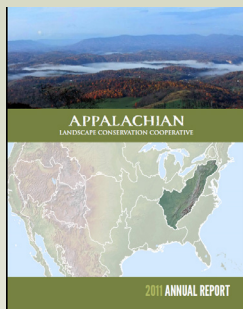


OUR JOURNEY. OUR INVESTMENTS. OUR LEGACY.

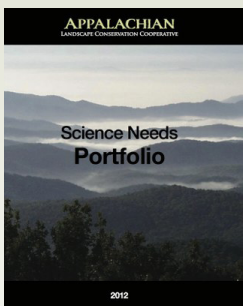
Our work and achievements in 2016 and 2017 built upon the collaborative scientific foundation established in our earlier years, while continuing towards a vision of maintaining a landscape that supports the special biological and cultural resources of the Appalachians. It's helpful to reflect on the systematic advances made by our regional partnership in terms of its actions, decisions, and our investments—both in terms of the science but also in terms of strengthening the partnership through investment in shared resources. Our past Annual Reports have highlighted major benchmarks we've achieved in our partnership's evolution, such as:



2011 *THE YEAR OF*

Identifying Science Needs & Forming the Partnership

Investing in the Partnership: Identified the decision-making body (Governance Structure and Membership) and defined their Vision and Mission. A portion of 2011 project funds jointly hired a Communications Specialist, who was shared with the Appalachian Mountain Joint Venture, to support the Partners in-reach and out-reach in communicating the value of conservation.



Investing in the Science: A group of over 150 invited researchers and managers, representing a diverse cross-section of expertise and affiliations, were assembled to identify the science information needs of Appalachia in order to effectively address the conservation challenges and opportunities across the landscape. The 3-day Science Needs workshop developed, through expert consultation workshop, a Science Needs Portfolio. Leadership approved The Science Needs Portfolio as the cornerstone of the Appalachian LCC Science Program. It was organized by thematic areas (Aquatics, Human Dimensions, Forests, Climate Change, etc.). Top Ranked Science Needs generated through the workshop were identified for funding.



Our Journey. Our Investments. Our Legacy



2012 THE YEAR OF

Defining the Business Model

Investing in the Partnership: Steering Committee members define the goals, direction, and expectations envisioned for the AppLCC. Workshops helped to define and implement a 5-year work plan

for the organization while also pursuing data integration with partners and sharing, and supporting monitoring and research. Focused on aligning actions that reflected the member's shared vision as reflected in the Goals and Objectives identified in the 5-Year Work Plan.

- ▶ **Goal 1.** Create a landscape level data sharing strategy and scalable toolset.
- ▶ **Goal 2.** Deliver landscape-level conservation plans for regional use.
- ▶ **Goal 3.** Create an on-going process to promote engagement and dialogue across the region.
- ▶ **Goal 4.** Assess and align conservation goals and actions that reflect the Cooperative Members' common and shared vision.

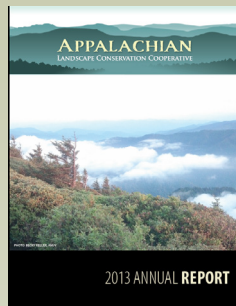
Investing in the Science: continued to fund and oversee projects that developed the tools and research necessary to enhance landscape conservation.

Goal 2: Deliver landscape-level regional conservation plans		Facilitate the use of natural resource indicators and surrogate species to inform landscape-level planning, identify and establish data needs and monitor design that reflect management objectives and conservation targets.				
Objective #2.7	Task	Unstarted	Start (1-3/4)	Medium (5/5)	Complete (7/7)	Exceeded (9/9)
2.7.1	Ensure adequate representation of the AppLCC expertise in relevant US Fish and Wildlife Service Regional (surrogate species) workshops and events.					
2.7.2	Assemble or develop and adopt agreed upon vegetation of habitat classification systems and geospatially recognize areas of rare and unique ecosystems.					
2.7.3	Assemble or develop and adopt agreed upon species classification and distribution data and geospatially recognize areas of rare and endemic species and unique habitats.					
2.7.4	Identify appropriate natural resource indicators and candidate taxa or surrogate species, and develop explicit population objectives or natural resource appropriate targets.					
2.7.5	Identify factors believed to be the most limiting to specific (surrogate species or targets) and identify monitoring efforts to track changes in these factors and response.					
2.7.6	Develop species habitat models to fully operationalize the integration of natural resource indicators and use of surrogate species measures across the AppLCC landscape-level planning, monitoring, and assessment.					
2.7.7	Further refine selection of indicators, species, and targets as needed.					

PERFORMANCE:
Work Plan provides the framework to report progress. Annual "Report Card"

INITIATED RESEARCH:

- ▶ "Appalachian Energy Forecast Analysis";
- ▶ "Riparian Restoration Prioritization to Promote Climate Change Resilience in Eastern U.S. Streams";
- ▶ "Development of a Hydrologic Foundation and Flow-ecology Relationships for Monitoring Riverine Resources in the Marcellus Shale Region".



2013 THE YEAR OF

Building the Portal – A Networking and Planning Tool

Investing in the Partnership: Helped to catalyze the network: assembled foundational data and information; provided decision support tools and products; supported outreach, capacity, and enhanced the visibility of conservation actors.

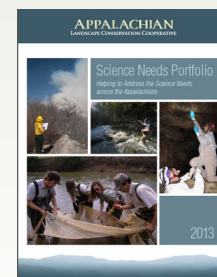
Supported the design and programming of a web-based portal to advance networking and collaborative planning and delivery from among the many partners.

Demonstrated the collaborative nature of LCC 'convening function' through its support of a planning alliance of multiple Fish Habitat Partnerships called "The Whitewater to Bluewater Project", made possible by hosting the on-line collaborative workspace of this Alliance through the appfcc.org web portal.

Creating a web portal

- ▶ a unique member directory to bring together diverse range of individuals and expertise,
- ▶ dedicated group space to facilitate collaborative workflow and exchange,
- ▶ integrated a searchable Research and Project Databases to highlight conservation activities across the region,
- ▶ shared stories and resources to promote and detail how their accomplishments fit into the larger regional goals of landscape conservation.

Investing in the Science: In February 2013, almost 50 experts from a wide range of technical background in both natural and social sciences, as well as geographic expertise across the entire region, volunteered to participate in the annual review of the Appalachian LCC **Science Needs Portfolio**. 2013 marked the first revision of the Portfolio.

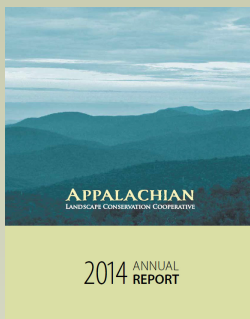


LCC funds research that provided foundational information needed for conservation planning and modeling.

INITIATED RESEARCH:

- ▶ "Data Needs Assessment to Support Conservation Planning for the Appalachian LCC";
- ▶ "Support for Understanding Land Use and Climate Change in the Appalachian Landscape"; and
- ▶ "A Stream Classification System for the Appalachian LCC".

Our Journey. Our Investments. Our Legacy



2014 THE YEAR OF Beginning the Conservation Planning Process

Investment in the Partnership: actively engaged Cooperative members through a process with university researchers to define and prioritize “priority resources” as modeling objectives and targets and

identify appropriate indicators. Defined and prioritized conservation planning “priority resources” to be captured in a regional conservation design. Partner-identified conservation modeling objectives and targets to inform conservation strategies needed to achieve desired outcomes to sustain priority resources (ecosystems) in Appalachia.

Investment in the Science:

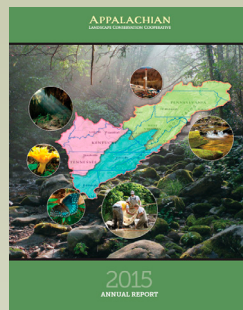
Science Delivered: results from funded research delivered to the partnership as data, tools, information, and assessments from:

- *“Assessing Future Energy Development across the Appalachians”;*
- *“Protecting Aquatic Habitats through Strategic Riparian Restoration”;*
- *“Data Needs Assessment Delivers a Suite of Conservation Planning Products”;*
- *“Providing Vital Data for Modeling, Visualization, and Decision Making”.*

All the information, tools, and resources highlighted in the previous years of work are integrated into or inform the modeling component of the conservation planning and design process.”

INITIATED RESEARCH:

- ▶ *“Classification and Geo-referencing of Cave/Karst Resources across the Appalachian LCC”*
- ▶ *“Assessment and Inventory of Ecosystem Services and Environmental Threats across the Appalachians”*



2015 THE YEAR OF Developing a Landscape Conservation Design (LCD)

Investing in the Partnership: The partnership reached a critical point of its evolution in the iterative process of conservation planning. Work done in 2014 with the conservation planning research

team identified the ‘priority resources’ or priority ecosystems to be conserved. This grounded the planning process in defining the end-point or desired outcome of the partnership – its ultimate measure of success. 2015 began the work of building the framework necessary to achieve the ultimate outcome. By working with the conservation planning research team, the partnership approved a modeling approach that reflects this framework.

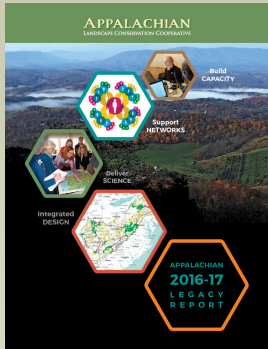
Based on the partners’ guidance, the conservation planning research team engaged organizational representatives, both managers and collaborative researchers, in an iterative year-long technical consultation to build the modeling framework. The approach adopted by the AppLCC partners reflects the complexity of large landscape-level conservation planning: the need to off-set land and resource conservation efforts in achieving ‘benefits’ or conservation targets against the likely detractors or ‘costs’ of expanding stressors or competition with societal demands. It represents an “optimal”, if not ideal solution, i.e., most likely to achieve maximum benefits at least cost. The modeling components identified surrogates or indicators to guide collaborative conservation efforts in, or measuring efforts towards achieving benchmarks, and ultimately realizing the desired outcome.

Investing in the Science: Building the science-based landscape conservation design or tool, to help decision-support by identifying optimal areas for investment or collaborative actions, required the integration of previous years’ funded research investments. Then, using super-computing technology, researchers at Clemson University identified focal landscapes and critical corridors -- key areas that most likely offer resiliency and represent ecologically significant habitats for species and natural resources of concern. The information and resources from these projects also had the net effect of informing the LCCs Landscape Conservation Design (LCD1) – a product presented as a series of maps and supporting data layers or decision support.

INITIATED RESEARCH:

- ▶ *“Data Needs Assessment to Support Conservation Planning for the Appalachian LCC”;*
- ▶ *“Support for Understanding Land Use and Climate Change in the Appalachian Landscape”;* and
- ▶ *“A Stream Classification System for the Appalachian LCC”.*

Our Journey. Our Investments. Our Legacy



2016 THE YEAR OF Focal Area Networks

Investing in the Partnership: 2016 marked the end of the 1st 5-Year Work Plan developed by the Partnership in 2012 (built upon Goals 1-5). In the summer, the LCC convened a 3-day workshop to identify next steps in advancing the partnership and drafting new goals to serve as the frame-

work for the next 5-Year Work Plan. Steering Committee members, collaborative researchers, managers and regional partnership staff from across the Appalachian geography hosted carried on the work stated in 2016 with a series of calls in early 2017 to produce a framework document of major landscape conservation goals and key objectives we will work towards achieving in the coming years. These teams helped to polish and refine our next 5-Year Work Plan around goals focused on achieving widespread use of LCC-funded data, tools, and our Landscape Conservation Design (part of the “NatureScape” tool suite); strategically collaborate and plan to achieve landscape conservation; and enhancing the financial foundation of the LCC and capacity of its membership. The Plan was finalized and approved for adoption at the following annual Steering Committee meeting in October 2017.

2nd (5-Year) Work Plan (draft)

Strategic Goal: The Appalachian LCC supports strategic planning, investment, and coordination to deliver beneficial and effective landscape science, tools, and resources to enhance partner’s capacity and achieve local and landscape-level conservation goals.

- ▶ **GOAL 5** – Build necessary capacity to achieve Appalachian LCC priority goals
- ▶ **GOAL 6** – Effectively achieve landscape conservation through strategic collaboration and planning
- ▶ **GOAL 7** – Promote and achieve widespread use of LCC science and tools across our geography to inform management and conservation planning decisions
- ▶ **GOAL 8** – Integrate social and cultural assets and services into landscape planning

2017 THE YEAR OF Refined (NatureScape) Design

Investing in the Science: 2017 saw the delivery of NatureScape – our “2nd generation of landscape conservation design. It represents a suite of tools drawing from many individually research projects funded by the LCC over the years. But key to this enhanced product was the “integrated modeling” approach that advances the state-of-the science as pioneered by the Clemson team. It goes beyond any previous effort to capture the interplay between aquatic and terrestrial systems optimization modeling approach. First, overcoming the statistical challenges that the aquatic system must ‘marry’ the aquatic condition scores that have been assessed at unique planning units (catchments, watershed, sub-basin) to the uniform terrestrial units such as km². Second, the focal aquatic model captures the dynamics of aquatic systems – defining four key variables influencing aquatic environment at both the catchment and stream reach–level, and then further characterizing the dynamics that modify the aquatic condition based on terrestrial buffer areas influencing that unit.

