



Highlights from the National Workshop on Large Landscape Conservation

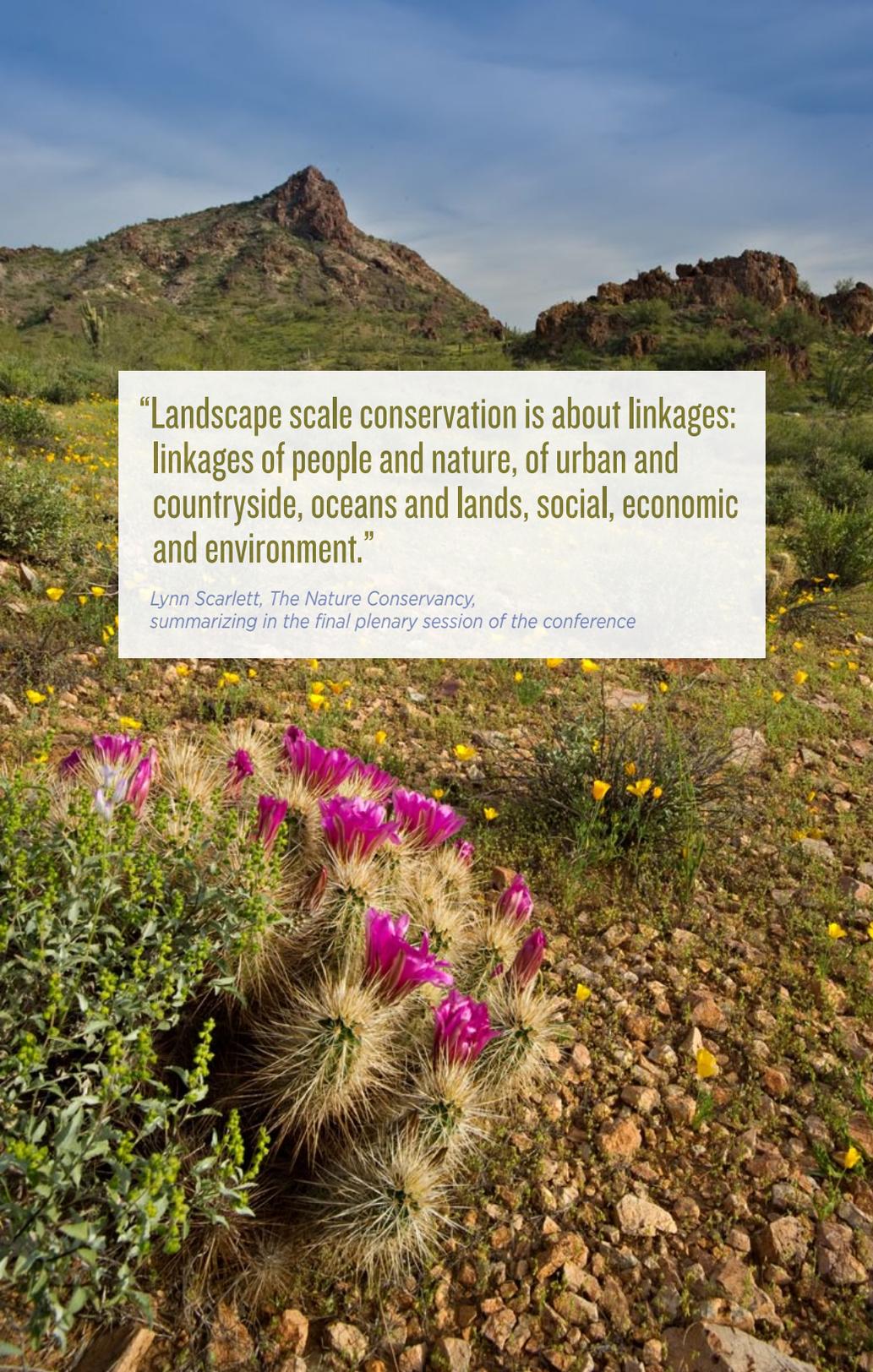
# **EXPANDING HORIZONS**

Washington, DC • October 2014

# PARTNERS AND SPONSORS



United States Fish and Wildlife Service



“Landscape scale conservation is about linkages: linkages of people and nature, of urban and countryside, oceans and lands, social, economic and environment.”

*Lynn Scarlett, The Nature Conservancy, summarizing in the final plenary session of the conference*

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## REPORT PARTNERS

**Practitioners’ Network for Large Landscape Conservation** is an alliance of professionals and citizens engaged in leading, managing, researching, advocating, funding, educating or setting policy to advance large landscape conservation initiatives.

**Lincoln Institute of Land Policy** is the leading resource for key issues concerning the use, regulation, and taxation of land. Providing high-quality education and research, the Lincoln Institute strives to improve public dialogue and decisions about land policy.

**National Park Service Stewardship Institute** advances learning through cultivating networks of inspired people actively engaged in keeping the National Park Service at the leading edge of stewardship for our natural and cultural heritage.

**Quebec-Labrador Foundation/Atlantic Center for the Environment** is a US/Canadian NGO supporting communities of eastern Canada and New England, and sharing models of stewardship of natural and cultural heritage worldwide.

## INTRODUCTION

Large landscape conservation is “not a specific scale but a vantage point.” This is how Lynn Scarlett began her summary of the National Workshop on Large Landscape Conservation (October 2014, Washington DC), referring to thinking that takes in whole ecosystems and successive generations of caretakers. This report is itself a vantage point, a high-altitude overview of the first nationwide conference on a new kind of collaboration in conservation.

The workshop was organized to share ideas about this innovative approach. Large landscape conservation acknowledges a 21st-century reality: that in a world under global threats to biodiversity and climate, environmental problems and opportunities have moved beyond standard approaches and traditional boundaries. The workshop exceeded all expectations. Originally planned for 300–400 participants, it was oversubscribed, with more than 650 people coming together. Fortunately, the venue at the Ronald Reagan Building and International Trade Center in Washington, DC, was large enough to accommodate the surge in interest. The event was held on 23 and 24 October, 2014.

The organization of the conference was itself a collaboration, with more than 30 partners and sponsors. Lead organizers were the Practitioner’s Network and the Lincoln Institute of Land Policy. The Chesapeake Conservancy served as the local host, with the American Fisheries Society facilitating registrations. Preparation of this report is a contribution of the National Park Service in partnership with the Quebec Labrador Foundation/Atlantic Center for the Environment.

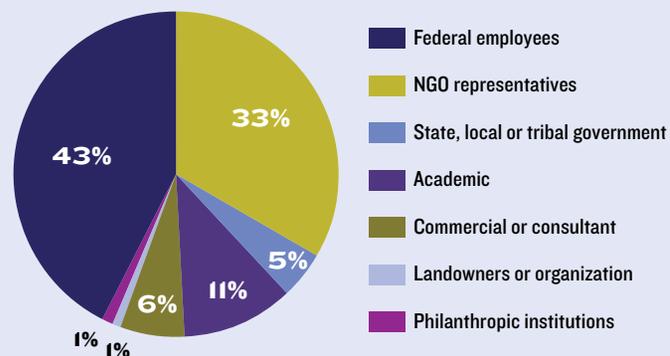
Concurrent sessions were organized through an open call for proposals. 370 were received, reviewed by a program committee, and most were accommodated. The event will sometimes be referred to as a *conference* in this publication.

This report does not attempt to capture the details of the tremendous outpouring of information on large landscape conservation at the

### CONFERENCE AT A GLANCE

2 Days, 661 Registered participants, 269 Presentations, 34 Posters, 23 Plenary speakers, 74 Concurrent sessions—  
Powerpoint slides & moments of inspiration: countless!

#### ATTENDEE AFFILIATIONS:





conference. Rather than document proceedings, this report is designed to summarize key facets of the field that emerged—distilled from the masses of information presented at the event—and to illuminate steps to moving the work forward. In the following pages, capsule case studies are used to illustrate important points or innovations. Specific projects are cited in the text that represent examples of work across the country, all selected with full knowledge that many other examples could have been cited. Not all conclusions and observations in the text are attributed, often because they came from multiple sources (a sign of convergent thinking

and experience) but also to maintain the flow of narrative. The objective of this report is to convey the breadth and depth of the large landscape movement in the United States as evidenced by the conference, and to extend an invitation to even greater collaboration.

#### RELATED VIDEO

Jim Levitt, Lincoln Institute of Land Policy: Overview of the conference as a whole. [tinyurl.com/ExpHrzn001](https://tinyurl.com/ExpHrzn001)

## FOREWORD BY TONY HISS

Big ideas about nature and people and a new approach to conservation cascaded through the first-ever 2014 National Workshop on Large Landscape Conservation. So much happened so quickly that the usual phrases for describing heartening and enlivening events just don't fit.

*A watershed event?* It felt more like whitewater rafting down Niagara Falls or along an Ice-Age Flood.

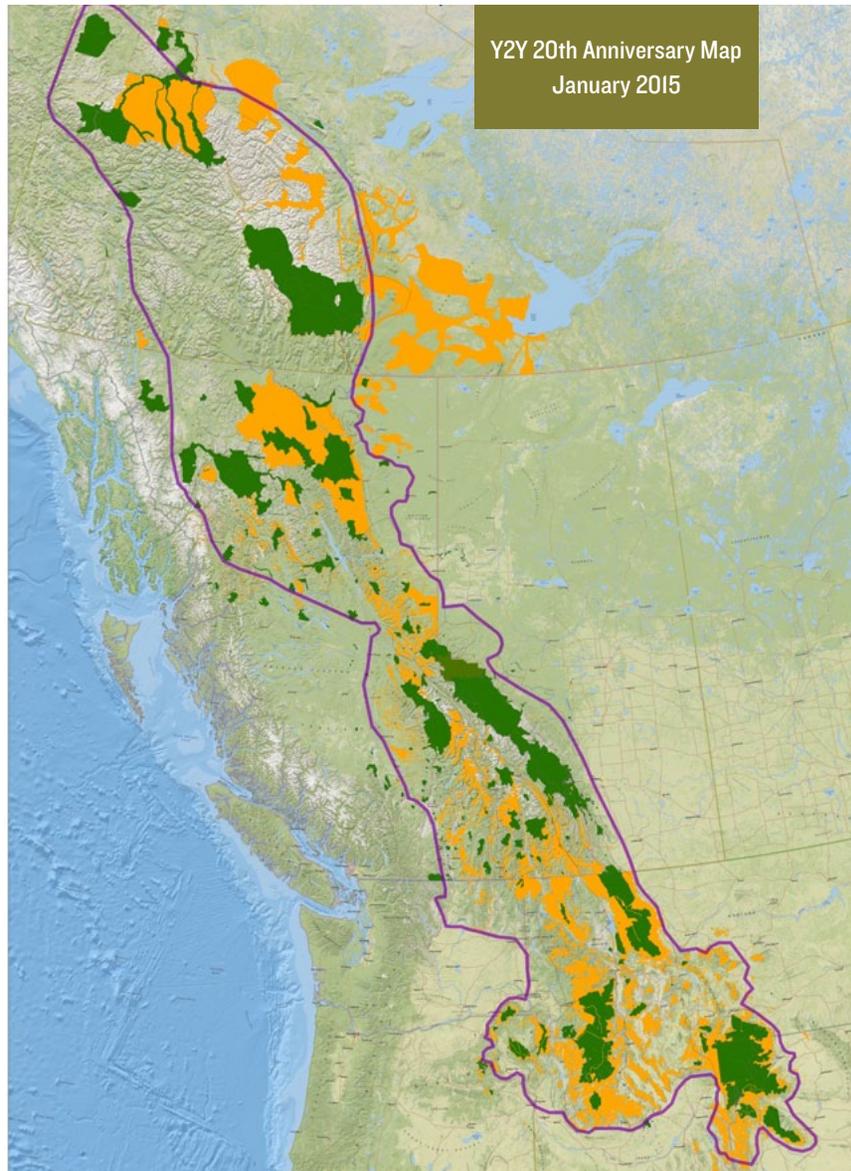
*A coming of age?* Perhaps, if what you're thinking about is the "rocket stage" in the growth of a longleaf pine tree: The tree can spend years looking like no more than a clump of grass, although it's been invisibly sinking a deep taproot; then, in a single season, it leaps four feet toward the sky, putting it past the reach of ground-hugging wildfires.

*Variety of input?* The medieval Spanish king, Alfonso the Wise, is remembered for saying that if he'd been present at the Creation, he could've offered some useful hints. But at the oversubscribed Large Landscape Workshop, which met for two days at the Ronald Reagan Building in Washington, D.C., on October 23 and 24, 2014, 117 hours of experience, advice, and data had to be packed into seven sets of concurrent sessions that occupied most of the 17 hours of the conference. There were thoughtful talks and panels and carefully prepared reports and slideshows by 269 presenters from inner cities, remote rocky heights, far-flung islands, and landscapes of all types across the United States, with connections to Canada and Mexico.

*Continuing momentum?* Ben Franklin said on the last day of the U.S. Constitutional Convention in Philadelphia in 1787 that, after spending three months listening to back-and-forth debate and looking daily at a gilded sunburst on the back of the President's chair, he finally had the happiness of knowing he was seeing a rising sun, not a setting one. But Secretary of the Interior Sally Jewell, one of two cabinet members to address the Workshop and applaud its efforts, told a lunchtime plenary session on the first day: "This room is bursting with vision. You will be pioneers of landscape-level understanding, as Teddy Roosevelt was of conservation a century ago. Let's make it happen!"



Landscape-level conservation – the term is still relatively new – is a different way of making sense of the world and of assessing and nurturing its health that steps beyond the laudable, but limited, 20th-century practice of designating reserves and cleaning up pollution. Taking a wide-angle, big-picture view of things, it sees every landscape, designated or not, as an intricately connected community of living beings sustained by a wide-ranging community of people. Landscape-level conservation has been reenergizing and broadening the environmental movement, demonstrating, as it is accepted and adopted, that the first thing to get bigger is not so much the size of the property to be protected as it is the possibility for actions, some large, some small, that will make a lasting difference for the future of the biosphere and its inhabitants, including humanity.



Many of these inaugural projects were on display in the Workshop presentations and in the 34 posters which adorned the vast Reagan Building atrium. At times the Workshop felt like an enormous bazaar where programs, concepts, research findings, explorations, cooperative agreements, and other early successes as well as questions to ponder were all on display.

Yellowstone-to-Yukon – known to all as “Y2Y,” perhaps the granddaddy of citizen-generated large-landscape projects, an idea for a connected, binational wildland corridor 2,000 miles long, from Yellowstone National Park north to the Alaskan border along the world’s last intact mountain ecosystem – was literally coming of age, celebrating its 21st birthday, and bringing maps showing that in 1993 only 12% of this 321-million-acre landscape had been conserved, but that by 2013 the total had surged remarkably – to 52%. National Heritage Areas, honoring this country’s history and achievements, are even more well-established: the program embraces tens of millions of acres, in 30 states. It has just turned 30.

Like any well-stocked marketplace, this was a bazaar where unexpected jewels, efforts hitherto known only to small groups, gleamed brightly in corners and were freely offered to all. Shortly before the Workshop began, an Oregon county sewerage agency began adding trees and shrubs to the meandering banks of the 80-mile-long Tualatin River west of Portland, Oregon to keep the fish in the river cool; it will have planted a million of them by World Environment Day (June 5, 2015). Y2Y has inspired plans for “H2H,” a 50-mile-long corridor of land just beyond the affluent northern suburbs of New York City, stretching from the Housatonic River, in Connecticut, to the Hudson River, in New York, that has been identified as a “resilient landscape” that, once protected, could dramatically slow the effects of climate change. The Staying Connected Initiative, a coalition of Canadians and Americans working across 80 million acres of forested land in four provinces and

four states anchored by northern New England (a landscape the size of Germany), calls itself “the very young cousin to Y2Y that 15 years from now they’ll call its northeast equivalent.”

The effect, Workshop participants told me during breaks (there were a few), was somehow both exhilarating and sobering. Landscape-level conservation is hope-propelled rather than fear-accelerated. It’s a banding together in the face of grave environmental threats of extinctions and degradation whose alchemy is that, by widening our horizons, the focus isn’t so much on salvage operations as on the astounding number of things that can and need to be undertaken to restore, replenish, safeguard, protect, and celebrate the long-term integrity of this gigantic continent’s astonishing natural and cultural heritage.



When human ancestors first stood upright millions of years ago and could see over the tall savanna grasses of East Africa, their world went in an instant from being about 20-to-30 feet wide to something like 20-to-30 miles wide. This redefined what was practical, necessary, and possible to think about. In a similar fashion, scaling up or accelerating our own awareness of conservation to the landscape level is a useful way of dealing with the ever-proliferating complexities of modern America, a country of 320 million people that within half a century will have 400 million.

A country where, the last half-century of science tells us, existing conservation methods aren’t enough to protect these places properly, in part because plants and animals move across lines drawn on a map and because, as these places become more isolated, former inhabitants can’t move back in again, either for full-time or part-time residence. Some Alaska shorebirds, for instance, winter in Mexico or China or New Zealand; Tom Tidwell, Chief of the United States Forest Service calls birds, bats,

and butterflies the “winged messengers” of landscape-scale conservation. In recent years we’ve also seen that, though maps and land designations remain stationary, places may soon be on the move in their entirety, as climate change nudges one ecosystem aside and draws in another.

Perhaps mapping itself is finally entering a non-Euclidean, or post-Jeffersonian, phase. For almost 230 years – ever since 1785, when Thomas Jefferson, even before the Constitutional Convention, suggested that geometry should trump topography for surveying what were called the “vacant lands” west of the Appalachians, we’ve had the “Jeffersonian grid,” still inescapably seen outside the windows of any transcontinental flight in the way roads and fields are laid out. This grid used the otherwise invisible (and only recently computed) lines of longitude and latitude to partition the landscape into square-mile “sections” for property lines that ignored ecosystems, watersheds, and even mountain chains. It created a right-angled reality for settlers moving west to set up towns, unencumbered by what they were inheriting – the natural organization of the landscape and the age-old ways and knowledge of its previous human inhabitants.



*Banding together.* If working across *more of* the land is something that follows from realizing there’s *more to* the land (and beneath it and above it), the new conservation equation places as much emphasis on the *who* part of the work as it does on the *what* of it. In yet another departure from traditional practices, another thing to get bigger is an opening up to the number and kinds of people who need to get behind any landscape-scale project. The entire process, said Dan Ashe, Director of the U.S. Fish and Wildlife Service, relies on “epic collaboration” (this became the Workshop’s most frequently repeated phrase). *Epic* resonated because it spoke of reaching across so many divides – or “de-railers,” another popular Workshop word:

- *Private landowners partnering with public-land managers* – the migration path of the pronghorn antelope, which traverses both public and private land, has been protected, but it’s the last of what were seven such corridors, and the others have all been expunged. On the other hand, working with 953 ranchers across 11 Western states, the National Resources Conservation Service’s Sage Grouse Initiative has moved or marked with white plastic tags 537 miles of barbed-wire fences so these low-flying birds won’t impale themselves. “I work with the hopefuls, not the hatefuls,” one rancher said.
- *Private landowners partnering with their next owners* – tens of millions of acres of farms and ranches will change hands within the next 20 years, along with more than 200 million acres of “family forests.” The average age of a forest landowner is 62½, and “affinity to the land,” one commentator pointed out, “can be harder to pass along than a legal deed.”
- *Public-land managers working with other public-land managers* – too many sister agencies have long-standing habits of treating each other as disdained step-sisters, or they act like the three Gray Sisters in Greek myths, passing around a single eye. Over the last 30 years, the Bureau of Land Management has developed a Visual Resource Management (VRM) system for evaluating intrusions on lands in the West, which includes listing scenic qualities at various distances from “KOPs,” or Key Observation Points. But VRM methods have not yet made it back East, where the Federal Energy Regulatory Commission tends to approve without question all proposals for new gas pipelines and electric-transmission corridors, even if they might affect views from a National Historic Landmark such as Montpelier, the Virginia estate surrounded by old-growth forest where James Madison drafted an outline for the U.S. Constitution.
- *Other disparities yet to be bridged* – 85% of Americans live in urban areas, leading to a generation of kids who have “walked only on asphalt.”



Within the Workshop most presenters were male – engaged in “mansplaining,” as one woman said. Another participant was shocked to find the conference so “overwhelmingly white.” Dr. Mamie Parker, retired Assistant Director of the Fish and Wildlife Service (the first African-American woman in that position), was a plenary speaker who got a sustained ovation equaled only by Secretary Jewell’s. “For many years,” Dr. Parker said, “we’ve been stuck, stalled, and scared of non-traditional partnerships. Fear has kept us from reaching out to people who want to feel respected, to know that they’re a valued member of the team.”

“Change happens at the rate of trust,” said one Workshop participant. “I don’t think we’ve tested the trust yet,” said another. It’s abundantly clear that, from here on out, successful *conservation* is going to need a helluva lot of successful *conversations*, many of which might be awkward at first. It’ll be

a challenge, a stretch – standing upright brought human ancestors out of their comfort zone; a sense of belonging to other tribes is something we're still working on.



*City People*, a ground-breaking book by the historian Gunther Barth, showed how 20th-century American cities became cohesive places because of late-19th-century inventions: Millions of small-town Americans and Eastern European immigrants learned how to live and work together thanks to apartment houses, department stores, newspapers (which gave them the same information base), and baseball parks (which taught them the rules of competition and cooperation). Public libraries and public parks could be added to the list.

Baltimore's Masonville Cove, the country's first Urban Wildlife Refuge Partnership, launched in 2013, is perhaps a new kind of public library for the large-landscape era. A waterfront neighborhood in the southernmost part of town torn up after World War II for a harbor tunnel thruway, and littered with abandoned industrial sites that have regenerated and then been rediscovered by 52 species of birds, the Masonville Cove Urban Wilderness Conservation Area now has classes taught by staffers from the National Aquarium about the Chesapeake Bay and its 64,000 square-mile watershed (the size of 18½ Yellowstones). There are also field trips, walking trails, a kayak launch, and opportunities to help clean up charred debris which may date back to the Great Baltimore Fire of 1904.

Nationally, landscape-scale conservation has an informal and unofficial steering committee – the Practitioners Network for Large Landscape Conservation, a well-named alliance (a practitioner is a healer) of government land managers, land trusts, academics, citizens, and national non-profits that save lands and protect species. And officially, as the result of an early Obama administration initiative, there's now a nationwide

underpinning to the work: a network of federal fact-finders and conveners, organized as 22 Landscape Conservation Cooperatives. The LCCs don't own anything or run anything and they don't issue regulations, but they generate and compile reliable scientific data about all of the country's landscapes (and many of the adjoining landscapes in Canada and Mexico), creating a shared information base. They necessarily cover a lot of ground – and water (one LCC takes in both Hawaii and American Samoa, 4,000 miles to the west) – and they bring a lot of people together (each LCC has at least 30 partners who represent separate government agencies, non-profits, and tribal governments).



What's next? That was the question asked over and over, with excitement and urgency, in the building's sprawling, mall-length hallways. There were those buoyed by a recent survey showing that Americans think 50% of the planet should be protected for other species (Brazilians say 70%). Some foresee a seamless continental system of interlocked large landscapes, and the establishment of an international peace park on the U.S.-Mexico border to complement the one set up in 1932 across the U.S.-Canada boundary. There were, on the other hand, those in anguish who see all efforts falling short, confining North Americans to a continent with more development and fewer wolves, salmon, spotted owls, and less biodiversity. There were those who thought that, at the next National Workshop, partnership must be made an official part of the proceedings, built into the planning of sessions, into their presentations, and into follow-up discussions and initiatives.

What *is* next? People may need to take some time to assimilate the ascendancy of a new insight, a permanent expansion in the perception of landscapes. No more NIMBY (“Not In My Backyard”); there's only one backyard (OBY), and it's our care and delight, our inheritance and responsibility. When you gain a new capacity, where will you set your sights? If someone gives you a telescope, what will you look at first?

## COMPLEXITIES UPON COMPLEXITIES

Conserving sustainable landscapes for nature and people is one of the most significant challenges facing society in the 21st century; one that will require a fundamental shift in thinking and action, addressing social, economic and ecological systems. All landscapes have been altered to some degree, a definition of ecosystem intactness is elusive, and scientists increasingly speak in terms of adaptation and resiliency.

As John Muir famously wrote, “When we try to pick out anything by itself, we find it hitched to everything else in the Universe.” As conservation has progressed from a focus on individual species and specific sites to habitats and finally large-scale ecosystems, following the connections of what Muir called “a thousand invisible cords that cannot be broken” one quickly comes to appreciate how very complicated the business of landscape sustainability is.

Technology helps to sort through the complexity. One example can be found in the host area of the conference. Landscape Chesapeake, hosted by NatureServe, provides a valuable online tool for viewing and informing conservation priorities. The platform synthesizes almost 200 layers of data bridging conservation priorities across states. Though still building its database of predictive modeling layers, such as those related to energy and land use, the system allows users to integrate their own Geographic Information System (GIS) layers to further customize their mapping needs.

**“We do better when we work together.”**

*Tom Vilsack,  
Secretary of Agriculture*

Relatedly, techniques in predictive modeling can be highly accurate, and remote sensing brings observation to our fingertips in ever finer resolution.

Ecological complexity of large landscapes is matched by cultural richness and by social expectations of land uses from a variety of sectors, including energy, transportation, infrastructure. Landscapes are defined both by technical and social perspectives. Partnerships are therefore imperative, and necessary at a scale and diversity rarely seen before.

Temperate grasslands are the most endangered biome on the planet, largely because they are particularly well-suited for agriculture. In an expansive view of agriculture, farmers select or breed a desirable species and bring its ecological niche to it—artificial rainfall, nutrients, pest control, etc. The alternative approach of the Midwest Conservation Biomass Alliance reverses that paradigm. The project seeks to restore grasslands by finding and incentivizing uses for native species. The alternative approach does not work if one cares only about the grass properties of native species. “You can’t make corn flakes out of thistle.” But the project is promoting innovative technologies for biofuel production. The benefits are not only in expanding native grassland. By burning a ton of native grass you sequester a ton of CO<sub>2</sub>. Burning a ton of coal you release three tons of CO<sub>2</sub>. The Alliance signed its first Memorandum of Understanding only in June of 2014, but is carefully planning the establishment of 30 million acres over 30 years, an area larger than the state of Ohio.





Big Bend National Park was designated in 1944. At over 800,000 acres, it is larger than the state of Rhode Island. The “Bend” is in the Rio Grande/Rio Bravo River, which serves as the border for 1,000 miles; 110 miles of it also serves as the Park boundary. Along the Mexican side of the river bend lie three flora and fauna protection areas, Maderas del Carmen, Ocampo, and Cañon de Santa Elena. The assemblage, together with contiguous areas protected by the state of Texas, totals over 3.3 million acres, three times the size of Waterton-Glacier International Peace Park. The connections are significant. Black bears had been extirpated from West Texas for 50 years until a female migrated from Sierra del Carmen in the 1980s, naturally re-establishing a population at Big Bend. Mexico and the U.S. signed an agreement to cooperate on conservation in 2011, and in 2013 NPS helped to re-open the border at Boquillas, which had been closed after 9/11, causing economic hardship, especially on the Mexican side. Yet an international park designation, first proposed at about the same time as Waterton-Glacier, remains elusive.

**“Not everything that counts can be counted,  
and not everything that can be counted counts.”**

*William Bruce Cameron (commonly but incorrectly attributed to Albert Einstein)*

New partnerships such as the Landscape Conservation Cooperatives (LCCs) are beginning to connect programs of government institutions, tribes, universities, and some nongovernmental and private partners, in collaborations described as “epic.” Twenty-two LCCs cover the country to develop and provide integrated science and facilitate conservation strategies. That alone is a complex undertaking. (Greater Sage Grouse conservation, to use a well-known example, includes 11 states, 15 subregional plans, and 98 separate resource management plans.) But partnerships must extend to other sectors if landscapes are to be managed in an integrative and holistic way, and we are “just at the beginning of what the LCCs are going to do,” according to Interior Secretary Sally Jewell.

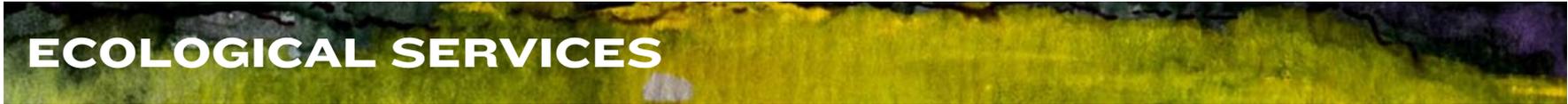
Landscape conservation design (LCD) is a process (to design) and a product (a design) that achieves stakeholders’ missions, mandates, and goals while ensuring sustainability of ecosystem health for current and future generations of Americans. It is an integrated, collaborative, and holistic process that is grounded in the interdisciplinary science of landscape ecology, the mission-oriented science of conservation biology, and the human-centric art of design.

#### RELATED VIDEOS

Karen Trevino, Natural Sounds and Night Skies Division: Preserving the landscape above us [tinyurl.com/ExpHrzn001](https://tinyurl.com/ExpHrzn001)

Jonathan Doherty, Chesapeake Bay Program [tinyurl.com/ExpHrzn001](https://tinyurl.com/ExpHrzn001)

Michael Whitfield, Heart of the Rockies initiative: Community conservation, and sustaining projects over time. [tinyurl.com/ExpHrzn001](https://tinyurl.com/ExpHrzn001)



## ECOLOGICAL SERVICES

To conservationists, healthy, resilient, functioning landscapes have value in their own right, but *all* people depend on the very life-supporting ecological services they provide. Ecosystem services provide clean air and water; regulate climate and disease; support nutrient cycles and crop pollination; provide spiritual and recreation benefits; and support wildlife habitat. Yet because most of these services are external to traditional market economics, they are usually excluded from decision-making, and such decisions, e.g. whether or not to convert natural land to other uses, are made without fully considering the consequences. Pilot projects such as the Chicago Wilderness Green Infrastructure Vision attempt to depict the economic value of ecosystem services provided by areas identified; and the two-year-old National Water Quality Initiative provides a means to accelerate voluntary, private lands conservation investments to improve water quality and to focus water quality monitoring and assessment funds where they are most needed.

One of the most common and useful decision support tools for guiding conservation and development is the mitigation hierarchy, which uses science to guide users to make development impact-negative on nature and ecological services. It is based on a three step descending hierarchy of:

- Avoid or prevent negative impacts on the environment in general and biodiversity in particular;
- Minimize and rehabilitate on-site effects of development if impacts cannot be avoided; and
- Offset/compensation measures that are undertaken as a last resort (on or off-site) for the residual adverse impacts.

Over \$3.3 billion is spent annually on compensatory mitigation under the Clean Water Act and the Endangered Species Act. In addition, environmental permitting can be up to 59% of road construction costs. Transportation agencies and others involved in infrastructure development often view these expenditures as “costs,” but instead they could be viewed as one of the largest sources of funding for achieving high priority conservation in the U.S. The potential benefits of strategically applying these funds could be enormous, supporting both conservation needs and a reduction in infrastructure development costs.

A progressive approach to mitigation site selection and design relies on a scientifically rigorous analysis of the watershed or landscape in which the compensatory mitigation project is being proposed. This approach results in mitigation projects that improve the overall condition of a hydrologic or ecological unit by considering multiple species and multiple ecosystem functions or services.

**“The art is the implementation of the science.”**

*Participant*

Here again specialized technology can be used to minimize development impacts and maximize opportunities for restoration. The US Geological Survey and partners are using geospatial information to develop a new strategy on mitigation. The Water Resources Registry allows a developer to select mitigation systems. Significantly, in addition to providing an online presence for access to information and documentation, the aim is to “create a Community of Practice” to help ensure effective adoption of the tool.

The South Atlantic Landscape Conservation Cooperative, which includes more than 89 million acres of land and water from Southeast Virginia to Northern Florida, typifies the rapid natural and cultural change happening in the American South. Climate change, urban growth, and increasing human demands on resources are reshaping the landscape and impacting the people, communities and economies that depend on them. While these forces cut across political and jurisdictional boundaries, the conservation community does not have a consistent cross-boundary, cross-organization plan for how to respond. A broad community of individuals and organizations are working together within the South Atlantic Landscape Conservation Cooperative to create a shared Conservation Blueprint depicting the places and actions needed to sustain the region's natural

**In much of the country, perhaps no other ecological service is more imperiled than that of clean, reliable water. The Yakima River Basin Integrated Plan is a 30-year, \$3.8 billion plan to restore ecological integrity and provide for future water needs along this tributary of the Columbia River. Five drought years in the past 15 years have depleted salmon and steelhead stocks and severely hurt agriculture in the basin. Conditions led to a collaboration of the Yakima Nation, water users, local, state and federal agencies and conservation groups to implement a climate adaptation strategy of seven key elements to help protect, mitigate, and enhance habitat; provide increased operational flexibility to manage instream flows to meet ecological objectives; and improve the reliability of the water supply for irrigation, municipal supply, and domestic uses.**



environment and cultural heritage in the face of future change. Version 1.0 of this Conservation Blueprint, which prioritized conservation actions (e.g., land/water protection, livelihood/economic incentives, land/water management) at a subwatershed (HUC12) scale, is now complete. More than 300 people from 85 different organizations were actively involved in developing this initial version of the Blueprint.

Landscape conservation can be most effective when it engages land-owners directly. After decades of fire suppression, intensive logging, and other factors, forests throughout much of the western United States are no longer resilient to disturbances such as wildfire and drought, and have been homogenized compared to historical conditions. Landscape Management Demonstration Areas (LMDA) are conceived to provide field sites for demonstrating what management strategies to restore forest resilience at a landscape scale actually look like. These select locations will be given the maximum administrative latitude and sufficient personnel necessary to assess, plan, execute, and monitor/research the effects of efforts to restore ecosystem resiliency. Site selection a) involves willing landowners/managers within a given landscape, b) addresses restoration at a pace and scale that can effectively change forest conditions and restore resiliency of forests to the daunting suite of disturbance factors (e.g. fire, insects, climate change, etc.) that challenge land managers, and c) provides a rigorous scientific foundation for both the treatment methods chosen and the evaluation of response to management.

## RELATED VIDEOS

Ernie Shea, project coordinator for Solutions From the Land Dialogue, and Pat O'Toole, board member for SLD and rancher at Ladder Ranch: Holistic land management, integrated ecosystem conservation. [tinyurl.com/ExpHrzn001](https://tinyurl.com/ExpHrzn001)

Francisco Zamora, Director of Colorado River Delta Legacy Program, Sonoran Institute: Revitalizing the Colorado River Delta and the pulse flow. [tinyurl.com/ExpHrzn001](https://tinyurl.com/ExpHrzn001)

## CULTURAL HERITAGE

Landscapes are storied places. Sharing information gained from historical research or the archeological record contributes a powerful cultural connection or a human dimension to conservation efforts. This history of place can be a compelling way to engage the community in stewardship and in generating the energy both to preserve historic sites and to protect land. Piscataway Park in Maryland was the first national park established to “preserve historic vistas.” Initially the site was created to maintain the viewshed across the Potomac River from George Washington’s home Mount Vernon. However, something much older and very significant was also preserved—the sacred homeland of the Piscataway people. Large landscape conservation is made more meaningful when it reflects the multiple



values embedded in a region. Incorporating cultural heritage fosters interconnectedness and transcends the boundaries, work that is so critical to large landscape conservation.

The National Park Service has recognized the concept of cultural landscapes as a property type, worthy of protection under the National Historic Preservation Act. Examples of cultural landscapes include designed landscapes such as formal gardens as well as vernacular landscapes, those lived-in places that represent the nation’s history of agriculture or industry. The agency defines the resource broadly: “*Cultural Landscapes are a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.*”

The National Park Service’s plan *A Call to Action* includes large landscape approaches as part of the planning for the agency’s centennial year in 2016. The agency recognizes that threats, unforeseen a century ago, have emerged beyond park boundaries and demand solutions that are large in scope and require collaboration with partners. Part of the agency’s action plan is to promote partnerships for large landscape conservation that support healthy ecosystems and cultural resources. Known as *Scaling Up*, this initiative is centered on parks and special places as the cornerstone for conserving broader natural and cultural landscapes. Case studies have been prepared that include whole watersheds like the Chesapeake Bay and transboundary and international examples.

The Ohio & Erie Canalway is located in the Cuyahoga Valley National Park in Northeastern Ohio. The national park was created as a national recreation area in 1974 to serve the cities of Cleveland and Akron as part of a larger National Park Service initiative to protect

recreational open space in urban regions. The Canalway was designated in 1996 as part of the national heritage area program and incorporates the full length of the canal that stretches 110 miles both to the north and south of the park boundaries. Built in the 1820s and 1830s, the canal was carved from the wilderness to provide an invaluable link—from Lake Erie to the Ohio River—in the nation's transportation system, completing an inland water route between the East Coast and Gulf of Mexico. The heritage area's popular Towpath Trail links to other regional trail systems and attracts 2.5 million

visitors a year. The national park works in close partnership with the heritage area to interpret cultural values of the larger landscape and even has explicit authority to assist the area with projects that are beyond the park's authorized boundaries.



Another important initiative for landscape conservation that is rooted in culture and history is the National Heritage Area approach. Recognizing large lived in landscapes such as historic waterways and canals as well as industrial and agricultural landscapes has inspired new models for conservation that have re-invented traditional management structures. The 'new model' takes a more grassroots approach, bringing preservation and conservation coalitions together to craft a shared vision. The goal of this strategy is to inspire actions by partners on a regional scale to work towards a common vision. And also to engage the multiple agencies that own and manage protected areas to find the common connection

between these resources. Developing a framework to address these challenges gave rise to the National Heritage Area model. Today over thirty years after the first area was created in 1984, there are 49 congressionally designated National Heritage Areas from Florida to Alaska.

Large landscape initiatives across the nation recognize the value of interpreting the cultural heritage of a region to its long-term conservation. Whether including the stories of American Indian tribes and local ranchers as part of the landscape in the Crown of the Continent (Waterton-Glacier International Peace Park) or following the path of the Captain John Smith's journey as a way to visualize the Chesapeake Bay and its people at the time of European contact. Incorporating cultural heritage into the landscape enriches conservation values and increases the chances of a successful project.

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## METROPOLITAN AREAS

Conservation efforts have traditionally been focused on non urban areas. However, cities and associated metropolitan areas are becoming increasingly important to the conservation of global biodiversity. Most cities were founded in places that are rich in natural diversity and provide valuable ecological functions, such as floodplains, coastlines, islands, or wetlands. Today, urbanization continues to expand into these valuable habitats and beyond and it is critical to learn how to protect, restore, and connect natural resources in cities and their suburbs. The outcomes of this effort

will enhance human health, create more livable and enjoyable places, and save scarce dollars by employing “green” infrastructure. All of these efforts will help to build a more sustainable future in the face of climate change for some of the nation’s most vulnerable and valuable places.

Metropolitan regions are an essential part of large-scale watershed scale restoration programs throughout the United States such as tackling Mississippi Gulf hypoxia, improving water quality in the Great Lakes



Chicago Wilderness is a multi-state alliance of more than 300 organizations dedicated to restoring biodiversity in this 1.9-million-acre metropolitan region that stretches over corners of three states. Like most cities, the Chicago region was founded in a place that is rich in natural resources and provides valuable ecological functions, such as on floodplains, shorelines, or wetlands. As an organization Chicago Wilderness has had nearly 20 years of experience developing collaborative partnerships and science-driven plans and actions for regional biodiversity recovery and conservation. It also has a strong community outreach program and reaches out to the next generation through participation in an imaginative program called “No Child Left Inside.”

region and Chesapeake Bay. To make an impact on these complex natural resource issues requires close coordination between rural and urban areas. It is critical to work beyond political boundaries and to focus existing funding efforts to create meaningful impact on a large scale. Green infrastructure planning is one way to help transform a region’s water management system and offer the benefits of water purification and groundwater recharge.

Both large and small scale restoration projects in built-up areas also deliver value beyond just water quality improvements. Rehabilitating urban ecosystems also contributes to a higher quality of life. Conservation projects can help acquire and improve land for a variety of open space uses, such as urban parks, and community gardens. This work can support the propagation of native flora and fauna and provide inviting, multi-benefit natural amenities, for example, repurposing floodways, green buffers and utility right-of-ways to serve as multi-use trails. Communities are finding new, green ways to reimagine infrastructure for multiple uses. Good planning and public engagement in such projects is critical to ensure the long-term sustainability and community stewardship of these assets. It is a strategy to consider environmental justice for communities disproportionately impacted by polluted air and water and high-water events. Finally, it is important to help regional decision-makers identify areas where it is most critical and economically feasible to invest in conservation. This can assist in saving local governments significant dollars.



Reclaiming brownfields is another opportunity to improve the health of regional ecosystems. Environmentalism and deindustrialization need not be seen as unrelated or even opposed to one another. Economic dislocation and the mobilization of working-class constituencies have in some cases spurred the development of innovations such as National Heritage Areas that have developed new uses for former industrial landscapes. Through this program hundreds of miles of former canal and transportation routes have been greened up and repurposed as buffer zones and recreational trails.

If large collaborative partnerships are emblematic of most landscape scale efforts, the partnerships to address issues in metropolitan regions must be even more robust where there are challenges of size, but also by population density and diverse interests. The Chicago Wilderness has replicated



their successful partnership approach by leading a coalition known as the Metropolitan Greenspace Alliance, an initiative that assists nine regions across the country to protect, restore, and enhance nature in cities and the metropolitan regions that surround them. They help with the necessary mapping, institutional, and collaborative frameworks to share best practices. One of the Alliance members, the Intertwine Alliance, has developed the *Regional Conservation Strategy for the Greater Portland-Vancouver Region*, which covers 3,000 square miles and nine counties along the Columbia River. A scientifically based land prioritization model, it generates information that helps prioritize conservation strategies at a variety of geographic scales—from entire region to local neighborhood; and identifies urbanized habitats as part of a collective effort to preserve the region's biodiversity.

Metropolitan regions are important players in the large landscape movement. A recent initiative that shows promise is Ecological Places in Cities (EPIC) that is being coordinated by the US Fish and Wildlife Service's Landscape Conservation Cooperatives to assess the collective impact of conservation at a mega-regional scale. To make a difference, we must value and care for every part of the landscape.

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## INTERCULTURAL CONNECTIONS

Indigenous peoples bring special and ancient knowledge to the stewardship of the landscape. Many of these communities rely upon biocultural resources for subsistence and to sustain their lifestyles. This traditional ecological knowledge (TEK) has often been gained through generation after generation of experience in the landscape. It offers an important source of wisdom in the conservation of these places today.

Beyond respect for the knowledge that indigenous people bring to landscape conservation efforts, engaging first nations can also be a matter of rights. In the United States many conservation projects, particularly in the west, intersect with tribal trust resources protected by treaty rights. An understanding of TEKs helps provide ways to work with the community to ensure that indigenous cultural values and resources are included in planning and management of any landscape scale initiatives.

With respect to climate change, the place-based knowledge of tribal and indigenous peoples can provide valuable insights into impacts and potential adaptive strategies. For example the Umatilla Indian Reservation's First Foods initiative reinforced the connection between the availability of traditional foods and contemporary science on climate change. A conference panel presented projects with Pacific Island communities to use TEK in large-scale conservation activities to reduce threats to coastal/marine resources, activities including biocultural resource mapping, community based adaptation, and cultural preservation.



The Klamath Basin, stretching between the border of California and Oregon, is home to a vast array of ecological and cultural diversity. It is also the home of six federally recognized tribes. The Klamath Basin Tribal Youth Program provides unique educational and outreach opportunities for tribal students of the region, including college-level internships on such topics as integrating traditional ecological knowledge into climate change research projects such as the social and ecological relationships between forestry, fire, and traditional foods. The goal is to develop adaptive strategies for today and train the resource managers of the future.



Another approach, developed by the National Park Service's Chesapeake Bay Office, is the concept of the Indigenous Cultural Landscape (ICL). This perspective views large landscapes from the perspective of American Indian nations at the time of their first contact with Europeans. Such landscapes comprise the cultural and natural resources and relationships that would have supported the historic lifestyles and settlement patterns of native groups in their totality. The ICL approach has been used in the planning for the Captain John Smith Historic Trail in the Chesapeake Bay Watershed.

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## CLIMATE CHANGE

Climate change is now a primary lens through which conservation and natural resource management is viewed. Landscape Conservation Cooperatives (LCCs) were established to “better integrate science and management to address climate change and other landscape scale issues.” Perhaps more than any other factor, the threat of global changes in climate and its impacts on “America’s water, land and other natural and cultural resources” has accelerated the move to landscape scale planning and thinking among conservation agencies and organizations. The 22 LCCs, together with eight regional Climate Science Centers, are designed to “integrate science and management to address climate change and other landscape scale issues.” Much of the work since they were created by secretarial order in 2010 has been on the side of planning, science, and information sharing, and less on application to management. As Interior Secretary Sally Jewell noted, “We are just at the beginning of what the 22 LCCs are going to do.”

**“We cannot have a meaningful conversation... without talking about climate change.”**

*Mike Boots,  
Council on Environmental Quality*

Climate change challenges concepts such as ecosystem intactness and ecological integrity. The Bureau of Land Management is now looking at “floating boundaries of Areas of Critical Ecosystem Concern” to “allow for cascading mitigation” because climate change makes landscapes much more dynamic. However, the National Environmental Policy Act does not

allow for such flexibility. This is not a new question, but one made more urgent by climate change. We can no longer think in terms of desired future conditions but must adjust to desired future *change*. We need a way to change our institutions.

Much of the current work is geared toward planning for adaptation. The old thinking, with static end-points, will be, in many cases, somewhat





The village of Newtok in Alaska's Yukon-Kuskokwim Delta region will be relocated after a storm surge a year before the conference, making the inhabitants America's first permanent climate refugees. The 350 residents, primarily Yupik, live by subsistence on the Ninglick River. The river has eroded toward the village an average of 70 feet per year, largely because the permafrost has thawed. The Western Alaska Landscape Conservation Cooperative, where Newtok is located, reported that their "greatest success has been in shifting thinking by individual organizations." Crises like Newtok have focused groups on short term actions, allowing the LCC to make a difference in a short amount of time.

irrelevant and instead we need to start thinking about managing for processes. The National Wildlife Federation's Climate-Smart Conservation framework emphasizes the importance of clarity in linking adaptation strategy to clear climate change drivers. Frameworks such as this provide tools to "wade through the noise to target meaningful adaptation strategies in the face of overwhelming paradigm shifts and uncertainties." Such adaptation will require new skills, and the US Fish and Wildlife Service and National Conservation Training Center are developing courses based on the framework, to "demystify climate adaptation for application to on-the-ground conservation."

Similarly, the Climate Change Response Framework seeks to "demystify scientific information on climate change and help forest management organizations and professionals identify and implement practical solutions for enhancing forest adaptation to changing conditions." More than 50 demonstrations are planned, ranging from tens to tens of thousands of acres.

"Phenomenal tools" and skilled wielders of those tools will be critical in managing the complexity of adaptation over large landscapes. For example, the Southeast Conservation Adaptation Strategy embraces a shared, long-term vision for the southeastern United States and Caribbean. It attempts regional collaboration across six LCCs and approximately 110 entities.

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## MANAGING, MEASURING, MEDIA

Over the past several decades, new technologies and improvements in affordable computing power have allowed for significant advances in the way that researchers, conservation leaders and grassroots organizations approach the decision of what lands should be protected. Publicly available datasets and satellite and aerial imagery have been steadily increasing in resolution and land managers are gaining access to information that allows them to identify, compare, and prioritize potential projects at a parcel scale across entire landscapes. Information on both cultural and natural resources can be integrated to provide better understanding and management of these resources. Simultaneously, improvements in the ability to host large quantities of data and analysis tools online are opening new opportunities to share this information with the public to help inform regional scale planning. In fact this new window on the world has been credited as the inspiration for the overall large landscape movement.

Technology can also be used to address some of the nation's most critical cross cutting issues such as the impacts of energy development, habitat loss on endangered species, and climate change—all on a large scale. New media can be used to make this scientific information more accessible. Beyond understanding an issue the public can be engaged to create new information. For example, the FracTracker project has created a crowd-sourced digital map detailing the scale of oil and gas development in the Marcellus Shale play in Pennsylvania and the Bakken Shale in North Dakota.

Despite the development and availability of vast amounts of new information such as climate models and vulnerability assessments, biodiversity and

**“The vision of the LCC Network is landscapes capable of sustaining natural and cultural resources for current and future generations.”**

*Landscape Conservation Cooperatives*

species population information, spatial analyses, and economic valuation studies, applying this to the real world is always challenging. Implementing on the ground science based solutions is hard work. One panelist at the conference quoted George Bernard Shaw's statement that “The single biggest problem in communication is the illusion that it has taken place.”

For this reason, successful efforts to conserve large landscapes require well-designed collaboration. Ensuring that all interested parties are at the table is a key to success. Particularly challenging for projects on a landscape scale is the large number of stakeholders that need to be engaged to build a sense of shared commitment and an action plan. Many of these efforts serve as a network of networks, so it is essential that there be a convening partner who can bring the stakeholders together, document decisions and follow up on next steps once agreed.

Different organizations can play this important role of convening partner. Government agencies can do so on a programmatic basis, for example the U.S. Fish and Wildlife's Services Landscape Conservation Cooperatives (LCC). As described elsewhere, the LCCs are applied conservation science

partnerships that are comprised of federal and state agencies, tribes, academic institutions, and private organizations. Each of the 22 LCCs is a self-directed partnership that functions as part of an international network for the purpose of providing shared data, products, and conservation tools to link conservation delivery and outcomes. Key challenges include developing science, information, and tools that are regionally relevant yet compatible, interoperable, and scalable across geographies.

Landscape scale conservation is still a new approach and both the mechanics and evaluation of outcomes are only just now being field-tested. In addition both networks types and evaluation metrics vary across institutional contexts, presenting challenges to objectively link networked processes with on-the-ground outcomes. The challenge lies in bringing together collaborative performance evaluation, social network analysis, and social-ecological network governance to develop a strategy to “count” network outcomes, particularly in landscape conservation. This includes evaluating ecological outcomes, the network itself, and the value-added benefits to network participants.

Some lessons can be learned from the National Park Service evaluations of the more established National Heritage Areas. These studies serve as a major contribution to understanding the effectiveness of large-scale regional planning efforts implemented over multiple decades. A summary of this research can be found in the report *National Heritage Areas are Achieving their Goals and Accomplishing their Purpose*. Another model is the Community Management of Protected Areas Conservation initiative, which has been working with communities at landscape level within and near World Heritage sites in Africa, Asia, Meso-America and the Caribbean. It offers an example of best practice in this area, tested at site-level in eight very different settings representing a variety of geographic regions.

The international trans-boundary region of the Rocky Mountains, where Alberta, British Columbia, and Montana come together, is one of the wildest, most diverse and intact ecosystems in the temperate zones of the world. This Crown of the Continent region of over 18 million acres includes Waterton-Glacier International Peace Park and is a land of unbroken deep forest, plunging valleys, jagged peaks and surrounding prairie. The Crown provides habitat for grizzly bear, wolverine, wolf, and bull trout. It is also home to over 160,000 human residents, including native peoples who occupy territory that has been their home for thousands of years. The future of this region depends on people working together to conserve its values.



The Roundtable on the Crown of the Continent is the forum that brings together people who care about this special place. It is co-convened by the University of Montana's Center for Natural Resources and Environmental Policy and the Center for Large Landscape Conservation and provides workshops, an annual conference, and also facilitates a portfolio of collaborative projects. The Roundtable promotes an ethic that is open to all perspectives, interests and focuses on connecting people and facilitating communication to promote sustainable communities and landscapes.

Our growing understanding of how effective landscape conservation works will provide the impetus to launch large landscape conservation on a previously unimagined scale – from the California Desert to the Chesapeake Bay, from the Chukchi Sea to the Caribbean.

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## SUSTAINING LARGE LANDSCAPES WORK

Sustaining large landscape conservation initiatives is new territory for many in the conservation field. How to deliver on the promise of working at scale over time is worthy of attention. So it was appropriate that the National Workshop on Large Landscape Conservation took the opportunity to recognize the anniversaries of two of the pioneering efforts to conserve our nation's resources on a landscape scale: the Twentieth Anniversary of the Yellowstone to Yukon Conservation Initiative and the Thirtieth Anniversary of the National Heritage Area program. In his acknowledgement Steve Guertin, USFWS Deputy Director for Policy remarked, "These landmark efforts blazed the trail for the movement and showed that large landscape conservation is possible with collaboration, hard work and big dreams."

One of the challenges of large landscape work is to engage multiple partners in collaborative conservation strategies that move the needle. Just as technology jump-started the ideas of what is possible by viewing the landscape holistically, technology now needs to adapt to connect the people to work together to sustain the conservation work in a landscape. As one session leader noted "the global conservation community is facing what some might call an implementation bottleneck." It is important to be able to share approaches on implementation and project management both online as well as in person. An example of this work is the nonprofit group Connecting Conservation, which helps in forming, leading, and assisting groups of partners with different missions and strengths to collaboratively strategize, design and develop products, design and implement projects, and assess effectiveness. Practitioners at the conference tested this approach with a thought-provoking track on Landscape Conservation Design.

Funding large landscape work is another ongoing challenge. While collaborative projects may gain strength from the ability tap funding from multiple partners such as state agency grant programs, corporate donations and private individuals, finding the money year after year to continue implementation is a struggle. In some areas government agencies like the US Fish and Wildlife Service's Landscape Conservation Cooperatives and Pennsylvania's Conservation Landscape Initiative, have taken the lead to convene and sustain these

2014 was the twentieth anniversary of the Yellowstone to Yukon Conservation Initiative. What began as a visionary effort to demonstrate the value of the vast mountain ecosystem stretching from Yellowstone National Park to the Yukon is now grounded in partnerships to conserve land and steward the region's natural resources. Today the Yellowstone to Yukon embraces five American states, two Canadian provinces, two Canadian territories, and the reservation or traditional lands of more than 30 First Nations governments.



2014 was also the thirtieth anniversary of the National Heritage Area program. In 1984 President Reagan signed legislation creating the 96-mile Illinois and Michigan Canal Corridor. This innovative approach is a public/private partnership with the National Park Service that engages local leaders and communities in preserving their heritage and telling nationally significant stories. Today there are 49 National Heritage Areas stretching from Florida to Alaska.



The longleaf pine ecosystem once encompassed more than 90 million acres of North America, from Virginia to Texas. Unique to the southeastern United States, it contains a stunning diversity of plants and animals, including rare and endangered wildlife like the indigo snake, red-cockaded woodpecker and gopher tortoise. Unfortunately, only three percent of the original acreage remains, and threatened and endangered species that depend on the habitat are struggling to survive.

The National Fish and Wildlife Foundation's Longleaf Stewardship Fund expands, enhances and accelerates ecosystem restoration across longleaf pine's historical range. It is a landmark public-private partnership supported with federal funding from the Department of Defense, the U.S. Forest Service, the Natural Resources Conservation Service, the U.S. Fish and Wildlife Service, and private funding from Southern Company, International Paper's Forestland Stewards Initiative and Altria Group.

effort. In other areas foundation funding has played a significant role in initiating and sustaining innovative landscape scale projects.

Foundations also can serve as conveners, strategists and “neutral brokers,” in addition to providing financial resources for work on the ground. For example, the Doris Duke Charitable Foundation's environmental mission is to enable communities to protect and manage wildlife habitat and create efficient built environments. Shaping the foundation's grant-making priorities are the awareness that climate change is the greatest emerging threat to biodiversity and the need for mitigation. The foundation has awarded more than \$240 million in grants related to the conservation of wildlife in the United States.

Large landscape scale efforts that have staying power seem to have a number of factors in common. One is a collaborative process that is hard wired into the project as a way to maintain partnerships across wide geographic area and multiple disciplines. Each project needs to develop

and subscribe to a cohesive vision that serves as its touchstone. As one presenter from the South Mountain Partnership in Pennsylvania noted, “landscape-scale work can be a somewhat nebulous concept and articulating a concrete understanding of how the work will be approached can be critical to building the collaboration.” To be successful over the long term landscape networks also need coordination. This is not just a convener, but is a person with the time to facilitate and ensure follow-through on the collaborative work. Someone whose job it is to wake up every morning thinking about how to advance the big picture.

The sustainability of any landscape scale effort or network depends on making sure that the interests of everyone at the table are considered and that those with a stake in the outcome will be heard. Better yet is when a partnership can be crafted that meets the direct needs of the stakeholders. Most successful large landscape efforts, while they start with conservation of a resource as a central value, are highly adaptive and continue to craft new solutions that meet local and regional needs. Or as one practitioner noted her efforts were effective on a landscape scale because they were uniquely “non-prescriptive.” One example from across the border, the Canadian Boreal Forest Agreement, covers 73 million hectares—one of the largest and most ecologically significant ecosystems on the planet and also the source of supply for one of Canada's most significant natural resource sectors. In 2010 environmental organizations and forest industry signed a groundbreaking agreement on the conservation management of this outstanding resource that was crafted to meet the diverse needs of both interest groups.

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## NEXT GENERATION

The future of landscape conservation starts with ensuring that the next generation connects to the landscape that surrounds them. A holistic strategy must be developed to provide opportunities for young people to experience and become stewards of the cultural and natural world. If conservation is to be seen as a quality of life issue, what can be taught and learned by working at the community level? For those who are interested in pursuing a career in the field of conservation, what knowledge and hands on skills will help prepare them for this work? What special training and experiences will assist these new practitioners to take conservation to a landscape scale?

One bright spot is the growing movement in K-12 education to engage students in “place-based” stewardship activities. This kind of experiential learning creates a foundation for the development of skills in collaboration, systems thinking, complex problem solving and civic engagement. These are the skill sets that will be needed to tackle conservation on a landscape scale. Place-based education has been shown to have a profound impact on student achievement and engagement. One innovative landscape scale project is the James River Expedition along the 340-mile length of the river that gives students an understanding of the challenge of protecting river corridors. Other landscape scale programs provide teacher professional development and student programming opportunities across a whole watershed or along a trail corridor.

Another approach is the increase in service-learning programs; these can be designed for all ages from “K through grey” to apply learning to real



world issues. Such projects can be designed to offer the opportunity to learn and connect people with conservation actions in a way that cannot be replicated in the classroom. It is important to open the doors to the wide variety of green careers. These can range from internships to hands on conservation positions, from administration to field scientists. For example, the Chicago Wilderness hosts job fairs and an informational website to help connect students with conservation jobs in the region.

Landscape scale conservation is a new field. It is challenging to put together the required skill sets. While cross-training in natural and social sciences and law is already standard in some professional environmental



The Living Legacy Tree Planting Project is a partnership initiative of the Journey through Hallowed Ground that engages middle school students in creating a 180-mile landscape memorial dedicated to commemorating the soldiers who died in the Civil War. The plantings are located in three states along this National Scenic Byway within the Chesapeake Bay Watershed. This project provides students with a national service learning opportunity and has a strong educational component as students throughout the country can research the stories of those soldiers who fought and died, then honor their memory by planting a tree in their name. Each tree will be tagged for a smartphone app, which will tell the story of individual soldiers through photos, diary entries and letters. The planting of 620,000 trees will also help reduce the region's carbon footprint and contribute to meeting the Chesapeake Bay Nutrient and Sediment Reduction goals and requirements.

master's programs, other skills are less consistently taught. These projects are highly collaborative and require a team approach to providing the necessary base of knowledge. One-way to highlight the need for a medley of expertise on these projects is to bring representatives of landscape scale conservation programs into the classroom remotely or in person. There is a definite need to develop best practices for landscape scale work with a focus on implementation on the ground and in the community.

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## HOW DOES IT ALL ADD UP?

The conference was hugely successful in its objective to share ideas on the challenges and opportunities that lie ahead in implementing large landscape conservation, as well as the most effective tools, strategies and science available to inform large landscape initiatives. This section explores those challenges and opportunities. As the first of its kind, the conference celebrated the progress that has been made in large landscape conservation, especially with respect to collaboration to organize scientific information, particularly among federal agencies. The projects and case studies mentioned in this report are just examples of a crescendo of activity and experimentation. The event also revealed opportunities in: wider collaboration; integration with other sectors; connections among



nature-focused and culture-centered programs; and in the *application* of accumulated science to effective conservation design. Above all, the over-subscribed event demonstrated enthusiasm for practicing conservation at landscape scale, and a recognition that it is necessary to be effective—a reality that is not new but is made increasingly imperative by sweeping disruptions: climate change, market globalization, shifting demographics and a public health crisis.

**“What do we have to do in the next 10-20 years for the next 100 years?”**

*Greg Wathen, Coordinator,  
Gulf Plains and Ozarks LCC*

**Matters of Scale** — The large landscape conservation approach is a model for creating innovative collaborations and making a greater impact in hundreds of conservation projects and partnerships across the country. Opportunities are not limited to one geographic location. They span all areas from pristine landscapes and seascapes in remote regions, to rural and urban landscapes, all of which impact the health of both the environment and of the people.

The large landscape vantage point affords practical ways to address wildlife habitat degradation; threats to water quality and quantity; losses of working farms and forests; weakening of cultural heritage; disconnection from land wisdom, particularly that of native peoples; and limited public access to urban, rural, and wild open spaces.

Planning and application must connect at multiple scales. Indeed, the underlying principle of large-scale planning efforts such as the Landscape Conservation Cooperatives is to reconcile regional coordination and local implementation. But it was clear to many who commented in the evaluations that practice has not yet caught up to theory.

Urban landscapes may involve relatively small geographic areas, but are significant in outsized ways. As Sally Jewell said shortly after the conference, addressing the World Parks Congress, “We have to start to make the connections with the cities.”

Finally, we must work at many temporal scales, planning for the next 100 years, but acting tomorrow. In shorter terms, a barrier to collaboration with many different partners is that all are working under different time horizons. Incompatible and uncoordinated project timeframes must be reconciled, a great challenge particularly for bureaucracies.

**Collaboration** — “One of the distinguishing features of landscape conservation is the centrality of collaboration,” wrote one participant in the evaluations. The conference demonstrated great success in diversifying project partnerships (especially in getting federal agencies to work together) BUT that collaboration is highly incomplete. As discussed below, largely missing from the conversation were state and local counterparts to federal agencies. Collaboration must work at multiple scales. Here too temporal scales are important. Collaboration must be durable over time, with shared goal formation but also an “imperative of mutual learning [and] integration of many knowledges.” And this cannot be mere knowledge transfer but truly collaborative and adaptive learning and management. It is about “pinpointing the possible, and identifying the doable” in ongoing cycles of planning, testing, feedback and adjustment.



*Cross-cutting* — “Epic collaboration” was a predominant meme of the conference, with many heralding a new era of cooperation. This appeared to be particularly true of various federal government land and natural resource management agencies working together. In that respect the conference was one of the most diverse gatherings of its kind. However, “I continued to hear a focus on one sector (usually natural resources and wildlife habitat) without bringing in the broader suite of landscape values. We really need to move beyond that and embrace the integration of large landscapes and what the cultural connection can bring to the conservation movement.” The “community” of large landscape conservation needs to effectively invite more diverse participants into the conversation. “Where

were some of the NGOs, private interest groups, agriculture, tribal interests, even the FS [USDA Forest Service]?” Partly owing to the conference location in Washington, DC, the majority of participants were federal employees, and many pointed the need to include more state, county and local government representatives, reflecting the level where large-scale plans must be implemented. Many recognized the key role that private landowners have and must play, but there were few farmers, ranchers, or woodlot owners in attendance, nor were there corporate interests involved.

*Diversity* — The field of large landscape conservation, as reflected in the conference attendees, is too white and too gray. “What an overwhelmingly white conference. It was rather shocking. Most speaker lineups were also male-dominated. Large landscape conservation isn’t going to succeed unless we can cross cultural boundaries, and that ain’t going to happen if we don’t broaden the conversation.”

Indigenous communities warrant particular attention, both for their role as sovereign governmental partners in many areas, and also for their traditional land wisdom and knowledge, which lends specific knowledge and philosophical guidance to landscape conservation.

Many participants commented on the need for recruiting and training the next generation of large landscape scientists, planners, and practitioners; and for grooming young professionals who will be future leaders.

*Integration* — Beyond diversifying collaboration within the movement, the field must integrate with sectors that would not primarily identify with conservation, but whose activities have great impact on landscapes. Connecting with these sectors might be considered a form of collaboration, but is more than that. Much of the collaboration that has been achieved to date is among actors working in conservation. Integration is

At the conference’s final session, Lynn Scarlett used story-telling effectively, closing her summary remarks with a personal story about the effort to save the California Condor from extinction. Thirty years ago just 22 of those magnificent birds existed. Debate raged about whether to give them a last chance in the wild, or to embark on a captive breeding program. She recalled John Ogden, now deceased, who took part in gathering those last 22 birds from the wild, amid death threats. “Scroll forward 25 years to 2009. I was privileged to return with John...We watched 12 California condor soar and alight in the roosts that their ancestors once used.”

about reaching out in novel ways to find solutions with different sectors of purpose. These sectors include but are not limited to:

- transportation
- energy (production and transmission)
- agriculture
- recreation
- economic development
- public health
- environmental justice

integrating with

- wildlife and endangered species conservation
- migration corridors
- cultural preservation
- heritage development
- wetland and other ecosystem protection

**Conservation is relational** — “We communicate priorities and purpose with technical terms and detailed maps, but the general public is more likely to first engage through stories and illustrations that build

emotional connections with the place and its multiple values. We need to continue to build skills in telling compelling stories.” And this starts with choosing language carefully. A study commissioned by The Nature Conservancy found that many terms commonly used by conservation professionals do not resonate with American voters. For example, it concludes that, rather than ecosystem services, communicators should talk in terms of nature’s benefits. However, the same study warns not to position nature as subordinate to people. “And some resist the idea that nature provides “services” to people – while they acknowledge that people depend upon and benefit from nature, the idea that nature exists to “serve” them is off-putting to some.”

There is a particular hunger for more on-the-ground success stories of implementation of large landscape planning projects. “There is still a lot of talk about what is going to get done. Not many presentations on results of science projects or planning efforts.” While acknowledging that many projects are in their early years, showing impact is important, even if it is just anecdotal.

*Developing persuasive success stories, and following up with rigorous evaluation, may be one of the greatest task priorities that emerged from the conference.*



## THE WAY FORWARD



The October 2014 conference was a tremendous advance in the field of large landscape conservation, connecting knowledge and experience from across the country. It was, as one participant put it, “a great opportunity to test the depth and strength of the field.” Comments in the post-event evaluation were overwhelmingly positive. Alongside the many accolades (“Overall, a great job pulling off a first annual conference.”) were many specific suggestions for how the work and gatherings such as this can and should evolve. Particularly, participants called for more dialogue and discussion to expand interactions beyond information and experience sharing.

A great deal of information and experience was shared, however the dense program did not allow a lot of time for discussion, a point noted frequently in post-event evaluations. People called for more opportunities to discuss concepts and site-specific applications, sessions to strategize with their peers, and test new collaboration ideas. The need was identified for “more examples of applied, rather than planned, large-scale conservation efforts.”

People are looking to develop skills, through exchange but also training (perhaps even certificate training, and through webinars and other distance learning opportunities). Needs expressed through evaluation were manifold, but include:

- Advocacy and political mobilization
- Decision support tools
- Story-telling and web communications
- Social marketing and outreach
- Financing strategies for ecosystem restoration
- Facilitating participatory, collaborative processes
- Maintaining collaborations and momentum
- Climate adaptation
- Evaluation

**“At the international level landscape conservation is being seen as an important climate change solution but also for poverty reduction and human health.”**

*Participant*

**“I would like to have had more speakers and participants from the perspective of landowners and local governments, who are closer to how land is controlled and managed.”**

*Participant*

Most of all, the conference pointed up the need for greater human and organizational *connectivity*. *Network* and *networking* were among the most frequently used words to appear in post-conference evaluations, (fourth in frequency after *sessions*, *conservation* and *landscape*, excluding prepositions, basic verbs, and other common words). Large landscape practitioners are asking for more opportunities to forge connections, in future events and outside of them—within their discipline and especially among different fields. In plenary remarks, former Wyoming Governor Jim Geringer said, “Think of this in personal terms. That’s how good collaboration starts.” And Lynn Scarlett pointed to “a florescence of network governance” in her closing summary. “Equal partners sharing and coordinating... Research shows that different skills are needed for networked leadership.” The tangle of obligations, expectations, reputations and mutual interests inherent in integration require a non-hierarchical organizational approach, with long-term, recurrent exchanges that create interdependencies. In short, large landscape conservation requires a diverse networked professional community, people from many walks of life connected by common necessity. Such a complex web must be built with great intention. It must be convened by a facilitative structure, informed by science, and supported as a natural solution to issues of human, wildlife, cultural and ecological health.



The path is clear. The road will be difficult. But the *National Workshop on Large Landscape Conservation* was a valuable opportunity to look up and check our direction.

#### RELATED VIDEO

Sally Jewell, Secretary of the Interior [tinyurl.com/ExpHrzn00I](https://tinyurl.com/ExpHrzn00I)

Tom Vilsack, Secretary of Agriculture [tinyurl.com/ExpHrzn00I](https://tinyurl.com/ExpHrzn00I)

**“Much of the biological context of large landscape conservation was available but other parts of the puzzle were left out, economics driving land use, economics and policies driving ag and forestry utilization.”**

*Participant*

## CONTINUING THE CONVERSATION

The 2014 National Workshop on Large Landscape Conservation was the first nationwide conference of its kind, but it is just a beginning. The complexities of working effectively at large scales, across disciplines, jurisdictions and geographies, requires novel and “epic” collaboration. The first step to collaboration is communication. “Who are we leaving out?” The collaboration among federal agencies must be matched by engagement by farmers, ranchers, urban dwellers, diverse communities, fishermen, hunters, businesses large and small. This report is an invitation to continue the conversation, and broaden the collaboration.



The Practitioners’ Network for Large Landscape Conservation is an alliance of professionals and citizens engaged in leading, managing, researching, advocating, funding, educating or setting policy to advance large landscape conservation initiatives.

### Mission

The Practitioners’ Network’s mission is to improve large landscape conservation by creating a place where practitioners can exchange information, share best practices, examine emerging policy initiatives, and build a national constituency to advance the theory and practice of large landscape conservation.

### Objectives

- Build capacity for large landscape conservation at various scales and across sectors.
- Link existing and emerging large landscape conservation initiatives.
- Improve the policy framework to promote and support large landscape conservation initiatives.

On the heels of the National Workshop, leaders of the Practitioners’ Network are reviewing and refining these objectives in an effort to provide relevant and timely information and resources to practitioners and decision-makers from all sectors and geographies.

Visit the PN website to become part of a growing network. On the website, you can learn more about other large landscape conservation initiatives, view and download publications, join the PN LinkedIn group, and sign up for the PN e-news. In the near future, the website will also provide information about upcoming events, including webinars, workshops, and other opportunities to learn about the theory and practice of large landscape conservation.

### RELATED VIDEO

Shawn Johnson, University of Montana: The Practitioners’ Network in the context of the conference. [tinyurl.com/ExpHrzn001](http://tinyurl.com/ExpHrzn001)

### RELATED MEDIA

Practitioners’ Network [tinyurl.com/ExpHrzn040](http://tinyurl.com/ExpHrzn040)

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“That land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics. That land yields a cultural harvest is a fact long known, but latterly often forgotten.”

*Aldo Leopold*