

APPALACHIAN

LANDSCAPE CONSERVATION COOPERATIVE

WINTER 2015

The Winter 2015 Newsletter highlights how the Appalachian LCC and its partners are addressing landscape issues and bringing together a community to find sustainable solutions.

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LANDSCAPE CONSERVATION
COOPERATIVES

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APPALACHIAN LCC INITIATIVES:

Steering Committee Advances the Cooperative's Conservation Planning Process

Appalachian LCC Steering Committee Members and natural and cultural resource experts met at the National Conservation Training Center on September 3-5 to advance the Cooperative's landscape planning initiative. During the Workshop, Steering Committee members and invited experts began developing a process for articulating the Appalachian LCC's priority resources – considering both natural and cultural resources.

A team of National Park Service (NPS) staff organized a full day of presentations and facilitated discussions aimed at how cultural resources can be incorporated into landscape planning and design along with natural resources. The presentations developed by NPS team provided an excellent orientation to the vast array of cultural resources (National Heritage Areas, traditional ecological knowledge, state historic preservation and national registry information, and related cultural geospatial data-sets). NPS participants and Steering Committee members suggested the LCC review data needs for cultural resources, understand local values to help guide a strategy, and identify the common ground between biological and cultural resource conservation. Ongoing collaboration with the NPS has positioned the Appalachian LCC to serve as a case study of how NPS can work more closely with LCCs to integrate landscape-level planning.

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Members of the Executive Board of the Southern Appalachian Man and the Biosphere (SAMAB) provided keen insights throughout the meeting pertaining to cultural resources and socio-economic aspects of conservation. SAMAB was established to work with regional, state, and local governments, individuals, and other interested organizations to develop a land ethic that recognizes the importance of ecologically sound management of natural and cultural resources in the Southern Appalachians. Success stories were presented by those partners who have previously made progress in integrating natural and cultural resource conservation in the Appalachians. Dr. Jim Fox, Director of the University of North Carolina-Asheville National Environmental Modeling and Analysis Center, gave a demonstration of the “Vitality Index” tool developed by the Center and originally applied to community and watershed group decision-making in Western North Carolina. The Vitality Index reports on the 27 counties of Western North Carolina through the perspectives of the region’s natural, social, built, and economic environments. Angie Chandler, Executive Director of the Blue Ridge National Heritage Area, then presented an illustrative demonstration of how partners were directly using the Vitality Index tool to allow planners, decision-makers, and the public access to information necessary to inspire discussion and craft decisions on issues impacting natural and cultural areas.

Partners at Clemson University and Appalachian LCC staff presented preliminary landscape modeling outputs from the open-source landscape design model MARXAN to begin to describe resource choices, solicit feedback regarding meeting future data needs and discussed developing a process to identify measurable priority resources for

the Appalachians. After running through several model exercises that spurred in-depth conversations, the Steering Committee agreed to a process for articulating priority resources in the Appalachian LCC:

- Steering Committee members will submit nominees to a Technical Team (comprising of around 15 experts) to work with the Steering Committee on drafting a list of priority resources;
- The LCC will distribute the nominee list to the entire Steering Committee for comment and final approval;
- The LCC Chair will correspond with States and other appropriate data sources (e.g. NatureServe) to obtain datasets of interest to the LCC, especially species occurrence and key cultural resource datasets;
- The Technical Team will utilize Appalachian LCC Guiding Principles to set parameters on potential priorities for decision-making;
- The Technical Team will assess the quality and appropriateness of the datasets for use in landscape planning and design. They will determine which are of sufficient quality to support species-specific modeling and narrow down the list of priority resources;
- A select number of species will be modeled for suitable habitat.

A follow up webinar to the Steering Committee will take place in the coming months to give an update on these action items and the ongoing process for selecting priority resources.

BECOME PART OF THE APPALACHIAN LCC NETWORK:

www.applcc.org/news/become-part-of-the-appalachian-lcc-network

LCC Coordinator is Invited Speaker at Tennessee Fish and Wildlife Commission Meeting

On October 30th, Dr. Jean Brennan was the invited speaker at the Tennessee Fish and Wildlife Commission meeting in Greenville, TN, where she presented an overview on the National LCC Network and an update on the work of the Appalachian LCC. The Tennessee Fish and Wildlife Commission is the elected, governing body of the Tennessee Wildlife Resources Agency, which preserves, conserves, manages, protects, and enhances the fish and wildlife of the state and their habitats for the use, benefit, and enjoyment of the citizens and visitors of Tennessee. Dr. Brennan provided information to the Commission on the evolution of the LCC network, the science and conservation planning process underway within the Appalachians, and reviewed currently funded conservation research and resulting management tools and products.

“Having the Appalachian LCC Coordinator speak at our Commission meeting shows how significant landscape conservation is to the state of Tennessee,” said Mark Thurman, an Appalachian LCC Steering Committee member and Regional Fisheries Program Manager for the Tennessee Wildlife Resources Agency. “We very much value the tools, information, and collaboration that are being developed through these regional partnerships for our resource planning and management.”

The first part of Dr. Brennan’s presentation discussed what LCCs are and why they were proposed. She went into detail on how LCCs are a national network of self-directed partnerships set up to link the science and management communities to better inform decisions and develop tools and information to meet the shared needs of a region. This function has never been greater, as population pressures and climate change are threatening diversity, the benefits nature provides, and recreational opportunities. LCCs were created to meet these challenges by managing through partnerships at the landscape level to determine how, where, and when to respond to and anticipate major changes on the landscape. Through landscape-level planning and support for conservation actions and research, LCCs work to protect the valued resources and biological diversity of the nation while sustaining the benefits provided by healthy and resilient ecosystems to human communities.



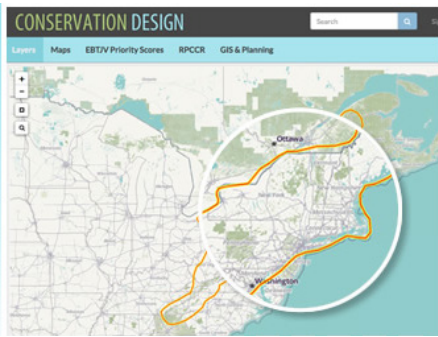
(Left to right) Tennessee Wildlife Resources Agency Executive Director Ed Carter, Dr. Jean Brennan, and Tennessee Fish and Wildlife Commission Chairman Jeffrey Griggs.

Dr. Brennan then went into the science and conservation planning process the Appalachian LCC is undertaking. The Cooperative is coordinating with the Appalachian conservation community and stakeholders to collaborate on the LCC’s projects and activities addressing factors affecting fish and wildlife and cultural resources. This work includes biological planning, conservation design for large landscapes, applied research, and monitoring/evaluation to improve scientific understanding over time.

The final part of the presentation focused on the critical research the Cooperative is funding to deliver decision-support tools and products for resource management. Examples of these projects include: Ensuring Climate Resilient Aquatic Communities which developed an innovative decision-support tool to safeguard valued aquatic resources under predicted climate changes across the region by improving habitat restoration targeting for riparian corridors; Information on the Climate Vulnerability of Appalachian Species and Habitats, a report that addresses how the Cooperative should acquire information about the climate vulnerability of Appalachian species and habitats and share with its partners; a Data Needs Assessment that delivered a suite of conservation planning products and data as well as identified data gaps to improve conservation planning in the region; and additional research.

Jean’s entire presentation is available at:
<http://applcc.org/lcc-coordinator-invited-speaker>

RESEARCH PROJECT HIGHLIGHTS – NEW DELIVERABLES



Research Project Highlights – New Deliverables

Partners of the Appalachian Landscape Conservation Cooperative (LCC) presented the “Riparian Restoration Climate Change Resilience Tool” to the aquatic management and research community at the Annual Eastern Brook Trout Joint Venture (EBTJV) meeting in early September. The Appalachian LCC funded this innovative riparian planting and decision-support tool and helped to coordinate the demonstration to address the immediate conservation planning efforts of resource managers to safeguard valued aquatic resources under predicted climate changes across the region. The tool works by identifying

vulnerable stream and riverbanks that lack tree cover and shade in coldwater stream habitats. By focusing on the most effective areas to plant trees in riparian zones, resource managers can provide shade to limit the amount of solar radiation heating the water and reduce the impacts of increasing temperatures from climate change.

The tool was developed and demonstrated by Keith Nislow and Jason Coombs of the U.S. Forest Service and enhanced through review and input by the EBTJV staff and Science Team.

Access the tool and watch a video demonstration at: <http://applcc.org/riparian-restoration>

Coming Soon – Final Products and Tools from Assessing Future Energy Development across the Appalachians

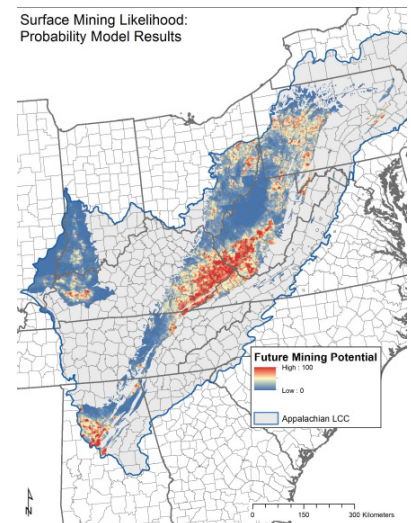
The Nature Conservancy - with support from the Appalachian LCC - has undertaken a study to assist policy makers, land management agencies, and industry in identifying the potential future footprint of energy development and how that may overlap with biological and ecological values.

The Appalachians are a global hotspot for biodiversity and provide tremendous environmental benefits to large cities and surrounding human communities. The region is also rich in energy resources that meet national and regional demands for energy. As wind, natural gas and oil energy expands along with traditional coal development, there is increasing need for research to inform discussions on how to meet immediate energy needs while sustaining the health of natural systems. To help address this need, the Appalachian LCC is working with The Nature Conservancy to assess current and future energy development across the entire region.

Assessing Future Energy Development across the Appalachian LCC developed robust models that combine data on energy development trends and identifies where these may intersect with important natural resource and ecosystem

services to give a more comprehensive picture of what potential energy development could look like in the Appalachians. A final report from the study will outline the major findings of the potential footprint from coal, wind, and natural

gas development. A web-based map tool will allow policy makers, land management agencies, industries, and others to see where development may likely occur and intersect with important natural values to inform regional and local landscape planning decisions. Ultimately this information is intended to effectively avoid, minimize, and offset impacts from energy development to important natural areas and the valuable services they provide.



Acquiring Information on the Climate Vulnerability of Appalachian Species and Habitats

A new report out of the Climate Change Vulnerability Assessment research project addresses how the Cooperative should acquire information about the climate vulnerability of Appalachian species and habitats and share with its partners. An expert panel was assembled by NatureServe to address the selection of species and habitats to assess, approaches to vulnerability assessment, and the availability of downscaled climate data. The panel recommended specific approaches for the Appalachian LCC to adopt. They include:

- Determine the appropriate target of the assessment. In some cases, focusing an assessment on a habitat can inform and potentially reduce the need for assessments of individual species;
- Use coarse-filter or rapidly-applied index methods to assess the vulnerability of many priority species. The Climate Change Vulnerability Index tool for example, works for most aquatic and terrestrial plant and animals species occurring in the Appalachian region;
- For habitats, use expert-interview methods similar to that developed by the North Atlantic LCC, or index methods such as the Habitat Climate Change Vulnerability Analysis, to yield credible ecological information and timely analyses;
- Perform more in-depth assessments of the species and



habitats flagged as highly vulnerable to climate change. Rich in biodiversity, the Appalachian LCC region is threatened by the impacts that climate change could have on natural resources. Thus identifying the steps necessary to acquire climate vulnerability information and using this information to inform climate change adaptation and mitigation strategies is a major research priority for the Appalachian LCC.

Learn more about this funded research:

<http://applcc.org/news/acquiring-climate-vulnerability-information>



Reviewing Studies of Caves and Subterranean Biodiversity

A status review of studies from the cave and karst classification and mapping research project examined an array of research regarding cave environments, cave/karst biodiversity, and previous techniques for mapping and modeling such ecosystems. The review focused on national cave fauna data, regional and local cave fauna distributions, a summary of major taxonomy, evaluation of previous mapping of biodiversity in the region and the techniques employed, and models for explaining subterranean biodiversity patterns both in the Appalachians and elsewhere. This critical review of earlier and existing efforts will allow researchers to propose the most appropriate classification system for these habitats within Appalachia in order to map both the physical and biological resources of cave/karst systems to be incorporated into landscape conservation planning for the region.

Learn more about this funded research:

<http://applcc.org/news/caves-biodiversity>



Data Needs Assessment Research Delivers Suite of Conservation Planning Products

The Data Needs Assessment research project was undertaken to review conservation planning tools, datasets, and methods to provide packages of products, data, and identified data gaps to improve conservation planning in the Appalachian LCC region. A suite of core conservation planning products and data from Principle Investigators at Clemson University are now available to the Cooperative and include:

An analysis of State Wildlife Action Plans in the Appalachian LCC that describe how information contained in individual State Wildlife Action Plans can be linked to integrate state and local-scale efforts into a regional conservation framework;

- A list of 21 conservation planning tools, describing function and relevance of each towards the Cooperative conservation planning goals;
- Interpretive text and graphics of conservation planning tools to be shared through the LCC Web Portal for users to learn about the tools available and what purposes they could serve;
- Interpretive text and graphics that describes the data that can be posted to the Web Portal for sharing;
- A final report that assembles all of these elements together and provides recommendations on how the LCC can use the information to collect finer-scaled data from States, expand on work accomplished at individual State levels and “scale up” to the LCC level, and deliver data in a format that is useful for individual States and for regional planning.

View all the deliverables here and learn more about this funded research: <http://applcc.org/news/conservation-planning-products>

Reviewing the Literature on Freshwater Classification Frameworks

A “Literature Review of Freshwater Classification Frameworks” by Principle Investigators at The Nature Conservancy and Oak Ridge National Laboratory reviewed aquatic and hydrological classifications and frameworks that have been developed at a variety of spatial scales and evaluates which could be applied for use by the Cooperative. Hydrologic classifications not only provide an understanding of how different streams operate, but also how they contribute to the structure of ecological communities. Such classification information is needed to develop and implement instream flow standards and management recommendations so that environmental flows can become integral to all water management decisions from the onset.

Learn more about this funded research: <http://applcc.org/news/freshwater-classification>

Reviewing Existing Tools and Data on Hydrologic and Ecologic Flow Models

The Aquatic Ecological Flows project reviewed existing tools and gathered available data within the project area on hydrologic and ecological flow models that would be suitable to use for the region. Models that were reviewed can predict discharge thresholds and frequency of both high and low flow events and discern the vulnerabilities these extremes will create for conservation targets. In addition, the team of researchers developed a georeferenced stream gage database, coordinated with users and developers on stream flow modeling tools, and developed a geo-referenced stream biological database for the Marcellus Shale region. This Report marks the completion of the first phase of this research that will lead to the development of models that predict the ecological responses to flow alterations within the Marcellus Shale region of the Appalachian LCC.

Learn more about this funded research: <http://applcc.org/news/hydrologic-flow-models>

IN THE NEWS AND ON OUR PORTAL



Assembling Vital Data for Landscape Conservation

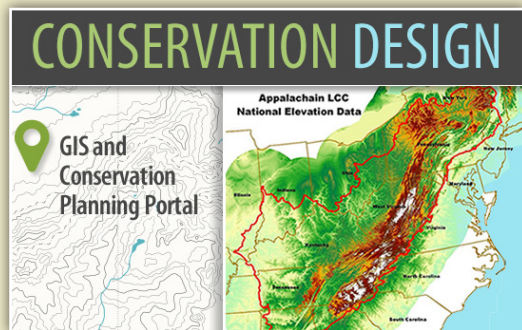
The LCC is dedicated to providing data, resources, and science to partners throughout our geography. We are serving up curated and georeferenced spatial data, with some data available following the completion of funded projects while other foundational datasets are available now.

LEARN MORE: <http://applcc.org/data>

New Appalachian LCC Fact Sheet

Check out the new Appalachian LCC Fact Sheet, which documents how the Cooperative is serving as a catalyst for conservation collaboration by providing the tools, products, and data resource managers and partners need to address the environmental threats that are beyond the scope of any one agency.

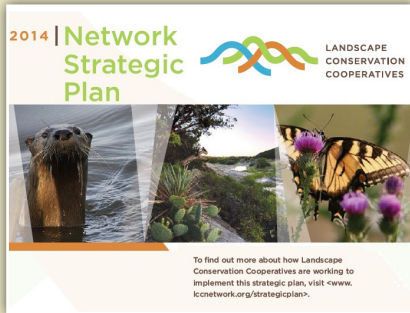
LEARN MORE: <http://applcc.org/cooperative/lcc-factsheet>



GeoNode Conservation Design Platform for Data Modeling and Visualization

The Appalachian LCC and the Eastern Brook Trout Joint Venture Partnership's open-source mapping platform "Conservation Design" supports the conservation community's diverse needs to view, create, and analyze spatial data and maps. This platform provides access to a suite of scientific data, relevant to a variety of conservation planning goals and tasks and includes custom designed decision support tools. These tools allow a manager or conservation practitioner to make dynamic scenario-based decisions using the most current scientific information. Newly developed and customized decision-support tools like the Riparian Restoration Prioritization for Climate Change Resilience Support Tool is currently served up on this platform for the conservation community.

LEARN MORE: <http://www.conservationdesign.org>



LCC Network Releases 2014 Strategic Plan

The Landscape Conservation Cooperative (LCC) Network has developed a strategic plan that articulates a path for the next five years to achieving the LCC Network’s vision and mission to conserve and maintain landscapes and seascapes capable of sustaining natural and cultural resources for current and future generations.

The strategic plan identifies goals, objectives and example tactics that support the Network’s vision and mission in the areas of conservation strategy, collaborative conservation, science and communications. Each goal area has a set of objectives that help guide collaborative efforts within and across LCC’s from an enterprise context. This strategic plan builds on existing work with the Network and serves as a companion document to individual LCC strategic, science, operational, and other plans. As a living, iterative document, we expect to update the strategic plan based on individual LCC’s experience, new information and changes in our respective fields.

LEARN MORE: <http://applcc.org/news/lcc-strategic-plan>



National Fish, Wildlife and Plants Climate Adaptation Strategy

In partnership with state agencies and federal partners, the U.S. Fish and Wildlife Service has released a progress report describing nationwide efforts to reduce impacts of climate change on fish, wildlife, and plants. Titled “Taking Action,” the report includes several projects in the northeast and the Chesapeake Bay among 50 nationwide examples that illustrate a long-term vision for adaptive management in the face of climate change.

LEARN MORE: <http://applcc.org/news/climate-adaptation-strategy>



Audubon Climate Change Report

National Audubon Society issued a new report identifying climate change as the No. 1 threat to North American birds. Three hundred and fourteen species - nearly half of species regularly occurring in the U.S. and Canada, including iconic birds such as the Bald Eagle - are severely threatened, and many could go extinct without action. Audubon’s science team analyzed 30 years of historical climate data and tens of thousands of historical bird records to understand the links between where birds live and the climatic conditions – including precipitation, temperature, and changing seasons – that support them.

LEARN MORE: <http://applcc.org/news/audubon-climate-report>