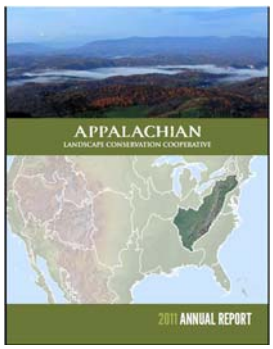
Appendix: Our Journey – Our Investments

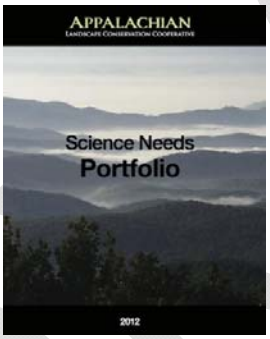
The work and achievements in 2016 and 2017 built upon the collaborative scientific foundation established in our earlier years while continuing towards a vision of maintaining a landscape that supports the special biological and cultural resources of the Appalachians. It's helpful to reflect on the systematic 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); defines their Vision and Mission. Portion of 2011 project funds to jointly hire a Communications Specialist, to be 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 (i.e., reflects the need to address by systematically building information and tools incrementally). Leadership approves The Science Needs Portfolio is the cornerstone of the Appalachian LCC Science Program. It is organized by thematic areas (Aquatics, Human Dimensions, Forests, Climate Change, etc.) Top Ranked Science Needs generated through the workshop are identified for funding.

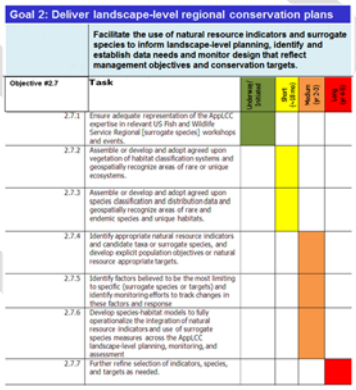
2012 *the year of*

Defining the Business Model

Investing in the Partnership: Steering Committee members define the goals, direction, and expectations envisioned for the AppLCC. Workshop helps 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. Focus on aligning actions that reflect 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.

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



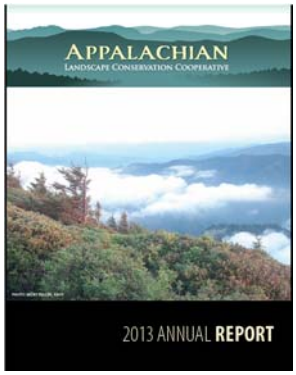
Goal 2: Deliver landscape-level regional conservation plans					
	Facilitate the use of natural resource indicators and surrogate species to inform landscape-level planning, identify and establish data needs and monitor design that reflect management objectives and conservation targets.				
Objective #2.7	Task				
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 or 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.				

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

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: Help to catalyze the network: assembling foundational data and information; providing decision support tools and products; supporting outreach, capacity, and enhancing the visibility of conservation actors. Support the design and programming of a web-based portal to advance networking and collaborative planning and delivery from among the many partners.

Demonstrate 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 applcc.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,
- integrate a searchable Research and Project Databases to highlight conservation activities across the region,
- share stories and resources to promote and detail how their accomplishments fit into the larger regional goals of landscape conservation.

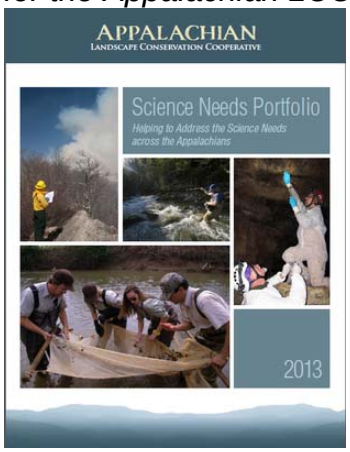
Investing in the Science:

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.

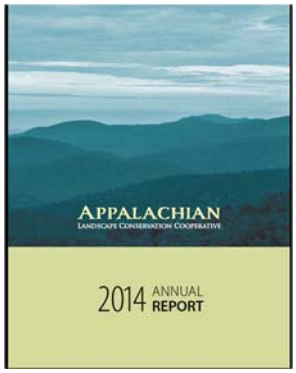
LCC funds research that provide foundational information needed for conservation planning and modeling.

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*".



2014 *the year of*



Beginning the Conservation Planning Process

Investment in the Partnership: actively engage Cooperative members through a process with university researchers to define and prioritize "priority resources" as modeling objectives and targets and identify appropriate indicators. Define and prioritize 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:

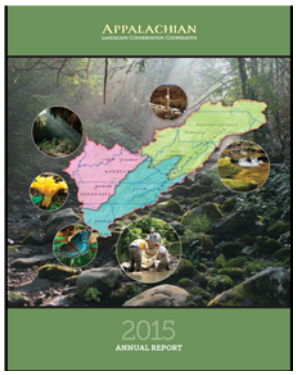
Science Delivered: results from funded research delivered to the partnership as data, tools, information, and assessments from: "*Assessing Future Energy Development across the Appalachians*"; "*Protecting Aquatic Habitats through Strategic Riparian Restoration*"; "*Data Needs Assessment Delivers a Suite 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 reaches a critical point of its evolution in the iterative process of conservation planning. Last year's work 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. This year began the work of building the framework necessary to achieve the ultimate outcome. By working with the conservation planning research team the partnership approves 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 identify the modeling framework that would be the most likely to succeed in achieving the desired conservation outcome (priority ecosystems and features). The effort to identify critical areas vital to sustain fish and wildlife populations, enhance ecosystem services for society, and protect cultural resources is informed by technical experts from among the Cooperative's membership using their on-the-ground knowledge and expertise.

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 identifies 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: The data investments, modeling framework, and definition of the desired outcome, all served to reflect the partners' shared goals in working collectively towards landscape-scale conservation. Building the science-based tool to help inform the partnership of optimal areas for investment or collaborative actions required the integration of previous years' funded research investments that addressed the most pressing scientific needs in assembling both foundational and predictive trends data. Using super-computing technology, researchers at Clemson University identified focal landscapes and critical corridors as 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 tools that illustrate the location of key focal landscapes and priority resources. The application of the design can inform management decisions and conservation actions to ensure the quality, quantity, and location of habitat needed to protect biodiversity.