

# The Present and Future Possibilities of Landscape Scale Conservation: The Appalachian Landscape Conservation Cooperative (AppLCC) Ethnographic Study<sup>12</sup>

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## 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:

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

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<sup>2</sup> This executive summary provides an overview of the larger report that can be found here: Brown and Murtha 2018 Report and accompanies interactive graphics that can be found here: Brown 2018 Interactive Charts.

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 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. The 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.

**References:**

Brown, Madeline. 2018. "AppLCC Partnership Report." Digital dashboard.  
<https://maddiebrown.github.io/LCC/LCChome.html>

Leonard, Paul B., Robert F. Baldwin, and R. Daniel Hanks. 2017. "Landscape-scale conservation design across biotic realms: sequential integration of aquatic and terrestrial landscapes." *Scientific Reports* 7(14556). doi:10.1038/s41598-017-15304-w.

National Academies of Sciences, Engineering, and Medicine. 2016. "A Review of the Landscape Conservation Cooperatives." Washington, DC: The National Academies Press.  
<https://doi.org/10.17226/21829>.