level thinking is primary conservation legacy of the LCCs. Both federal and state respondents agreed that the LCC has not yet addressed specific conservation issues or impacted on-the-ground conservation. Opinions diverge over whether implementation should be a role of the LCC, or if the LCC's role is to provide information for others to implement conservation. The table below outlines some of the main reasons partners cited to explain why the AppLCC did or did not advance conservation.

<p>1) Specific projects that advance conservation</p> <ul style="list-style-type: none"> a) Marcellus shale work b) Barriers, culverts and small dam identification c) Energy forecast model d) Water flows <p>2) Yes, advanced conservation:</p> <ul style="list-style-type: none"> a) Through partnership building and consolidating information <ul style="list-style-type: none"> i) By bringing states and NGOs into conservation decision making process ii) By bringing together diverse people, effective model for advancing conservation iii) Consensus building approach, and standardizing systems iv) Effective partnership model v) Fosters conservation through large scale communication, beyond what states can do vi) Places own work in larger context vii) Provide information to partners who implement projects viii) By producing information to advance conservation b) LCC has funded projects that allow others to do conservation <ul style="list-style-type: none"> i) Facilitating conservation c) Ideological advancement <ul style="list-style-type: none"> i) By encouraging “big picture” thinking about climate change ii) Advancing landscape-level thinking iii) Paradigm shift in thinking about stability to instability, long-term planning horizons d) Advanced science and communication around conservation issues <ul style="list-style-type: none"> i) Tools, information, etc. that advances capacity of all players in region. ii) Communicating science iii) AppLCC web portal, consolidation of information <p>3) No, did not advance conservation:</p> <ul style="list-style-type: none"> a) Not sure if any specific conservation issues have been addressed by the AppLCC b) LCCs role is to provide basic information rather than address specific conservation needs c) Incremental progress, not anything that wouldn't have been accomplished anyways without LCC involvement d) No on-the-ground impact yet, this is where we need to go next e) Conservation is advanced locally, not yet by AppLCC
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- f) Hasn't done as much as it could've if conditions were different
- g) Yes, but not at implementation. Has produced information, but needs to get the tools and information out to local people so they can get conservation done

THREATS TO CONSERVATION

Partners were asked to describe the main threats to conservation in the Appalachian region. Their responses were grouped according to the main environmental stresses and direct threats to conservation were categorized according to the standard framework developed by Salafsky and colleagues (2008). Salafsky et al. (2008) divide environmental stresses into “Ecosystem or Community Stresses” and “Species stresses”. The main stresses mentioned by LCC partners include: 1) fragmentation, 2) issues related to fish and wildlife species conservation, 3) climate change, 4) poor water quality. Partner responses primarily focus on environmental stresses that generally affect all wildlife, rather than specific species. This focus aligns with the goals of the LCC, which works at a broader landscape level, rather than one the conservation of any single species. Human development and impacts are considered a major threat to regional conservation. The table below outlines each of the threats to conservation in the Appalachian region as reported by interview participants.

Threat	Responses
Agriculture and aquaculture	None mentioned
Biological resource use	✓ Water use
Climate change and severe weather	✓ Climate change ✓ Sea level rise. Particularly important for lighthouses and stationary historical sites, which cannot move and adapt like species can
Energy production and mining	✓ Energy development, which causes: <ul style="list-style-type: none"> ○ Habitat loss ○ Fragmentation ○ Damaging cultural resources ○ Pollution and water use related to this ○ Salinization of water ✓ Pipelines
Geological events	None mentioned
Human intrusions and disturbance	✓ Development ✓ Human population growth ✓ Lack of planning for natural resource conservation ✓ Site disturbance through construction
Invasive and other problematic species and genes	✓ Hemlock Adelgid ✓ White nose syndrome ✓ Invasive species ✓ Emerald Ash borer
Natural system modification	✓ Significant changes in habitat ✓ Changes in water supply ✓ Wildfires in TN
Pollution	✓ From energy development ✓ Gulf Hypoxia ✓ Certain rivers have very poor water in region

Residential and commercial development	<ul style="list-style-type: none"> ✓ Growth of human settlements. ✓ Second home development in Appalachia ✓ Urbanization ✓ Mentioned frequently as a stressor ✓ Price of land increases, making it difficult for federal agencies to purchase and protect it
Transportation and service corridors	<ul style="list-style-type: none"> ✓ These are an issue: roads, pipelines.

B. Cultural Resource Conservation

Most partners interviewed (60%, n=15) directly reported that their work involves cultural resources. Indeed, many partners provided detailed accounts of the various cultural resource projects they have worked on throughout their career. Descriptions of LCC cultural resource-related work were less detailed, with most partners primarily sharing a positive assessment of the LCC’s work, without details about what has been completed. Sentiments seem to be that the LCC has made a great start, and in fact is the LCC which has made the most progress on cultural resource conservation, but little on-the-ground conservation work has been completed. Partners remain optimistic about the future progress that the LCC will make towards integrated natural and cultural resource conservation.

Future project ideas involving cultural resources include: 1) encouraging new sources of income (e.g. ginseng and morels); 2) LCC tools could aid in prioritizing areas for outdoor recreation and tourism development; 3) LCC could assess local economic impacts of their work; 4) form a dedicated cultural resources committee; 5) develop a case-study pilot project for local level cultural resource conservation; and 6) develop a standard lexicon for cultural resources, similar to the ones for natural resources.

Partners also espoused strong opinions about the threats to cultural resources in Appalachia. The majority of threats were similar to those threats to natural resources, pointing to potential consolidation of effort for integrated resource conservation. These threats include: 1) energy development, 2) commercial and residential development and 3) climate change. A fourth major threat identified is one that is unique to cultural resources, namely, the threat of cultural and economic change. As rural community demographics and livelihoods change, there is a fear that traditional lifeways and cultural practices will be lost, and with this a loss of cultural heritage and sense of place will follow. One respondent described the complicated natural-cultural landscapes in a changing Appalachia: *“[One threat is] growth, as cultural heritage changes in the way things were and how their lives change. [In a] historic Appalachian community, people are building homes in the natural landscape, but also want craft breweries. People want to go there for the beauty, mountains, and water, but building a house on the mountain changes the view.”*

CULTURAL RESOURCE ISSUES AND WORK

Many partners identified numerous projects where their work overlapped with cultural resource ideas. In addition, some partners further discussed the work that the AppLCC has completed in or to assess cultural resources. Interview responses are grouped according to whether they are employed by the state or federal government. These responses detail, 1) the types of work the AppLCC has engaged in related to cultural resources; 2) future projects the AppLCC could engage in; 3) partners’ engagement with cultural

resources; 4) and threats to cultural resources. These four themes outline the existing and future approaches to landscape-level cultural resource management. In general, interviewees espoused interest in working on cultural resource conservation, but little consensus about what the best approach to cultural resource conservation might be. This is indicative of the lack of a cohesive idea about what landscape-level cultural resource conservation might look like for the LCCs.

State
<ol style="list-style-type: none"> 1) LCC work: <ol style="list-style-type: none"> a) LCC worked on cultural resource integration with Penn State b) Not sure if actual conservation has been accomplished c) Seems focused on visualizing distribution of natural and cultural resources d) Tried to integrate cultural resources into work, but happening slowly. Partners involved are mostly natural resource agencies. Been a challenge to think about cultural resource issues at a landscape scale. 2) Future actions: <ol style="list-style-type: none"> a) They could develop a standard lexicon for cultural resources, like exists for natural resources b) Could work with urban landscapers, underrepresented groups, and immigrant communities 3) Partners' engagement with cultural resources: <ol style="list-style-type: none"> a) Primarily work on cultural resource reviews as required by law <ol style="list-style-type: none"> i) Permitting for dam removal ii) Protect cultural resources during proposed development, through land restoration and acquisition b) They also work in public education and outreach <ol style="list-style-type: none"> i) Presentations to school children <ol style="list-style-type: none"> (1) Interfacing with public, safety and values for dam removal c) In the Tennessee River Basin, the TRBN group decided to bring back the "adopt-a-stream" program, which helps get schools and the public involved by teaching them how to measure water quality in local watersheds. This will be an important output of the TRBN group when completed. d) SAMAB did some cultural work 4) Threats to cultural resources: <ol style="list-style-type: none"> a) Energy development, such as seen in North Dakota and the Marcellus Shale. The "gold rush" mentality can damage unique cultures of rural communities and the cultural resources there. b) Development: unplanned development can impact cultural resources c) Many threats are threats that also affect natural resources: land use change, development, fragmentation d) Demographic change in Southern Appalachia. Low and middle-income people being displaced by second home developers. Traditional income sources are lost, shift towards tourism and second home development. e) Climate change f) Rising land prices: makes it difficult for federal government to purchase important land and structure 5) Human dimensions as a threat to natural resources. 6) Issues related to different user groups and conservation funding. Some state wildlife protections are funded by consumptive-users (i.e. hunters and fishers) who pay for permits. There is some debate over charging more for non-consumptive users to access public land, but then there may be backlash if those non-consumptive users are then excluded from decision-making processes.

Federal
<ol style="list-style-type: none"> 1) LCC cultural resources work: <ol style="list-style-type: none"> a) Mission of LCC is conserving both natural and cultural resources b) AppLCC has strongest effort for cultural resource conservation c) Part of the efforts include these interviews (that Maddie Brown conducted)

- d) South Atlantic LCC has worked on cultural resources by thinking about greenways and different natural and cultural resources
- e) Still room to improve for AppLCC:
 - i) Although they've research approaches to cultural resource conservation, have not yet seen the applications of this work
 - ii) AppLCC has started but made limited progress as of yet
 - iii) No tools for cultural resources, unlike for natural resources
- f) Partners are more aware about cultural resource issues now, and that human concerns need to be integrated into conservation design
- g) Work from Penn State
- 2) Potential future engagements:
 - a) Could encourage new sources of incomes: ginseng and morels
 - b) LCC tools can help prioritize areas for outdoor recreation and tourism development
 - c) LCC could assess the economic impacts of their work in local communities, for both cultural and natural resources
 - d) Dedicated cultural resources committee
 - e) *"1) dealing with landscape resiliency. 2) regional economic development activities where we try to get people, local folks to realize natural resources can be economic assets, and not just extractive perspective, but also ecotourism. 3) integration with historical/cultural, human health: is an area that needs more focus. 4) maybe create LCC ambassadors with geography they are responsible for, getting communities involved in tools, get community input in what their priorities are."*
 - f) Developing case studies of key places or resources, such as Tennessee River Basin or "Lost River" in Virginia.
- 3) Threats to cultural resources:
 - a) Climate change
 - b) Economic change
 - c) Lack of funding to protect historic sites and areas
 - d) Lack of funding for communities, financial well-being for citizens
 - i) Communities that are "affluent enough to be concerned with cultural resources in the area"
 - e) Overuse
 - f) Development
 - g) Changing communities: *"New people coming in can be positive or negative, depending on how they value community."*
 - h) *Loss of institutional memory: "We forgot history and culture, what it means. It's one thing to read a book about traveling and living on the river and another to have been that person. How [is this] addressed? Within the tribes there are efforts to preserve information, from fluent speakers, but the best [approach] is person to person [interactions and knowledge sharing]."*
 - i) Difference between threats in urban and rural areas
 - j) Cultural resource community itself
 - i) People get hung up on process and lose sight of the bigger picture. Need to think broadly
 - k) Prospect of having NEPA or NHPA substantially revised
 - l) Not sure what capacity is lacking
 - m) Growth
- 4) What are cultural resources?
 - a) In some cases, a lack of awareness about cultural resources.
 - i) *"[People will say] "Oh yea, we forgot to talk about cultural resources at this meeting. What's a cultural resource? It can range from a monument or church, building, or a prized hunting habitat in W.V. as a culture of a place that involves hunting. Cape Cod is an iconic seashore. So what are we working on?"*
- 5) Importance:
 - a) Appalachian region has a rich cultural history, important to protect
- 6) Partners' engagement with cultural resources

- a) In NPS: *“Lots of research, writing and analysis, on environment or landscape history and how this fits into cultural landscapes. Not just archaeological environment but also views and vistas, scenic experiences...focus on settlement and community divisions. not just cultural resources in isolation but also human interactions.”*
- b) NPS has often taken the lead on cultural resources
- c) One interesting effort a partner did was a collaboration with the Date Department of Historic Resources to document and save information about dam construction before it was removed. They documented unique things about the dam house and made a kiosk for the past dam site.
- d) A partner project involved working with landowners with a history of waterfowl hunting in the Chesapeake Bay. Worked to preserve history of hunting practices.
- e) Through SAMAB is involved with Cherokee tribes, working on medicinal plants and river cane. River cane can be planted for both baskets and riparian restoration.
- f) Mitigation: an important and common way of engaging with cultural resources
- g) Human health: particulates and cool urban areas
- h) Economic value: quail hunting and recreation
- i) Some efforts to preserve cultural heritage come from new farmer generations, “handmade in Appalachia group”. Involvement in making the Appalachian Vitality Index (partner involvement, not formal LCC)
- j) If timber is a cultural resource, then sure, we work on it, also on nontimber forest products
- 7) What the AppLCC could have done differently in terms of cultural resources work
 - a) The AppLCC could have integrated cultural resources into their projects from the beginning.
 - b) *“Making the case that this isn’t about competing for the piece of the pie, rather broadening the pie, the stakeholder base, and constituencies. Helping people who have been focused on wild turkey restoration to see cultural resources: it’s not about the number of turkeys, but human-turkey interaction, human interaction with one another and the turkeys.”*

BENEFITS FOR BOTH HUMANS AND NATURE

Although much of the LCC work does not incorporate human and natural systems or attention to the benefits for both humans and nature, many of the partners interviewed espoused views of the importance of incorporating both of these aspects of conservation work. They gave multiple examples of how their own work in their home organizations paid attention to conservation projects with benefits for both humans and nature. As these sentiments are expressed by partners but not currently included in LCC activities, they may be a potential path forward for LCC work. This notion extends the idea of the role of humans in nature from disturbers and creators of isolated cultural resources to key elements in ecosystems. One partner noted that it would be beneficial to focus on changing energy economies in the region, and how this is changing communities. Some of the examples of partner work incorporating human and nonhuman ecological benefits are listed below.

- One partner’s work focuses on economic benefits or neutral effects on landowners from projects, not on easements. “Emphasis is on win-win with landowners”. One example is with cedar: cedar has been spreading in the west, which reduces sage grouse habitat and ranchers’ grazing land. Sage grouse like to be in habitats where they can see the extent of the landscape. So when ranchers cut cedar, they have more grazing land and the sage grouse has more habitat
- Another partner effort was working with a woman interested in medicinal plants, who planted seed and fruit bearing shrubs and trees, with economic value, as riparian buffers. This both benefits environment and community. Win-win for landowners who can sell paw-paws and raspberries and also restore the riparian buffer. This was an effort with USFWS and an Appalachian NGO.
- *“Everything needs to be looked at and worked on together to help both communities of people and natural resources”*

INTEGRATED RESOURCE MANAGEMENT

Many partners feel it is beneficial to integrate cultural and natural resource management, though the path through which to accomplish this integration is not always clear. In some cases, natural resources are also cultural resources, like with the hunting and fishing for certain wildlife and fish species. In other cases, there is a direct tradeoff between cultural and natural resource conservation. Perhaps more commonly, some sites exhibit both synergy and conflicts between natural and cultural resources. For example, one revolutionary war site is also important for natural resource conservation, and there are many diverse stakeholders involved. Viewing stakeholders for natural and cultural resources as allies rather than as competitors helps broaden the support base for accomplishing integrated resource management. Although the LCC has not yet completed any integrated cultural and natural resource projects, it has made this a priority and worked to conceptually advance these ideas. The AppLCC is also considered the first and only LCC to be integrating cultural and natural resources. The AppLCC's recent TRB Report Card project also illustrates links between the values of cultural and natural resources. Once they have developed the concept of integrated natural and cultural resource management, the LCC will be ready to prove the concept and take conservation to the next phase. Some partners felt the initial conceptual work is already complete and the LCC should move towards implementation. As a future direction, one partner suggested that the LCC might work on prioritizing cultural resource conservation using an LCD.

- Importance of considering the human dimensions of natural systems. Need to understand the value of green space to humans.
- LCC work that productively incorporates cultural and natural resource conservation:
 - TRB area prioritization of natural and cultural resource values
 - By identifying natural resources with cultural values, they can expand the constituency for conservation
 - LCC is working to integrate human dimensions of conservation
- Sometimes partner work incorporates natural and cultural resources to improve conservation planning. One example is a project at St. Simon's island on the Georgia Coast. Efforts to protect land of both ecological and cultural significance.
- Sometimes there is a lack of integration of cultural and natural resources and projects suffer as a result:
 - Southern Appalachian Spruce Restoration Initiative (SASRI) wanted to plant 1000 spruce seedlings with help from a nonprofit plant conservancy, nursery, Backcountry Horsemen, other land conservancies, Daughters of the American Revolution. USFWS was also involved on behalf of the Northern pine squirrel. They ran into conflicts between cultural and natural resources, as they did not realize they would need a historical assessment. In the end they had to do a rapid archaeological assessment and delay the project. This is an example of natural and cultural resource conservation being out of sync. However, now people are more aware about historic preservation in the area as a result of this issue.
- Can be difficult for some to see connections between these different resource types.

ENVIRONMENTAL JUSTICE

Several partners mentioned environmental justice as a main component of their work. In general, the LCCs tend to overlook environmental justice in their daily operations. Thus, the mention of these issues by partner interviewees is interesting and may point to future directions for LCC work. By incorporating both human and nonhuman justice issues, the LCCs work may gain more leverage than by focusing on natural resources alone. In particular, environmental justice is part of the EPA mandate, which includes a focus on clean waterways and human health. The EnviroAtlas might be combined with some of the modeling and conservation efforts of the LCC. State partners also raised concerns about environmental justice. Conservation efforts might be more successful if human concerns are also taken into

consideration. This is particularly true for waterway issues, both in terms of pollution, sedimentation, and water flow; since upstream impacts may be in one state while the downstream effects are located in another state. This is an area where the LCCs, as regional conservation bodies could help coordinate conservation efforts across both states.

One partner described a moment where conservation and environmental justice did not support one another in the Upper Cumberland. In this area, there were conflicts between fish surveyors and local people, which caused the project managers to rethink about engagement and outreach in those communities. This made their work better by promoting engineering and science, and funding students to work on conservation scholarships.

WORK WITH NATIVE AMERICAN TRIBES

Although partners agreed on the importance of LCCs working with Native American Tribes, opinions differed regarding whether or not the current level of effort towards this goal is adequate. Most partners felt that the level of engagement with Native American Tribes could be improved in future LCC activities. A number of partners described past and current projects working with Tribal governments, these may provide a baseline upon which LCC activities could be built.

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| <ol style="list-style-type: none">1) LCC work:<ol style="list-style-type: none">a) Could incorporate tribal interests in future workb) Jean gave a presentation at a tribal annual meeting.c) They have worked to engage tribes, but has not been successful yetd) AppLCC gave a talk at the National LCC level about what works and does not work for engaging tribese) A lot of LCCs talk about helping tribes, but the state government has been the priority for LCC actions. State proposals take precedence over tribal proposals.2) Partner work:<ol style="list-style-type: none">a) Work with Native American tribes on projects related to important plants and wildlife.b) One group has staff ethnobotanist working on traditional plant usec) Involve tribes in planning, such as for hydropower projects. |
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C. APPLCC as an Organization

CHALLENGES FOR THE APPLCC

The AppLCC faces a number of challenges both internally and externally. Interviewees were asked to describe the main challenges they face in participating in the AppLCC's activities. In addition, other challenges that the LCC faces as a cooperative are identified. These challenges can be divided into several categories: 1) challenges for the cooperative's existence; 2) challenges to partner participation; and 3) challenges to cooperative meeting its goals. Within each of these categories, interviewees identified several main types of challenges: 1) funding; 2) lack of time; and 3) lack of political or organizational support.

I. CHALLENGES FOR COOPERATIVE EXISTENCE

Major identified challenges to the cooperative existence are related to funding and external support for LCC activities. According to participants, the AppLCC received less funding than other LCCs, which

translates into fewer staff members and reduced project funding. The second major challenge identified is the perception that people who are not directly involved in the LCCs are unaware of the LCC's activities and importance. The lack of awareness extends to both the general public and political entities. The lack of awareness translates into reduced external support for the LCCs. This also makes it difficult for certain partners to remain actively involved in LCC-related work. As one partner put it: *"When you talk to other people who are not involved in LCCs, it's difficult to convey to people [the importance of what the LCCs are working on] ...you have to be embedded in it."*

<ol style="list-style-type: none"> 1) Lack of public and political understanding of threats from climate change 2) Political reorganization and lack of federal support <ol style="list-style-type: none"> a) The LCCs were made as an executive order, not congressional law, leaving them vulnerable to political change 3) Funding <ol style="list-style-type: none"> a) Need commitment from USFWS for future b) Uneven funding across LCCs c) Without federal funding from USFWS, it is unlikely the partnership will continue 4) Lack of understanding of LCC importance <ol style="list-style-type: none"> a) Need to communicate value of LCCs and where to find its products 5) Lack of public support for LCCs <ol style="list-style-type: none"> a) Little connection between LCC activities and the public

II. CHALLENGES FOR PARTNER PARTICIPATION

Many partners from both federal and state agencies reported their participation in LCC activities is constrained by time and funding. It can be difficult to devote time to LCC activities, particularly when it is not directly linked to a partners' primary workflow. In addition, it is often difficult to find time and funding to attend in-person meetings and trainings. Finally, the borders of the LCC and its lack of a certain future made it difficult for partners to fully participate. Possible solutions might include linking LCC work with the SWAPs.

Federal	State
<ol style="list-style-type: none"> 1) Budget and time constraints <ol style="list-style-type: none"> a) Lack funds b) Travel restrictions c) No time among members of home organizations to learn about or engage with LCC work d) Cannot contribute money e) Involved in many different partnerships 2) Uncertainty about future of LCC <ol style="list-style-type: none"> a) Is it worth participating? b) Some agencies don't see future of LCCs as certain, so budget for LCC engagement is cut 3) Lack of accountability or communicating value of LCC actions <ol style="list-style-type: none"> a) Better articulation would facilitate partner's ability to participate b) Need to link LCC outcomes with own work 4) Scale of LCC <ol style="list-style-type: none"> a) There are 6 EPA regions and many states within AppLCC, so difficult to coordinate, vs. South Atlantic LCC which has fewer states and primarily follows EPA Region 4. b) Too many partnerships. For example, if there are 2 LCCs within Chesapeake Bay, it can be difficult to know who is in charge 5) Role within partnership <ol style="list-style-type: none"> a) Some partners see selves as information providers, not consumers b) Some partners feel they don't fit within a norm for participating in the LCC 	<ol style="list-style-type: none"> 1) Budget and Time constraints <ol style="list-style-type: none"> a) Funding and time b) Difficulty of traveling out of state c) Time to actively participate 2) Scale of LCC <ol style="list-style-type: none"> a) Several LCCs and JVs within state, difficult to find time and people to participate in each one 3) Relevancy to own work 4) Conveying the value of LCCs to own organization <ol style="list-style-type: none"> a) State agency leadership needs to see value, particularly for "on-the-ground conservation" rather than information products b) How can LCC help partners work more efficiently, solve problems and achieve goals? c) Are there enough benefits for partners to fund the partnership and devote time to it?

III. CHALLENGES FOR MEETING PARTNERSHIP GOALS

Major challenges to the LCC meeting its goals include the previously mentioned challenges of lack of funding and time to devote to partnership and the lack of political support. In addition, partners reported that the AppLCC was also hindered by inadequate staffing levels and not including more diverse partners, who may have also fostered greater bottom-up engagement. A final theme of challenges identified involved abstract concerns such as mismatch and uncertainty about the LCC’s and partners’ goals. For example, partners mentioned that the LCC would benefit from a clearer vision statement. This vision would include a clear statement of shared goals and how partners will help achieve those goals. Without clarity of what the LCC is trying to achieve, it is difficult to assess whether the LCC is achieving its goals. In addition, sometimes there is a mismatch between partner goals related to certain conservation issues or focal species. One example offered was that sometimes it can be a challenge when species are viewed differently by the state and federal agencies.

<ol style="list-style-type: none"> 1) Consensus building <ol style="list-style-type: none"> a) Achieving consensus about LCD among states 2) Funding <ol style="list-style-type: none"> a) Disparity between funding levels across LCCs 3) Inadequate number of staff 4) Fostering ideological shift from natural resource conservation to integrated cultural and natural resource management 5) Political barriers 6) Interaction between LCC and communities <ol style="list-style-type: none"> a) Need more bottom-up engagement 7) Types of partners involved in partnership 8) Funding 9) Staff and partners 10) Time 11) Getting people to think at a landscape scale

IV. TYPES OF CHALLENGES

The main challenges faced by the LCC can be divided into three types: 1) logistical; 2) external; and 3) internal challenges. Logistical challenges involve funding, time, and staffing levels. External challenges include lack of political support, uncertain future of the partnership, and the borders of the LCC. Finally, internal challenges include a lack of consensus on the goals of the LCC as well as the role of partners within the LCC. A sense of uncertainty about the future of the LCC can make partners ask themselves: “is it worth it to continue to participate in the LCC?” Sometimes partners have disparate ideas about which agencies should focus on conservation planning and implementation at various scales. Furthermore, some partners are uncertain about the goals or needs of the LCC, and how they can best contribute to that goal. There are also concerns about how the LCC’s goals fit within their own work.

Logistical	External	Internal
<ol style="list-style-type: none"> 1) Funding 2) Time 3) Lack of staff 	<ol style="list-style-type: none"> 1) Political administration 2) LCC Borders 3) Secretarial order vs. congressional law 4) Lack of public and political awareness about LCC 5) Level of decision making about priorities, budgets, etc. 6) Uncertain future 	<ol style="list-style-type: none"> 1) Not foreseeing conditions that would threaten LCCs 2) Lack of clear vision, goals or purpose 3) Unclear partner roles 4) Unclear communication of benefits to partners 5) Concerns over scale of activities 6) Uncertainty about how LCCs fit into the broader conservation landscape

V. RECOMMENDATIONS

- **Assets for continuing the cooperative**
 - Dedicated people involved
 - LCC has been efficient given their available resources: making “stone soup”
 - Staff is incredibly productive
 - Partners are all valued, improving partnership success
 - People see the need for landscape-scale conservation
 - Interest among partners in finding a way to operate without USFWS
- **Actions**
 - **FUNDING**
 - These challenges could be addressed through both increasing the funding for the AppLCC and standardizing the funding allocated to each LCC.
 - LCC could offer financial assistance for travel
 - Identify new sources of sustainable funding such as local sponsors (e.g. TVA)
 - **COMMUNICATION**
 - Communicate value of LCC to government agencies, politicians, and public
 - LCC could demonstrate how they support and provide resources for the states and other agencies, which would help partners justify engagement
 - **LOGISTICAL**
 - Hold meetings across the entire AppLCC geography to facilitate attendance from spatially-disparate partners
 - **PROJECT PRIORITIZATION**
 - More clearly link LCC activities with partners’ home organization goals and mandates
 - In order to be relevant to the states, the LCCs should work on something the states are required to work on, such as the SWAPs
 - **IDEOLOGICAL**
 - LCC could more clearly articulate its goals, vision, and scope of action.
 - LCC would benefit from increasing the clarity about its future continuation.

LIMITATIONS

I. LIMITATIONS

Although the AppLCC is generally considered successful, there are some areas where it could improve. Partners felt that the scope of both the LCC’s work and the partnership base could be expanded. This would incorporate more diverse perspectives into the LCC and allow it to increase its positive impact on all aspects of conservation in the Appalachian region. A second major limitation of the LCC is the lack of clarity about the LCC’s purpose and goals. Partners felt unsure what the LCC was meant to accomplish and how they could contribute towards these goals. Finally, the LCCs did little to communicate the value of their work or to reach out to potential users for their tools and science. This has impacted the breadth of the impacts of LCC activities, largely restricting the impacts to those who are already involved in the LCCs. All of these limitations of the LCCs are opportunities for growth and improvement in future work.

- Limited outreach and communication
 - LCCs have not communicated who they are and what they’ve accomplished to either congress or the American people.
 - LCC has made great efforts, but people outside partnership may be largely unaware of their work.

- Limited training for tools
- Unclear purpose
 - Need a clear understanding of shared goals and partners' role to achieve those goals.
 - During early stages of LCCs, poor communication about what the LCCs were meant to be or what USFWS was trying to accomplish through them
- Uneven partner roles and prioritization
 - LCC does not always feel like a partnership in which all federal agencies have a primary role, instead USFWS seems to take the lead.
 - LCC prioritizes state needs and proposals over other partners. Furthermore, state agencies that are prioritized are often those who work on fish and wildlife and their habitats.
 - Some partners felt their home agency's resources were not efficiently used
 - Need clarity about the roles of different partners within the LCCs.
- Limited resources
 - Not as effective at leveraging resources
- Prioritization of certain topics over others
 - AppLCC has tools for some topics, but not all, e.g. no tools for cultural resources.
 - Mixed ideas about whether the AppLCC has made progress on cultural resources or not. Some feel that the initial steps towards integrating cultural resources are already a success, while others feel little progress has been made.
 - Prioritization of natural resources and wildlife management in the staff, partners, and projects of the LCCs

<ol style="list-style-type: none"> 1) Scope of work <ol style="list-style-type: none"> a) AppLCC is species and habitat focused, could have expanded its scope b) LCD is weak on aquatic metrics 2) Partnership composition <ol style="list-style-type: none"> a) Dependent on one agency (USFWS), weakness of LCCs b) Could have stronger partner engagement, including funding and staff from partners. c) Could have engaged more with local groups and communities d) Has not adequately engaged with Tribes, despite LCCs talking about doing this e) Has not brought in all possible communities involved in conservation in the region 3) Purpose of LCCs <ol style="list-style-type: none"> a) USFWS didn't always communicate what the LCCs were meant to accomplish b) The purpose and role of LCCs can be unclear c) Lack of clarity on what the LCC is and is meant to accomplish 4) Science information is high quality, but the amount produced is not impressive. 5) Lack of accountability from partners, no incentive to remain engaged 6) Few metrics to measure LCC activity success 7) Mismatch between LCC borders and agency borders 8) Not clear that the scientific information or tools being produced have an audience 9) Funding <ol style="list-style-type: none"> a) AppLCC was less well-funded than other LCCs 10) Benefits of LCCs <ol style="list-style-type: none"> a) Benefits to states not always well documented b) Need better communication of benefits, to the partners, to the public 11) The role of partners and how they can contribute is unclear

II. DECISION-MAKING

The efficacy of the LCCs as conservation institutions seems constrained by the lack of jurisdictional authority possessed by the LCCs. The LCCs lack regulatory power and do not generally make decisions about on-the-ground conservation. In addition, partners reported that there is also sometimes be tension between regulatory and management agencies, even within the USFWS itself (e.g. refuge managers and regulatory branches). Moreover, there is some worry within USFWS that LCCs will become major decision-making body, rather than individual USFWS regions. In some cases, there are also unclear distinctions from LCCs and JVs.

USFWS' strong role leading the LCCs led some partners to feel that LCCs claim to be partnerships, not federal entities, while in fact many are largely run by USFWS. Many decisions about LCC borders, partners, funding, and projects were decided as top-down regulatory decisions. Relatedly, the funding decisions coming from the DOI about LCCs has led to uneven funding across LCCs. Many partners emphasized that the LCCs might be improved through even funding and a more diverse leadership base, with less reliance on USFWS staff, agendas, and funding.

III. APPLCC BORDERS

The mismatch between LCC borders and other agency jurisdictions was a frequent issue mentioned by partners. In some cases, there are too many LCCs for a potential partner to participate in, while in other cases, a partner may have too many of their own district representatives located within a single LCC. For example, one partner mentioned that there are several LCCs and JVs within the state making it difficult to find time and people to participate in each one. Both Virginia and Pennsylvania have three LCCs within their borders. In addition, there are 6 EPA regions and many states within the AppLCC making it more difficult to coordinate partners compared to the South Atlantic LCC which has fewer states and primarily follows EPA Region 4. On the other hand, the LCC borders work well for other agencies, which operate at a larger scale. Some partners expressed uncertainty about the motivation for defining LCC borders as they currently exist. A second major issue related to LCC borders is the large region covered by the AppLCC. Some partners reported that the AppLCC has the most states of any LCC, a fact that can make consensus building difficult. The large scale of the AppLCC also contributed to the need for the Coordinator of the AppLCC to spend much of her time the first two years traveling across the region to demonstrate what the LCCs are and what they can accomplish. A potential solution to these issues is to perhaps reorganize the AppLCC into smaller workgroups based on issues or sub regions. Most of the AppLCC's activity would occur in smaller groups, but larger group could still meet once a year. Finally, there is concern that the LCDs of particular LCCs may not align well with the LCD borders from other LCCs. It is suggested that these LCDs be made compatible with one another.

■ Recommendations

- Use LCD to determine LCC boundaries
- Organize LCC boundaries to better fit with existing political and jurisdictional boundaries
 - Find a balance between ecological and political regions
- Break LCC into subgroups based on regions or issues

IV. STAFFING LEVEL

The AppLCC staff is very dedicated and productive. In particular, Jean Brennan is very dedicated, knowledgeable and resourceful. At the same time, the AppLCC needs more full-time staff. It is too much work to have only one coordinator responsible for outreach, coordinating, etc. Instead they need a group of people steering the partnership. Unfortunately, however, the AppLCC ran out of funding and didn't

have enough funding to hire a science coordinator. In addition, the persistent uncertainty about future of LCCs made USFWS reluctant to hire new staff, who might later have to be reassigned. Although some partners have offered staff to work with the AppLCC, not all of these staff have been good fits. Staffing is an important concern related to the success of each LCC. As a result, outcomes across LCCs varied greatly based on their staff: some coordinators focused on science, while others emphasized administration.

FUTURE IMPROVEMENTS

Partners interviewed had many ideas about how the LCCs generally and AppLCC specifically could be improved in the future. These improvements generally focused on the following challenges: 1) funding; 2) improved outreach and communication; 3) better articulation of the partnership's purpose; 4) broadening the scope of LCC projects; 5) membership changes; and 6) changes in the way the LCC completes its work.

Improving funding for the LCCs would enable them to better achieve their goals. Participants stressed the importance of developing a sustainable funding strategy and funding all of the LCCs at the same level. Currently, the AppLCC is funded at a lower level than other LCCs, and this is seen as constraining the partnership's success. Additional funding might also allow the partnership to hire more full-time staff to implement projects. The lack of clarity about both the purpose of the partnership and its future are also attributes that could be improved the future. Some partners felt that there needs to be a commitment from USFWS to keep the partnership going. Moreover, it would be beneficial to clarify the role of the LCCs within their regions and the role of state and federal partners within each LCC. Relatedly, it was suggested that the future of LCCs might be through sub-partnerships.

Other partners stressed that the LCCs would be improved by developing clear metrics to assess their progress. Incorporation of communities and bottom-up planning into LCC activities would also improve the LCCs. There is a need to think about how to actively engage partners, to inspire them to dedicate funding and staff to accomplish LCC goals. Partner engagement is only one part of the partnership-related improvements that the LCC would benefit from. Interviewees stressed the importance of incorporating additional, more diverse partners into the LCCs. These new partners might include industry members, tribal governments, state forestry agencies, local governments, and a variety of as of yet not included NGOs.

Although the AppLCC has created many tools and compiled large amounts of information, these resources have not always been well communicated or integrated into the work of other organizations beyond webinars and videos. The LCC's future success could be improved through increased communication and outreach. Moreover, although the information the LCC has produced is high quality, it is not always clear who the audience is, or who is going to use it. As one partner put it: *"Not clear that somebody is actually asking for the information. Folks come together and say they need energy development issues [information], but it's a specific agency that needs the information, not necessarily the LCC as a whole. Are there information needs that serve multiple agencies?"* Clarifying the information needs for specific issues and regions will be crucial to the future improvements of the LCC.

Some partners commented on the inconsistency between the different Blueprints and goals across LCCs, a variance that also happens for SWAPs. Although the SWAPs have the same basic components, different states have taken the plans in different directions. Though the respondent does not explicitly state this, it is possible that had there been more sharing of the different methods (across LCCs and SWAPs) at an early stage, there might have been an emergent optimized approach, which could have slight variation from place to place, but would incorporate the "best" aspects from each experiment. This could promote consistency, but in an emergent, rather than top-down manner. The following two tables highlight some of the ideas partners offered about how to improve the LCCs in the future.

Ideas for Future Improvement to the AppLCC

- 1) FUNDING
 - a) Could bring in better funding through other partnerships. Like the South Atlantic LCC bringing in fire dollars. LCC could look at DOD Sentinel Landscapes program
 - b) Better funding for AppLCC, same level as other LCCs
 - c) LCC could be improved through a clearer link between funding and decision-making
 - d) Sustainable funding source
 - e) Partners could all contribute X% of their budget to the LCC to generate a sustainable funding source
 - f) More funding
- 2) PARTNERSHIP
 - a) Incorporating more diverse partners in the future
 - i) Work with state agencies beyond those interested in fish and wildlife, for example forest agencies.
 - ii) Could have done a better job involving tribal environmental groups in LCCs from the beginning. Many tribes see themselves as separate from LCCs, and don't work together
 - b) Would be improved by being less dependent on a single agency
 - i) Need more state involvement, not just NGOs and Feds
 - c) Maybe a path forward is through smaller, thematically focused work groups
 - d) More bottom-up engagement
 - i) Engaging in more local-level conservation efforts and decision-making tools
 - e) Full Time, dedicated staff
 - f) Stimulate higher level of partner engagement, such that they contribute staff and money
 - i) Would be improved by agencies dedicating quality people to work for the LCC
 - g) The role of the LCCs and benefits to partner organizations could be made clearer. One idea is to make participation in LCCs a "line item" for partner work.
 - i) Could use performance plans for individuals that mandate cooperation in LCC
 - h) LCC could have clearer "asks" of federal partners
 - i) Greater diversity of partners
 - j) More staff
- 3) SCOPE OF WORK
 - a) Figure out how local level efforts can scale up to the landscape level
 - b) Integrate cultural resources from the beginning
 - i) More work on cultural resources
 - ii) Help people see connections between cultural and natural resources
 - c) Aquatic aspect of LCD could be improved
 - d) Could identify projects and co-fund them, like NALCC has done
 - e) Could have more small-scale projects
 - f) LCC projects could focus on things that states are required to do, such as the SWAPs.
 - g) Needs to be more direct benefits for the states
 - h) Could be improved by giving money to states for participating
 - i) Perhaps more of a focus on specific priority areas, like the ILP
 - j) LCC is not part of partners' required work, nor does it usually offer them funding. Need a clearer benefit for partners to participate in LCC.
- 4) PURPOSE OF PARTNERSHIP
 - a) Articulating how specific activities of the LCC fit into the work of different agencies.
 - i) Clearer plan of action and priorities for the partnership's work
 - b) Could more clearly identify the purpose of the LCC
 - c) Clearer idea of audience for LCC
 - d) Clear explanation of all the efforts of the LCC thus far
 - e) USFWS didn't always clearly communicate what the LCCs were meant to accomplish. The goals and purpose of the LCCs often remain unclear. How do they differ from JVs? Need better communicating

- f) Often difficult to determine what the LCCs needs are and the role different partners can play
- 5) COMMUNICATION AND OUTREACH
 - a) Could improve by having more outreach and training of partners and resource managers in how to use the tools
 - i) More outreach with tools, bringing them to communities and people. Training people to use them
 - b) LCC could communicate benefits of partnership to partner agencies and the general public
 - i) Tangible benefits, whether financial or research products. In particular the successes of the LCC.
 - ii) Could do a better job of communicating the benefits of a landscape-level approach
 - iii) Could do a better job of communicating value of LCCs
 - c) Need better communication between state and USFWS
 - d) LCC needs a common message of what it is and how the work is benefiting the public
 - e) LCCs could improve by documenting or showing how they are supporting and directing resources towards the states. The LCC could frame how their work directly supports state-defined goals.
- 6) PARTNERSHIP ACTIVITIES
 - a) Greater work with other partnerships to avoid redundancy and ensure LCC is filling a meaningful niche
 - b) The LCC could benefit from better monitoring of their efforts and documentation of where their work made impacts. The LCC would be improved by an accountability perspective.
 - c) Could improve by getting more partners to use the LCD
 - d) Hold in-person meetings and training more evenly across LCC geography to facilitate travel
 - (1) This would also better communicate the benefits of the LCC to other agency members
 - e) More workshops
- 7) MISCELLANEOUS
 - a) Could have greater stability as a congressional law rather than executive order
 - b) For some LCCs, need clearer distinction between LCCs and JVs
 - i) LCC borders and partner members could have been decided via bottom-up rather than top-down decision-making
 - c) Could perhaps have more guidance across LCCs to promote greater consistency across LCCs

MEASURING FUTURE SUCCESS

Partnership success is not always a straightforward thing to measure. Partner responses generally suggest that partnership success might be measured through the degree to which they 1) fill a capacity gap; 2) advance conservation; and 3) build a stronger collaborative partnership. A general consensus is that the partnership needs clearer metrics to measure its success moving forward. In addition, the LCC might productively transition from the role of developing tools to bringing existing tools to various user groups. The following tables highlight some of the partner ideas about mechanisms and metrics by which the future success of the AppLCC might be assessed.

Federal	State
1) PARTNERSHIP <ul style="list-style-type: none"> a) More work with tribes, integrating their historic preservation interests into LCC work b) More engagement with local communities c) Successful partnerships have representation at multiple scales d) Bottom-up driven: <i>“what local folks need informs what is needed up each scale”</i> 	1) FILLING A CAPACITY GAP <ul style="list-style-type: none"> a) A positive outcome would be accomplishing goals through partnership such that partners do not spend their own money b) The LCC helps partners achieve their goals and work more efficiently 2) ADVANCING CONSERVATION <ul style="list-style-type: none"> a) On-the-ground conservation successes

<ul style="list-style-type: none"> e) Tools and information developed by the partnership to connect across multiple scales and across disciplines f) Relevance of LCC to partners' work <ul style="list-style-type: none"> i) Success would be every state being able to identify how the LCC helps them get work done. <p>2) FILLING A CAPACITY GAP</p> <ul style="list-style-type: none"> a) The LCC builds capacity in the region b) The LCC needs to demonstrate its contribution to conservation independent of other partnerships. Opportunity to be a "poster child" for bringing human and environmental aspect of conservation together. c) Make work easier and more efficient for resource management professionals <p>3) SCIENCE AND CONSERVATION PLANNING</p> <ul style="list-style-type: none"> a) Bringing LCD to finer scales <p>4) ADVANCING CONSERVATION</p> <ul style="list-style-type: none"> a) Use information to make decisions b) Integrate existing tools into decision making and regional-level planning c) Validate tools and then improve them d) Take actions and decision-making tools to local level e) On-the-ground implementation is the next step f) Something new would have to be created, currently little progress on cultural resources, more so for natural resources. <p>5) MISC.</p> <ul style="list-style-type: none"> a) Success might be measured through improved efficiency: 1) fewer redundant efforts, 2) more efficient use of funding b) Clearer definition of roles of partners c) Link up available funds to projects and goals 	<ul style="list-style-type: none"> b) Could measure success through clear metrics of how conservation decisions and information changed as a result of LCCs' work c) Information that has been produced is integrated into landscape-level management <p>3) PARTNERSHIP</p> <ul style="list-style-type: none"> a) Partnership diversity b) Partner engagement and activity <p>4) COLLABORATIVE PRODUCTS</p> <ul style="list-style-type: none"> a) Developing a product with involvement from all the partners and which is used by them (such as the NE SWAP database which is developed and used by the states) b) Process through which research needs are developed c) How science was approved <p>5) SCIENCE AND CONSERVATION PLANNING</p> <ul style="list-style-type: none"> a) Identifying important areas for conservation, landscape level threats b) Continue to produce information to plan for climate change c) Identify overarching research needs and translate to partners on-the-ground d) Provide state agencies with tools and information to implement conservation e) Quality of science f) How science is communicated <p>6) MISC.</p> <ul style="list-style-type: none"> a) Engaging decision-makers such as federal and state governments to promote conservation
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COMPARISON WITH OTHER LCCs

Many AppLCC partners are also involved in other LCCs and conservation partnerships. Yet, the integration of experiences and information from other LCCs and partnerships into the AppLCC partnership seems somewhat limited. This may be another area of potential growth for the LCCs. A main comparison frequently made is that the AppLCC received less funding than the other LCCs. Additionally, a second main comparison is that the AppLCC is considered by partners to have most successfully worked on cultural resource conservation, as well as to have developed the most sophisticated LCD. More generally, some partners felt that the AppLCC's tools are in the midrange for LCCs.

D. AppLCC as a Partnership

ROLE OF PARTNERS AT MULTIPLE LEVELS

A theme that emerged multiple times during the interviews was concern over the uncertain role of partners within the LCC partnership. Not all partners see how they fit into the LCCs. Some partners felt that their role was to provide information, rather than receive information or be “served” as a client of USFWS via the LCCs. They raised the question of whether their agency or the LCC itself is a “customer”. These concerns tie back into the overarching feelings of unclear communication from USFWS about what the LCCs were meant to accomplish.

Some frustration was expressed at the decision-making process for LCC projects. Oftentimes the LCC hired contractors to complete scientific work rather than relying on the data or expertise of partner agencies. Some felt the LCCs could increase efficiency by directly working with federal agencies who already possess certain resources, rather than recreating the resources via paid external contractors.

Another way in which the unclear roles of partners at multiple levels manifested is through the relationship between USFWS and other partners involved in LCC activities. Some felt the AppLCC was driven by a USFWS perspective, and as a USFWS organization, it is their directive to lead the partnership. Consequently, some felt the LCCs have advanced species conservation for those species USFWS cares about, but has not done as much to advance regional conservation. An alternative way to guide the LCCs could have been to bring in an independent and elected chair, and develop clear boundaries and by-laws to remain distinct from USFWS.

Other issues related to the role of partners within the LCC include some perceived tensions between federal and state agencies, tensions over funding, tensions between regulatory and management agencies, and tensions between scientists and administrators about decision-making at the higher-level LCC network level. Some feel that it’s not the best use of federal agencies’ time to be involved in many different partnerships.

PARTNERSHIP BUILDING

A major success of the AppLCC has been its ability to build a cohesive conservation partnership for the Appalachian region. The trust between steering committee members is considered pivotal to the AppLCC’s success. The self-direction and equality of members within the partnership are also key features. Partners appreciated the AppLCC’s open and transparent decision-making process, which included partners at all stages. In addition, some expressed approval about the interview project (this report) as a means of collecting honest partner answers and improving LCC activities in response. Although many felt that involved LCC partners were equally valued and able to offer input, some suggested that getting all potential partners engaged has been a challenge. The LCC spent a long time identifying relationships in the region during their initial phase, to assess how the partnership is nested within other existing conservation initiatives. The table below highlights some of the ways in which partners discussed the partnership building mechanisms for the LCCs.

Federal	State
1) Partners included at all stages of planning, transparent decision-making	1) Major players have been included in the partnership, but not much networking outside the partners

<ul style="list-style-type: none"> 2) Partners are all equal 3) Partnership is open and inclusive 4) Partnership is self-directed 5) Self-selection, those active in LCC are ready to share, no hidden agendas. 6) Some trouble getting people engaged, 1/3 active with 2/3 present but “sitting back and watching” 7) <i>“Steering committee is core group of people who have a lot of trust, leavening agent for how things will go”</i> 	<ul style="list-style-type: none"> 2) Partners feel welcome in partnership, “part of something” and that their voices are heard 3) Transparent decision-making, open input. All partners involved. 4) <i>“Focus on a common vision and a commitment to that vision”</i> 5) In some cases, worked with existing partnerships where trust is already established 6) Paying for partners to attend meetings. When the LCC pays for them to attend, more likely to participate and be engaged, this builds trust 7) Conducting this interview 8) Information is freely available on their website, can see what LCC has spent time on
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PARTNERSHIP COMPOSITION

Many partners had ideas about how to improve the partnership composition of the LCCs. Although all current partners are generally considered core members, there are many additional groups and representatives who partners felt should also be included. A primary critique of the current membership is that it is heavily skewed towards including USFWS partners rather than entities focused on conservation more broadly.

Some interviewees felt the LCC would benefit from greater state involvement, while others believe the current level of state involvement is not only effective, but also is a main benefit of the LCCs. In addition, some felt that the Federal partners serve as funding agencies to support state priorities, a process that could be improved through the LCCs. The partnership composition could also be improved not only through directly incorporating new steering committee and partnership members, but also through increased collaboration with other existing partnerships and organizations. For example, there is a need for LCCs to better coordinate with Climate Science Centers.

In considering who to include as future partners, interviewees noted the need to maintain representation across multiple scales. This may be particularly true for federal agency representatives, for which there is a tradeoff between including individuals who are either regionally or nationally focused. Both types of partners may bring different perspectives to the partnership, so it is important to balance representation not only across agencies, but also across spatial or topical foci within a given agency.

Business and industry groups were frequently mentioned as necessary partners for improved LCC functioning. Although the AppLCC engaged with businesses to some extent through the Marcellus Shale work, this could be increased in future work. The LCCs are also believed to have overlooked engagement with Native American Tribes. This oversight is in spite of many LCCs openly reporting their commitment to helping and engaging with tribes. State project proposals are seen as taking precedence over tribal project proposals. In addition to these groups, interviewees proposed including additional local government and NGO groups, land trusts, SHPOs, and numerous other agencies. The new partners proposed by both federal and state respondents are listed in the table below.

Federal	State
<ul style="list-style-type: none"> 1) States as core partners. <ul style="list-style-type: none"> a) Need more state involvement moving forward b) State agencies are very dedicated c) Kentucky could be more involved 2) Need more local community engagement 3) Would benefit from adding: 	<ul style="list-style-type: none"> 1) Would benefit from adding: <ul style="list-style-type: none"> a) business organizations b) mining organizations c) timber companies d) CSCs e) USGS

<ul style="list-style-type: none"> a) Local government b) Water districts c) County commissioners d) Railroad companies e) Corporations f) Land trusts g) NGOs h) Local groups i) State forestry agencies j) Trout Unlimited k) Rocky Mountain Elk Foundation l) Municipalities, counties m) Tribal governments <p>4) Bias in work</p> <ul style="list-style-type: none"> a) Very species and habitat focused. Could have broadened to include more people. b) Skewed towards natural resources and wildlife management, detracts from ability to meet natural resource conservation mandates c) LCC partners don't encompass entire suite of organizations working in conservation in the region 	<ul style="list-style-type: none"> f) ACOE g) Universities h) Land trusts i) Nonprofits j) SHPO k) TNC could be more involved l) Benefit from greater involvement of Native American tribes and tribal governments, both federally and locally recognized. Don't all necessarily need to be on steering committee, but are important partners m) At a state level: State DNR, Parks Division, Forest Division, TNC, the Conservation Fund, River keeper groups, Plant Alliances <p>2) Bias in work:</p> <ul style="list-style-type: none"> a) Most partners are natural resource agencies; which skews work towards natural resources rather than cultural resources. <p>3) Size of partnership:</p> <ul style="list-style-type: none"> a) Some 30 active partners, 170 more general partners for science needs identification, really good partnership b) Need to avoid having too many people in steering committee, over 25-30 the group becomes too large
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PARTNER PARTICIPATION

I. MOTIVATION FOR PARTICIPATING

The following list details the diverse motivations partners reported that influenced their decision to anticipate on the AppLCC steering committee. Many partners felt that serving on the steering committee would benefit their home agencies' goals, or reported a general interest in promoting landscape-level conservation. Other partners participated in the steering committee primarily as part of their job requirements or because they inherited or were given the position from/by their supervisors.

- Had participated in other partnerships or LCCs already
- Sees landscape-level conservation as very important.
- Has benefits for accomplishing own goals.
- Can advocate for issues they see as important
- Interested in learning more about climate needs for species
- Supervisor or agency wanted representation in LCCs
- Knew people in NALCC, and saw benefit of their work. Or was already on NALCC steering committee.
- Supported the mission and wanted their jurisdiction or agency to be involved
- Was asked as part of job, supervisor assigned them to be involved
- Initially as a curiosity, to see whether the LCCs were a group their agency wanted to be involved in
- When supervisor left, they were handed position on steering committee
- As a federal agency, have a stake in decision-making processes of LCC, trying to find niche
- LCCs as next level up from SWAPs, enable them to be combined

II. INTEGRATION OF LCC ACTIVITIES INTO OWN WORK

The following list includes many of the ways in which partners described how they integrate LCC activities into their work in their home organization. Responses ranged from some partners for whom the LCC activities were not highly integrated into their work to others who specifically bring particular tools to their home agency experts in order to improve their workflow.

- Bring Blueprints to experts in home agency so they can integrate into programmatic activities
- Shares information with program managers
- Integrate LCC information into SWAPs
- Not much integration
- Use products when relevant
- We provide information to the LCCs rather than consume the information produced by LCCs.
- Report on LCC activities back to staff.
- Minimal reporting
- Allows them to prioritize work and assist in larger regional conservation efforts
- Their group is starting to use riparian restoration map
- Analyze what their agency is doing as it relates to LCCs
- Information from LCD will be able to guide their management process

BENEFITS OF LCC TO HOME ORGANIZATION

The LCCs offer many benefits to partners' home organizations. In particular, many partners highlighted the benefit of meeting new people through the LCC and improving the efficiency and efficacy of their work as a result. In addition, some specific projects such as the karst study or LCD benefited partners' home organizations. Finally, the ability to contextualize one's work and extend the effect of projects to beyond their jurisdictions is a major benefit of participating in LCC activities. Some partners did mention however that in some cases the LCC operated more as an isolated unit with staff rather than a full partnership.

Federal	State
1) Forum to meet people and build partnerships <ul style="list-style-type: none"> a) Reduces conflict b) Identify common interest 2) Science projects <ul style="list-style-type: none"> a) Project on stream flow had direct benefit for EPA b) Cutting edge research c) LCD can help prioritize own work and land acquisition 3) Shifting perspectives towards landscape-level thinking 4) Tools and metrics 5) Can contextualize work within broader region 6) Can tap into others' data 7) Working in a partnership allows one to create positive impacts on issues of importance but in areas that are outside one agency's jurisdiction. 8) Mixed bag whether beneficial or not <ul style="list-style-type: none"> a) More benefits for LCC to say they have included some agencies than the agencies get benefits back 	1) Makes partners informed about conservation work in the region. Provides opportunities to offer input on regional projects. Tangible products such as karst study. 2) Increases communication between conservation actors at different levels 3) Bring landscape level science back to home organization 4) More information to improve planning and programs. Can contextualize own work within other programs in the region. Can also influence conservation outside of own state, but which will affect state-level management 5) Specific projects <ul style="list-style-type: none"> a) When SWAPs are included in LCC work 6) Knowledge: Exposure to experts, training, tools and modeling, baseline information

<ul style="list-style-type: none"> b) Some federal agencies already have data and mandates and feel the LCC has not made use of existing resources adequately or cited the partners' datasets. c) Not a true collaboration, just staff doing things 	<ul style="list-style-type: none"> 7) Reduces duplication of effort
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E. Idea of LCCs

ROLE OF LCC

Partner opinions about the role of the LCCs differed, but generally focused on the idea that LCCs are support agencies rather than conservation delivery agencies. Partners agreed that a main role of the LCCs is as a forum for relationships and cross-agency communication. In addition, the LCC is seen as providing information and science to support partner conservation efforts and to make the partners' jobs easier. It was important to numerous partners to state that the LCC is not meant to conduct on-the-ground research, but rather leave implementation up to the states and other partners. Partners were split on whether they identified as part of the LCC or outside the LCC. Moreover, numerous partners expressed frustration at the unclear role of the LCCs, with one partner using the metaphors of a potluck, barn-raising, or militia to describe the three potential roles of the LCCs.

Sometimes the direct role or function of the LCC was described by partners. The main functions of the LCCs include compiling information, building a regional conservation partnership, and developing tools and scientific information. By bringing together regional conservation practitioners, the LCC was able to promote greater information sharing, coordination of effort, and improve the efficiency of conservation actions within the Appalachian region. By developing scientific tools and information at the landscape level, the LCCs filled a vital niche in the region, as no other entities were operating at this scale. These tools and information in turn allow partners and regional resource managers to more effectively make conservation decisions.

Partners held strong opinions about the types of conservation actions the LCC should or should not undertake. In general, the LCC is seen as a conservation support and information delivery entity, rather than a direct implementer of conservation issues. The LCC should aim to provide information about large landscape issues that the partners can then use to implement projects. Moreover, the LCC should not implement on-the-ground conservation or directly manage resources. Implementation instead is the role of the states. The list below details partner perspectives on the role of the LCC.

- 1) LCC is not there to:
 - a) Implement on-the-ground management or conservation. This is the role of partners, not the LCC
 - b) Make conservation happen
 - c) Build capacity
 - i) Has seen no increase in staff or funding as a result of LCC, not sure it's the LCC's role
 - ii) Not sure their role is to fund partner research
 - d) Produce scientific information
 - i) Producing scientific information might be the CSC's role
- 2) LCC is there to:
 - a) Compile information
 - b) Facilitate management
 - c) Provide information
 - d) Develop conservation planning tools

- e) Plan, not implement (that is the state's role)
- 3) Platform for communication across agencies
 - a) Place where conversations can happen
 - b) Partners can identify common needs and pool resources to meet needs
 - c) Helps inform partners about regional conservation efforts, be less parochial
- 4) LCCs provide a partnership function
 - a) Provides a forum for input into regional conservation and for information sharing
 - b) Foster communication between partners
 - c) Foster relationships
 - d) Be a convening body for partners
 - e) Builds trust among partners
 - f) Reduces conflict across partners
 - g) LCCs can also bring together partners and funding to work as a landscape scale for species conservation, which is something the states cannot always do.
- 5) Provide science tools that enable natural resource managers to work more effectively
 - a) "LCC is a science-based partnership"
- 6) The LCCs have provided information for planning but didn't facilitate it
 - a) Others say the LCCs have facilitated planning
- 7) LCC doesn't build capacity but delivers science and tools so partners can do their jobs better
 - a) "... [The LCC] gives you science so you can do your job better."
- 8) LCC's job is to provide information and facilitate management but not implement management on-the-ground
 - a) "The LCC is there to: 1) get information, 2) facilitate management, but not to do management itself. that should be done by the partners."
 - b) LCCs work at broader level, and do not conduct on-the-ground research
 - c) "LCC should focus on enabling other entities to do their own work. Pull their own people up. Give information, tell them [the partners] what to do, but not do it ourselves [as the LCC]"
 - d) Identify overarching research needs and bring information to partners who can implement conservation
- 9) Lack of partner identification with the LCC
 - a) From both state and federal partners
 - b) For example, when asked about how the LCC should organize in the future, one response was that it was not their place to say what the LCC "should" do. Instead, this is the role of the partnership, as their home agency doesn't need the LCC's help but rather they are there as a service role to help the LCCs.
- 10) At times the role is unclear
 - a) Potluck, barn raising or militia?
 - b) "What is it that the entity the LCC, what is it trying to achieve? And how can we help them achieve that goal? It's been tricky at times...to understand the goal, what it is they want to do, and what are the information needs?"
 - c) If LCCs do not manage land or develop regulations, what is their role? Could benefit from greater clarity.
 - d) Furthering landscape-scale science
- 11) Funding projects that wouldn't otherwise be funded
 - a) Has not addressed conservation issues, but funded projects for others to address conservation
- 12) AppLCC has integrated cultural resources into conservation planning

SUCCESSSES AND BENEFITS OF LCCS

Although the AppLCC has had many tangible benefits through its creation of tools and science products, overwhelmingly partners felt the main success of the AppLCC was the creation of the partnership in and of itself. This type of partnership, which focuses at a regional scale on holistic conservation, is novel in the realm of US government-led conservation partnerships. As such, partners appreciated the ability to bring together diverse perspectives to advance conservation, align the interests of different groups, and share information. Another novel aspect of this partnership is its self-direction. Although partner perspectives on the degree of self-direction of the LCCs varies, in general, the ability to determine project priorities to fit partners' goals is considered a unique benefit of the LCCs. Other than the partnership itself, another major benefit of the LCCs has been its ideological

advancement of landscape level conservation and reorganization of conservation science according to ecological rather than political regions. More detail about the major successes and benefits of the AppLCC, with associated interview notes with greater detail are listed below.

- One partner described the benefits of putting their own organization’s work into the broader conservation context in the region: *“It’s helpful to even know what is possible for establishing management plans, priorities, and budgets.”*
- Partners praised not only the formation of a partnership, but the model of the partnership itself. This model is considered beneficial for its transparent, equal, and inclusive attributes: *“The model has worked tremendously well. It has brought together diverse people and ideas, at least for what I’ve seen in outcomes. The AppLCC has done a really good job.”*
- A major benefit of the LCCs is their work to advance landscape level conservation and serve as a leader for ecosystem conservation in the region.
- Overwhelmingly, the main benefits of the LCCs described by partners involved the creation of the partnerships in general. The ability to share information and coordinate action with other resource managers in the region has been hugely successful.
- Both state and federal partners mentioned the benefits of LCCs enabling them to influence conservation activities beyond their jurisdictions.

1) Federal	1) State
2) Partnership <ul style="list-style-type: none"> a) Type of partnership b) Self-direction of partnership c) Learning from others d) Aligned interests of different groups e) Brought together diverse stakeholders 	2) Partnership <ul style="list-style-type: none"> a) The partnership itself b) Personal benefits through new professional relationships and professional development opportunities c) Bring together wide range of different partners across the region to work together d) Coordination of effort, reduction of redundancy e) Forge new relationships and new partnerships among partners <ul style="list-style-type: none"> i) TRBN as an important output ii) Bringing together land trust and refuge folks in some areas
3) Collaborations <ul style="list-style-type: none"> a) Formation of larger regional partnerships, like SECAS. 	3) Integrating cultural resources into natural resource planning
4) Integration of socioeconomic into natural resource planning	4) Tangible benefits <ul style="list-style-type: none"> a) Providing high quality, current data b) Tools, information and partners available, and landscape level science
5) Leveraged own resources, but not others	5) Allows states to influence conservation efforts beyond their borders
6) Can impact issues partners’ care about beyond their jurisdiction.	6) Provide landscape perspective and information <ul style="list-style-type: none"> a) Improves ability to conserve species at a larger scale
7) <i>“One of the really important things about the LCCs is the dynamic between the people in the room. vs. the agency approach where you only go talk to people if you’re legally required to, vs. LCC where people talk about other things, share ideas.”</i>	7) Mixed bag for facilitating planning. Some areas, like TRB has strong group of partners, while other areas lack a group to implement the information from the LCC
8) Advancing conservation <ul style="list-style-type: none"> a) Environmental reorganization in face of climate change b) Has inspired new ideas in conservation 	8) Advancing conservation <ul style="list-style-type: none"> a) Innovation and creative approaches to common problems. Space to experiment with new ideas.
9) More efficient work and regional coordination <ul style="list-style-type: none"> a) <i>“Better way to do business, don’t operate with blinders on.”</i> 	9) Leveraging resources
10) Tangible products: tools, information	

IDEOLOGY OR MISSION OF LCC

The mission of the LCC is not a shared concept across partners interviewed. Some partners asserted that the LCC is a science delivery organization, while others were less certain of its role. Much of the uncertainty about the purpose of the LCC seems to impair partnership success in the eyes of those who perceive the uncertainty. The main forms of uncertainty involve: 1) the audience of the LCC; 2) the purpose of the LCCs; 3) the role of individual partners within the partnership; 4) measuring LCC progress. More detail about these forms of uncertainty is given below.

- 1) Uncertainty about the audience of the LCC
 - a) Who benefits from the LCC? The public? States?
- 2) Uncertain how to measure progress
- 3) Uncertainty about the purpose of the LCC
 - a) Unsure what its goals are or how each partner fits in
 - i) Some partners felt the mission of the LCCs is to protect habitats of USFWS
 - ii) Other partners report that the LCCs aim to address overarching landscape needs at a higher level than JVs and “raise the boats for all”
- 4) Metaphors for describing the partnership
 - a) Potluck: everyone brings something to the partnership and shares what they can offer. This helps partners answer specific questions and individually benefit from the partnership. Seems to be what the partnership has been so far from some perspectives.
 - b) Barn Raising: Is the partnership a branch of a particular agency, such as USFWS, that has a need, and all the partners bring their tools to help accomplish this goal
 - c) Militia: Partners organize together to address a larger threat that cannot be tackled individually
- 5) This uncertainty about the purpose of the LCC also influences other decisions such as who should be involved and what the role of individual partners within the LCC should be.

TANGIBLE BENEFITS OF LCC

Partner largely agreed that the tangible benefits of the AppLCC are extremely valuable. These tangible benefits include specific projects, tools, data layers, and classification systems. The LCC is seen as playing a unique role in the creation of landscape level tools and science. For example, one partner stated that they are “of the opinion that all LCC tools are unique, and [they don’t] see other partnerships filling that niche.” Partners praised the high quality, landscape scale science and asserted that without the LCCs, no other entity was going to produce this science. A major reported benefit of these tools was also that the products and science projects were designed from for the target audiences from the beginning. The main tangible benefits named by state and federal actors are listed in the table below.

Federal	State
1) Meeting information needs of agencies 2) Communication and outreach <ol style="list-style-type: none"> a) Webpage b) Seminars c) Science communication among partners 3) Science products <ol style="list-style-type: none"> a) Science needs portfolio b) Marcellus shale work c) Barriers, culverts and small dam identification d) Landscape Conservation Design/ Marxan modeling <ol style="list-style-type: none"> i) Terrestrial side e) Energy forecasting model f) Data layers g) Cutting edge research 	1) Communication and outreach <ol style="list-style-type: none"> a) Web portal: information not just about LCC activities but also partners b) Information to advance conservation c) Training on diseases d) Exposure to expertise in mapping and modeling e) Workshops 2) Science products <ol style="list-style-type: none"> a) Maps, tools b) Habitat classification system c) Karst classification map d) Species vulnerability work will be useful for future SWAPs

<ul style="list-style-type: none"> h) Tools and information for landscape-level planning i) Specific tools that are useful for agencies j) Karst classification k) Water use project, Riparian tool <p>4) Level of research quality and how the research has been made available. Not simply information, but also tools</p> <p>5) Not completed:</p> <ul style="list-style-type: none"> a) Some work on ecosystem services but not applicable yet b) Tools for future biodiversity planning. So far can't predict over a long planning horizon c) Tools haven't been taken out and used by partners much yet d) Communication of science beyond partners e) Incremental production of science, no major breakthroughs, would've happened without LCCs f) Tools for cultural resource conservation 	<ul style="list-style-type: none"> e) Energy forecasting study f) Landscape Conservation Design g) Water modeling h) Conservation by design in upper Tennessee River Basin i) GIS layers for region j) Riparian restoration map k) Aquatic connectivity and watershed work l) Compiling oil and gas resources of the region <p>3) Funding</p> <ul style="list-style-type: none"> a) Funding to participate in workshops <p>4) Mapping and modeling</p> <p>5) Not completed:</p> <ul style="list-style-type: none"> a) Conservation strategies
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GREATEST LOSS WITHOUT LCCs

The main losses without the LCC mentioned by partners include: 1) the partnership itself, 2) landscape-level conservation efforts, and 3) the science and tools produced by the LCC. Overwhelmingly the benefits of the partnership itself were considered to be the greatest potential loss without the LCC. The partnership has been a leader for conservation in the region and provided a platform for relationships to form and for information to be shared. Without the partnership, the partners will go back to working in isolation. The effects of this will include a loss of efficiency in conservation efforts. LCCs allow large-scale effect and efficiency for products. For example, if one completes a karst study in VA or PA, it's impact is far more limited than completing the same study across the whole Appalachian region. Moreover, the regional conservation products are made more successful through the collaborative process through which they are created. The AppLCC products are joint products, which is seen as a major benefit of the LCC. As one partner put it: *"The LCCs have served as both a clearinghouse and forum for good data production. The LCC is not a monolithic entity, but a place where people can come to discuss these [conservation and data needs], we need that forum, that's important"*

A primary loss without LCCs will be the efforts towards climate change planning and mitigation. The LCC was one of the only entities in the United States to implement climate change planning at a large regional scale, and without them little future progress will be made. As one respondent put it: *"Those issues aren't going away, so without the LCC it would be less efficient, costlier for each unit of mission success. "fragmentation of effort to deal with these issues is the biggest issue" The way society has organized management is through different species, issues, etc. So, all these units are seeing themselves as doing an isolated thing. This is a problem for holistic management. In the past we made the laws like for migratory birds to coordinate efforts across states. It's challenging though. LCC gets people thinking across ecological boundaries rather than political. [The LCCs] transcend political boundaries."*

Federal	State
<ul style="list-style-type: none"> 1) Science and research 2) Partnership <ul style="list-style-type: none"> a) Trust that's been built b) Relationships c) Opportunity to interact with other partners 	<ul style="list-style-type: none"> 1) Science and research <ul style="list-style-type: none"> a) High quality science that could not have been produced by another entity. b) Participatory process of science creation c) Research tools: mapping and modeling

<ul style="list-style-type: none"> d) Information sharing between agencies and individuals 3) Landscape level conservation <ul style="list-style-type: none"> a) In regards to the landscape classifications, the LCCs are the first to bring together actors across the region to focus on landscape conservation. Without this, efforts were fragmented. b) Large landscape connectivity is not the priority of any other agency besides the LCCs. This is a unique niche. c) No other groups specifically focus on this d) Science at this scale e) Loss of landscape-level context for local implementation and planning activities f) Funding for landscape-level work, if minimal 4) Integrated resource management <ul style="list-style-type: none"> a) Being unable to continue the effort to integrate cultural and natural resource conservation would be a loss 5) Multi-stakeholder conservation <ul style="list-style-type: none"> a) Setback for integrative resource management through voluntary partnerships b) Going back to inefficient decision making, uninformed decisions, and loss of public benefit from our efforts c) Coordinated action, will go back to fragmented efforts <ul style="list-style-type: none"> i) Loss of convening function of LCCs d) Interagency work and partnerships would decline 6) Conservation leadership <ul style="list-style-type: none"> a) Leader in conversation for the region 7) Will be more difficult to implement blueprint <ul style="list-style-type: none"> a) Different organization may be able to bring Blueprint idea forward 8) Efforts towards climate change planning and mitigation. 	<ul style="list-style-type: none"> 2) Information about conservation in region 3) Conservation leadership <ul style="list-style-type: none"> a) Lose “support body” for Appalachian region 4) Landscape level conservation <ul style="list-style-type: none"> a) Loss of a community focused on landscape scale conservation b) Platform for bigger, multi-taxa ideas c) Progress on broad-scale conservation planning <ul style="list-style-type: none"> i) Information could become dated without continued progress ii) Result will be a duplication of effort when someone starts this process again in the future d) Lose an entity that provides landscape-scale resources with partner input e) Compiling landscape-level information would not have happened without large focus of LCC 5) Multi-stakeholder conservation <ul style="list-style-type: none"> a) Loss of efficiency in conservation efforts. b) Go back to duplication of effort: <i>“the left hand doesn’t know what the right hand is doing”</i> c) Back to silo’d work d) Opportunities to communicate beyond own work or interests, connection to bigger picture 6) Partnership <ul style="list-style-type: none"> a) Spawning of partnerships b) Reduced collaboration c) Venue for relationships and developing a common regional vision for conservation
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CULTURE OF THE APPLCC

I. ETHOS

- “Hardworking”: Value hard work, see staff and certain partners as exemplars of this value
- “Resourceful”: Accomplishing goals despite lack of resources
- “Cooperative”: Trust one another within the core steering committee group, commitment to transparency and pro-cooperative actions
- Interested in public benefit, efficient work, avoiding duplication of effort, and completing projects in the best way possible

II. NORMS

- Difficulty blaming political groups or administrations given affiliations

- External reasons for any shortcomings of AppLCC rather than due to partnership itself.
 - Paraphrase: *“Didn’t have time and resources to do a better job”, or “AppLCC didn’t have the funding, they needed to be most effective”*
- Personal reasons for shortcomings of AppLCC rather than due to partnership itself
 - Partners espoused perspective that some of the work should have been completed by the partners, so it is not the AppLCCs fault it didn’t get accomplished.
- It is beneficial to work together to improve efficiency, quality of science and management, and reduce redundancy. In general, people operate in silos, which is problematic. LCCs offer a way to integrate diverse partners, conservation needs, and perspectives.
 - In response to question about cultural resources, paraphrases: *“A lot of people live in their own worlds, so it’s good to integrate”*
- AppLCC has done hard work, but people don’t know about or appreciate it
- Work is accomplished through establishing trust and transparency among partners
- Partnership diversity is a desirable goal
- Proud feelings about AppLCC partnership and staff, reluctance to blame them for actions
- Open to partner input
- Public may not care about environmental threats but do care about threats to their health, clean air and water
- Benefit for standardizing information, classification systems, etc. across regions and projects
- Role of government agencies is to serve the public
- Value of broader context to work, connecting projects across multiple levels
- Importance of local community perspectives, bottom-up conservation
- Emphasis on metrics and tangible results as proof of value of work

III. CULTURAL PARTICIPATION

- Not all partners are aware of all the activities of the LCC. For example, one partner mentioned how the South Atlantic LCC has developed a Blueprint and that it would be useful for the AppLCC to do something similar and also incorporate cultural resources. These are projects that have either already been completed or are underway, yet the partner was unaware. This illustrates some degree of uneven communication throughout the partnership.
- AppLCC is driven by USFWS. Thus, the emphasis among partners is on states and agencies who work on fish and wildlife.
- There is value in having everyone participate. This includes diversity of partners and their level of engagement, through committing time, staff, and funding to LCC efforts.
- Transparent, trust-based organization, with high levels of participation

IV. CULTURAL IDENTITY AND PRIDE

- Quality of work given lack of resources
 - Paraphrase: *“AppLCC had some of the least funding but the best results.”*
 - Short timeframe, limited resources, yet quality work given circumstances
- Identity as “underdogs”
 - Paraphrase: *“Would do more of this if they had more money. But given the constraints...they’ve done well. Never really got the budget they needed...not like the NA LCC”*
 - Made “stone soup”
 - Did not have as many resources as other LCCs
- Only LCC to integrate cultural resources
 - Paraphrase: *“We made a great start and were on of the first and only LCCs to do this”*
 - Only LCC to work on cultural resources by bringing in NPS
 - *“AppLCC in particular, bringing cultural aspects in mix is a major benefit, other LCCs have not done this.”*
 - Have “moved the needle” with cultural resource integration
- Quality of science

- Best LCD of any LCC
- Dedicated staff and partners
- Positive feelings towards AppLCC
 - Gave the AppLCC higher ratings/scores
 - *“we have a really good list of accomplishments in the AppLCC”*
- AppLCC as compared to others
 - Middle of pack for tools
 - Best Marxan modeling
 - *“[this] LCC is one of the best ones in the country”*
- Less conflict in Eastern LCCs compared to Western LCCs
- Sometimes conflicted feelings about identity
 - Some partners express dissatisfaction of certain aspects of LCC, while often coupling these answers with positive statements about LCC. Indicates how strongly the individual identifies with the broader group, as well as their nuanced assessments of the positive and negative aspects of the partnership.

V. CULTURAL GOALS

- Identify important areas for future conservation at the landscape scale
- Conserve both natural and cultural resources

F. GLOSSARY

- AppLCC: Appalachian LCC
- NALCC: North Atlantic LCC
- SALCC: South Atlantic LCC
- SWAP: State Wildlife Action Plan
- JV: Joint Venture