NatureScape

Frequently Asked Questions

1 "What is *NatureScape*?"

NatureScape is a suite of tools to help inform decision-making at the landscape-level. It is made up of:

- a conservation design map -- reflecting cost-benefit 'optimization' modeling output,
- summary data table by area -- customized to examine specific location or region to visualize the data driving the modeling solution or map design, and
- the aquatic condition score to visualize the aquatic or watershed influence on the design.

Together these help frame the response to challenges facing conservation efforts in the 21st Century.

How to invest more strategically, and work more efficiently, to achieve greater conservation benefits for the least cost, given what we know of future trends in land-use, expanding environmental threats, and projected changes in temperature and water availability?

Key elements of the scientific underpinning of ***NatureScape*** include:

- Extensive stakeholder consultation served to articulate the number of "priority resources" or ecological systems that are reflected in the final ***NatureScape*** design.
- Priorities reflect objective to conserve functioning ecological systems to long-term viability of species to environmental health.
- Modeling employed the most globally recognized modeling – Marxan approach. The number of conservation targets, as well as the trends in major land-use change-stressors were so complex it required the use of the most current scientific information in applying sophisticated computer modeling -- supercomputing technology -- by leading landscape ecologists at Clemson University.
- Forward-looking results reflected in the ***NatureScape*** tool suite reflects the integration of predictive modeling to help facilitate the conservation planning process – to evaluate the underlying science information against current conservation program priorities and helps to inform decision-making.
- The scope and scientific sophistication make it truly state-of-the-art science for implementing large-scale conservation, and the predictive nature of the approach helps to identify opportunity areas to work collaboratively or invest limited resources more strategically, to achieve sustained conservation benefits.

2 "Why plan at landscape scales if most conservation action happens locally?"

Many of the environmental challenges of today - from expanding urbanization to increasing frequency of droughts and wildfires - are threatening natural plant and animal species, and the health of ecological systems. The rate of change and scale of the challenge requires conservation planning across state lines and collaborative efforts and transcend organizational areas of responsibility. To better protect species, ecosystems, and the valuable environmental benefits nature provides society, it is necessary to create interconnected areas of conserved lands if species are to move and adapt to these large-scale regional changes. Greater coordination among partners informed by a spatial design to focus conservation delivery is the best hope to achieve more cost-efficient investments, assist in the recovery of endangered species while keeping others from declining toward levels requiring legal protection, and lead to greater, more lasting successes.

3 "What is unique about this approach and resulting design compared to others that may be out there?"

- Takes a holistic approach to conservation planning (not species or taxa -specific);
- Considers areas that may be more resilient to large-scale impacts (i.e. energy development, urbanization, changing climate factors);
- Employs a cost-benefit approach to arrive at the final design or 'optimal solution. Cost (fragmentation or loss of connectivity) is entered in its mathematical calculations as a 'penalty' applied to an investment to identify the least cost to reach the overall conservation goals;
- Integrates aquatic conditions into the modeling design that captures four key variables influencing aquatic environment (modeled at both the catchment and stream reach –level, while modifying condition based on buffer areas around each);
- Incorporates socio-economic variables (ecosystem benefits and services, carbon storage, and watershed areas important to drinking water supply) into the design;
- Represents partnership-prioritization, reflecting programmatic interests of the diverse conservation community across an ecologically-defined landscape.

To learn more about NatureScape, visit ***http://applcc.org/research/applcc-funded-projects/interactive-conservation-planning-and-design***

4 "Who identified the priorities reflected in *NatureScape* and what was the process to develop this product?"

The consultative process began in 2013 through workshops and meetings of federal, state, non-governmental, and tribal members of the Landscape Conservation Cooperative who identified areas of "no regret" (everyone could agree were areas to conserve). Researchers then made their first spatial representation of the partnership's stated priorities, which reflected conserving important ecological systems or unique features across the Appalachian region. In 2015, the research team expanded its consultation to engage technical experts with knowledge of the species, ecosystems, and physiographic regions of the Appalachian LCC geography. They were assembled to advise in the development of the first iteration of the spatial map of ***NatureScape***. Consultations continued to identify essential natural resources to represent in the landscape modeling work, capturing a mix of terrestrial and aquatic ecosystem types, and balance these 'targets' against an expanding list of ecosystem services and landscape-level stressors such as urbanization, energy development, and climate change projections. The Advisory Team was expanded in 2016 for the purpose of seeking additional input and recommendations for design refinements.

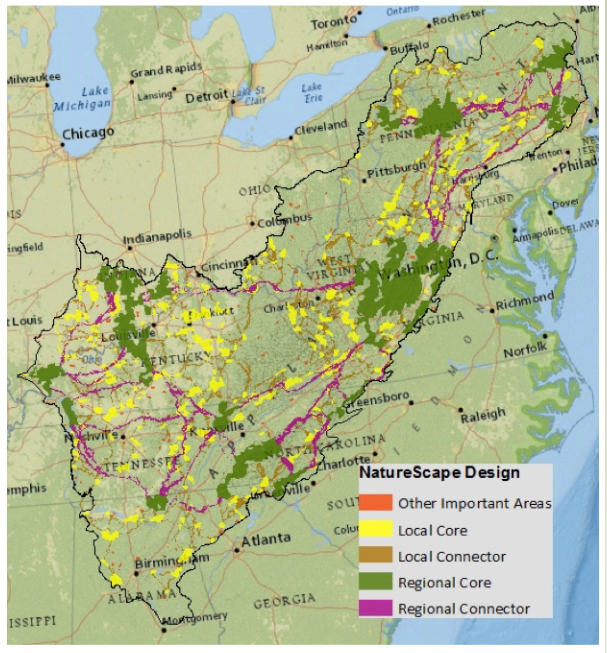
5 "How can *NatureScape* help local conservation decision making and planning?"

NatureScape provides the regional context for decision-making, enabling local partners to prioritize key lands and waters to protect that would be valuable at local and regional levels. This reflects wise investments of limited conservation dollars now and into the future. It provides land managers, private landowners, and many others the ability to incorporate regional information and future trends of a changing landscape into their own local land use and natural resource decisions.

6 "If the area I'm working in is not identified as one of the 5-conservation elements (e.g., as regional core, connector), does that mean it isn't of conservation value?"

The Landscape Conservation Design (map component) of ***NatureScape*** is organized into five design elements ('cores' at two scales – local and regional, 'connectors' serving as the least costly area to connect important cores, and 'other areas of conservation importance'.) The result covers many critical ecological processes and patterns across the Appalachian geography. It's important to understand that the spatial design reflects the "optimal solution" **If the area you are working in is not identified (not included in the Optimal Solution) that does not mean it isn't of conservation importance or value.** The value of working from the starting point of using a science-based conservation planning design, is that it help to guide further discussions, and to allow partners to identify next steps and prioritize strategies and actions.

Conservation plans are both scale-dependent, and data-input dependent. They reflect the priorities of the geography for which they were assessed and the data used. ***NatureScape*** assesses the far-reaching geography of the Appalachian LCC (~600,000 km2, 15 states).



Therefore, a place on the landscape that is known to be important locally can only be included in the overall plan if data were available to include and if it competed throughout the whole geography. In other words, that its characteristics were not represented somewhere else better, than in that particular spot. But it's also important to note, a conservation design can be rescaled at any time; re-running a design with new and better data, within a priority geography (sub-geography), will most likely result in finer-grained priorities. As the tool suite illustrate, ***NatureScape*** is also totally transparent, which is important to foster trust and allow the capacity to revisit shifting trends and priorities.

7 "How can the conservation community move forward in using this *NatureScape* to achieve connected landscapes in Appalachia?"

Work as a Collaborative Network! The value of employing ***NatureScape*** is that it allows the many partners to identify areas of possible collaborative and shared interests. As conservation communities face the scale and scope of the challenges there is a marked transition into fostering collaborative networks of conservation practitioners, to act as a forum to bring together diverse stakeholders based on shared goals and develop key tools and products necessary for action. The ***NatureScape*** tool suite offers both the 'optimal solution' map to help identify areas of least-coast and greatest value to regional conservation objectives, while providing on-line data visualizations that help identify the key conservation targets – both within the design and outside the design but where partners are working.

Serving as a coordinated network and offering a forum is key to facilitating the exchange of ideas and information among partners to implement regional planning and conservation delivery. By assembling the expertise, innovation, and passion of the conservation community within the Appalachians, the ***NatureScape*** resources should help promote more effective collaboration to address the conservation challenges of the 21st century.