

Great Northern LCC Activities & Accomplishments 2013

Within the Columbia Basin, the Palouse River starts its course in the forested mountains of northern Idaho and carves through high desert basalt of southeast Washington into the Snake River. Photo credit: Wikimedia

Vision

A landscape that sustains its diverse natural systems to support healthy and connected populations of fish, wildlife, and plants; sustains traditional land uses and cultural history; and supports robust communities.

As the Great Northern Landscape Conservation Cooperative completes its fourth year of operation in fiscal year 2013, the partnership has matured to a new level of collective landscape understanding and collaboration. The GNLCC has implemented its Strategic Conservation Framework, which has the over-arching goal of maintaining the ecological integrity of aquatic and terrestrial landscapes. Now the partnership is working to identify shared outcomes and to develop a road map, the GNLCC Science Plan. The 5-year Science Plan tiers off of the Strategic Conservation Framework and will serve as a guide to how landscape science and conservation actions are implemented and measured towards these outcomes and ultimately, towards the GNLCC collective landscape vision.

This report highlights activities and accomplishments, including the growth of Partner Forums, the development of the Science Plan, the launch of the Inter-LCC Greater Sage-grouse Project, and the funded science that supports landscape conservation goals of the partnership.

LEADERSHIP AND COORDINATION

■ Steering Committee and Advisory Team Activities

The Great Northern Landscape Conservation Cooperative Steering Committee comprising leaders from more than 27 natural resource organizations, met in-person once this fiscal year. In May 2012, the Washington Department of Fish and Wildlife hosted the meeting in Leavenworth, WA. This meeting focused on:

- FY13 science support
- Strategic science planning
- Review and alignment with the National Fish, Wildlife and Plant Adaptation Strategy
- Progress on the Partner Forums
- Regional landscape program alignment (e.g., developing a strategic approach to Land and Water Conservation Fund)

Scientists and managers were invited to present their work on landscape-scale projects. These in-person meetings were augmented by conference calls to extend discussions and garner feedback as Steering Committee members related GNLCC updates to their respective organizations. A second meeting, to be hosted by the Province of Alberta and Canada National Parks, was postponed due to the shutdown of the US Federal Government in October 2014. That meeting is rescheduled for May 2014.

The GNLCC Advisory Team, with invited guests from the scientific community, held one in-person meeting, focused on developing a Science Plan, preceding the Steering Committee meeting in Leavenworth. The Advisory Team had monthly conference calls and several ad-hoc calls to conduct GNLCC business.



The Great Northern LCC encompasses a bi-national North American landscape. This landscape spans interior British Columbia and portions of Alberta in Canada, and extends from eastern Washington and northeastern Oregon across north and central Idaho into western Montana and Wyoming. It includes the major river systems and basins, high alpine peaks, rolling plateaus, and deep canyons of the northern Rocky Mountains and Columbia Plateau.

Steering Committee member organizations



■ Partner Forums

The GNLCC Partner Forums made great strides this year as partners and partnerships took lead roles in rallying the conservation community around common landscape issues. These self-directed groups of conservation practitioners and partnerships share landscape conservation challenges in an ecogeographic context. Partner Forums inform the GNLCC partnership on science needs to support an adaptive management approach to on-the-ground application of landscape conservation. Here, we present Partner Forum highlights.

Rocky Mountain Partner Forum

Hosted a workshop on climate change adaptation and cold-water systems; in the process of drafting a charter; has identified future priorities to be the spatial prioritization of cold-water refugia and to initiate discussions and coordination on connectivity work; and will host an online speaker series in 2014.

Sage Steppe Partner Forum

Prioritized the conservation of greater sage grouse and sagebrush ecosystems; coordinating the Inter-LCC Greater Sage-grouse Project; developed an online collaborative workspace; and will host an eight-week webinar series on sagebrush ecology and conservation in 2014.

Columbia Basin Partner Forum

Held conference calls, an inaugural in-person meeting and a mini-workshop to share and develop ideas on how to address large-scale landscape stressors (e.g., climate change, invasive species, land-use changes) as they relate to planned conservation actions among partners. The Forum has identified a need for focus on aquatic and terrestrial issues including contaminants, connectivity and AIS.

Cascadia Partner Forum

Hosted the first workshop for input from a diverse array of partners; hired three fellows to organize and synthesize information to guide Pilot Council discussions; developed a new website. Conservation Northwest continues to play an important leadership role and engaging the Forum in northwest regional landscape issues.

All Partner Forums are working with local managers to provide access to science and tools and to coordinate with respect to like conservation issues in an ecogeographic context. Ideally, at they mature, the Partner Forums will coordinate on conservation delivery for a collaborative landscape design. This information can guide investments by GNLCC and other partners working regionally.

➤ *Read more about Partner Forums and provide input and feedback on utility and application of landscape science, tools, and information: <http://greatnorthernlcc.org/partner-forums>*



■ Science Plan Development

A key focus of our work in fiscal year 2013 was developing a Science Plan. Building upon the GNLCC Strategic Conservation Framework, the Science Plan describes a process and lays out guidance on how GNLCC partners can work collectively to achieve a landscape vision:

A landscape that sustains its diverse natural systems to support healthy and connected populations of fish, wildlife, and plants; sustains traditional land uses and cultural history; and supports robust communities.

We will work toward this vision by implementing actions that will meet objectives for conservation targets under four broad landscape integrity goals:

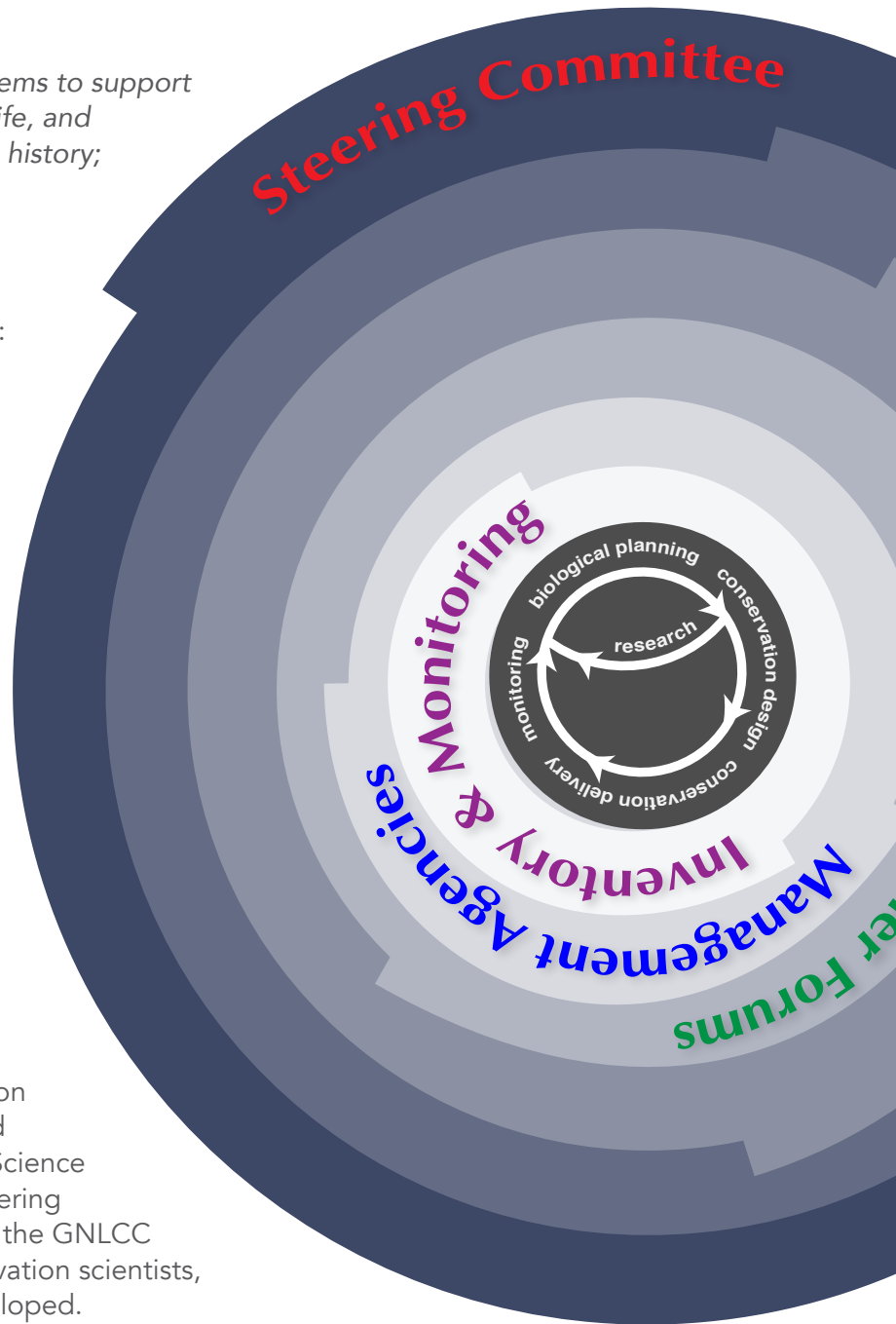
1. Maintain large, intact landscapes
2. Conserve landscape connectivity
3. Maintain hydrologic regimes
4. Promote landscape-scale disturbances

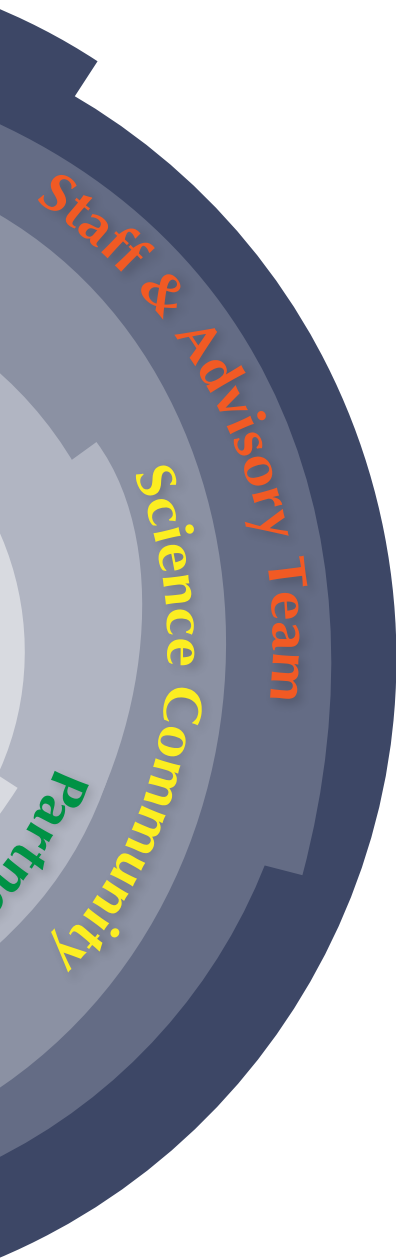
The Science Plan will also help partners identify science needs, and support delivery and application of science products to landscape management.

In March 2013, we began collecting information for the Science Plan through a six-week Science Webinar Series that profiled partner needs and priorities. A diverse group of conservation partners was invited to present landscape conservation programs, conservation priorities, and landscape issues. Programs presented included the BLM Rapid Ecoregional Assessments, the USFS Cooperative Forest Lands Restoration Program, the Idaho State Wildlife Action Plan revision, and regional landscape planning and science initiatives. The GNLCC hosted a two-day Science Workshop in conjunction with the Spring 2013 Steering Committee meeting in Leavenworth, WA, wherein the GNLCC Advisory Team and a number of landscape conservation scientists, discussed how the Plan could be framed and developed.

The GNLCC staff and a small team of writers are synthesizing this information with tenets of conservation theory into a draft Plan. Working with the Advisory Team, a final draft of the Science Plan will be developed. The Science Plan will be delivered to the Steering Committee for final approval at the Spring 2014 meeting in Alberta, Canada.

► **View the Strategic Conservation Framework and Science Plan:** <http://greatnorthernlcc.org/business>





This diagram represents the level of activity or engagement of GNLCC partners by functional role through the adaptive management cycle. The wider parts of the diagram indicate where each partner group takes a leading role in the Science Plan to achieve shared outcomes and ultimately, the GNLCC collective landscape vision.

PROGRAM ALIGNMENT

To create efficiencies and reduce the challenges of working in complex ecological and jurisdictional systems, GNLCC staff continues to focus on aligning programs from different agencies and organizations. Highlights of these efforts include:

- Serve as co-led for the Federal Partner's Working Group of the America's Great Outdoors Initiative Crown of the Continent Demonstration Area. Milestones include developing a 2013-2018 Strategic Plan that included connectivity, invasives, and partnership outcomes.
- Provide support for the US Forest Service sponsored Southwestern Crown Collaborative (SWCC) Cooperative Forest Land Restoration Project Pilot for the third year. Working with scientists from the US Geological Survey (USGS), the team is integrating two monitoring approaches to develop an assessment of the effects of forest roads on in-channel processes and biota within four watersheds of the SWCC.
- Serve on the Assessment Management and Technical Teams for Bureau of Land Management Wyoming Basins Rapid Ecoregional Assessment
- Serve on the Stakeholder Advisory Group for both the North Central and Northwest Climate Science Centers; reviewed 83 statements of interest and 22 proposals for both Climate Science Centers; serving as a Co-PI on North Central CSC project to inform implementation of the Greater Yellowstone Coordinating Committee's whitebark pine strategy
- Support a pilot project to develop a strategic approach to conservation planning using the concept of Landscape Conservation Design for the National Wildlife Refuge System in the Columbia Basin. This approach should be transferable to the Wildlife Refuge System nationally.
- Partner with the Intermountain West Joint Venture on avian conservation targets, and continued funding to expand the Grid-based Bird Monitoring Project in Montana and Idaho
- Provide guidance and technical assistance to US Fish and Wildlife Service in developing the Inter-LCC Greater Sage-grouse Project
- Support the High Divide Collaborative through the Land and Water Conservation Fund proposal, led by Steering Committee member organization Heart of the Rockies, to acquire wildlife habitat and increase connectivity from Yellowstone National Park to the Central Idaho Wilderness complex

DEMONSTRATION PROJECTS

Demonstration Projects are designed to bring diverse partners together to achieve a priority outcome for GNLCC collaborators. These projects are approved by the Steering Committee and carried out by GNLCC staff working with collaborators.

■ Landscape Assessment Demonstration Project

In 2011, the Landscape Assessment Demonstration Project was initiated to provide inter-project coordination, avoid duplication, and to the greatest extent possible leverage their efforts to compile information, identify data gaps, and assure data quality and standards. The project team moved into Phase II in early 2012. Accomplishments of the team for fiscal year 2013 include:

- Bureau of Land Management is working toward completion of the Middle Rockies and Wyoming Basin Rapid Ecoregional Assessments
- Heart of the Rockies led a multi-partner collaborative Land and Water Conservation Proposal and hired, partially with funding from GNLCC, a science coordinator
- Western Governors' Association launched the west-wide Crucial Habitat Assessment Tool (CHAT), Landscape Integrity and Connectivity Tool, and public viewer
- GNLCC staff and partners assisted the North Central Climate Science Center in establishing a collaboration of partnerships to apply adaptive management to greater sage-grouse in Northern Montana

■ North Fork of the Flathead River Basin Demonstration Project

In February 2010, governments of British Columbia and Montana signed a Memorandum of Understanding (MOU) that recognizes the high value of natural resources in the North Fork of the Flathead River Basin. The MOU outlines a framework for the signatories to work together with US and Canada Federal, State and Provincial, and Tribal and First Nation partners on environmental protection, climate action, and renewable and low carbon energy. This memorandum addresses

two decades of negotiations over impacts of potential mining and oil and gas development. The GNLCC is:

- Supporting an executive-level working group among the Department of Interior, Department of Agriculture, State of Montana, Canadian Federal government, and the Province of British Columbia to facilitate and promote commitments of the MOU
- Supporting the study Predicting the Effects of Climate Change on Aquatic Ecosystems, a pilot aquatic vulnerability assessment in the Flathead River System
- Coordinating an adaptation strategy for climate and landscape stressors among technical representatives of the MOU working group that will provide guidelines for adaptation actions and conservation efforts that the conservation community can use to for transboundary coordination on important resource issues beginning with aquatics
- Initiated a collaborative and spatially explicit adaptation strategy in to the Flathead MOU, based on shared data of the NetMap tool



*Highway signs in rural Idaho are used to alert motorist of greater sage-grouse use areas.
Photo courtesy: Mary McFadzen*

■ Inter-LCC Greater Sage-grouse Demonstration Project

Because landscape scale issues cross LCC boundaries, the US Fish and Wildlife Service (USFWS) Office of Science Applications targets funding to support priority inter-LCC science and capacity building. In 2012, funds were allocated to the Inter-LCC Greater Sage-grouse Project for data synthesis and analysis. Project partners include the Plains and Prairie Potholes, Southern Rockies, Great Basin, and Great Northern LCCs, and our primary partner, the Western Association of Fish and Wildlife Agencies (WAFWA).

Import milestones in 2013 include the signing of a Memorandum of Understanding among USFWS and WAFWA; establishing a review panel; committing over \$1million in science funds; and leveraging additional funds through collaboration with the USGS Ecosystems Program to deliver additional high-priority science for greater sage-grouse conservation decision-making. Tom Remington, formerly with the Colorado Division of Wildlife, serves as Project Coordinator. The project is integrally tied to the Landscape Conservation Management and Analysis Portal (LC MAP; see Science

Support and Integration), which functions as the data hub for all science delivery, and strengthens our collective effort to provide needed science to managers ahead of the 2015 greater sage-grouse listing decision.

Funded projects include research to understand range-wide population trends of greater sage-grouse and standardize monitoring protocols; an evaluation of the benefits of firebreaks on sagebrush; an evaluation of effects of conifer removal on sagebrush cover; connectivity; and testing and scaling-up use of a novel bio-control for cheatgrass. USGS science is aimed at defining greater sage-grouse demographic and genetic connectivity; remote sensing techniques to map habitat; and sagebrush revegetation potential based on climate and soil factors. An additional effort is a dedicated synthesis of existing greater sage-grouse and sagebrush conservation data on LC MAP. Coordination among participants is managed through the Sage Steppe Partner Forum.

► Read more at Sage Steppe Partner Forum: <https://sites.google.com/site/forumsagesteppe>



SCIENCE AND DECISION SUPPORT

■ Support for Landscape Science

The GNLCC is strategic and purposeful in funding science that supports the conservation goals and targets of the Strategic Conservation Framework and as a shared science base, meets the needs of the GNLCC partnership. In FY13, eleven research projects received funding: six received funding in previous years and five were newly funded. These tables provide a snapshot of science projects including key deliverables.

Projects funded in previous years and in FY13

Project Title	Deliverables
The NorWeST regional stream temperature model	<ul style="list-style-type: none">• Comprehensive regional temperature database• Spatially continuous maps and descriptive summaries of historic and future stream temperatures
A new model of watershed-scale aquatic monitoring from the Crown of the Continent	<ul style="list-style-type: none">• Calibration coefficients and base erosion rates for road erosion models• Quantification of relationships between road metrics, modeled road sediment delivery, and in-channel conditions• GIS layers of hydro-geomorphic impacts of roads
Species adaptations to climate change: baseline data for grassland, sagebrush, and riparian-associated landbirds	<ul style="list-style-type: none">• Acquire spatially-explicit density or occupancy estimates for >70 grassland, sagebrush, and riparian-associated birds species• Link population estimates generated through the monitoring program to habitat conservation objectives at multiple scales
Using landscape analysis metrics to manage aquatic invasive species and targeted transboundary species	<ul style="list-style-type: none">• Synthesized transboundary databases for targeted carnivore species, trout species, and AIS• Occupancy models and spatially explicit data layers for wolverine, cutthroat trout, and bull trout• Standardized AIS monitoring protocols and AIS Strategic Plan
Piloting a strategic approach to landscape conservation design in the Columbia Plateau ecoregion	<ul style="list-style-type: none">• Develop and test a rapid-field assessment protocol to assess condition of landscape scale conservation priorities• Synthesis of EIA data to determine overall ecological integrity of conservation targets• Monitoring protocol for conservation partners in the region
Predicting effects of climate change on aquatic ecosystems	<ul style="list-style-type: none">• Vulnerability assessments for bull trout and cutthroat trout• Completion of an adaptation strategy



Projects funded for first time in FY13

Project Title	Deliverables
Science support for land conservation in the Rocky Mountain corridor	<ul style="list-style-type: none"> • GIS data layers of conservation resources and accomplishments entered into an online mapping and analysis platform • Final report on the success on ongoing utility
Identification of fire refugia in Rocky Mountain ecosystems of United States and Canada	<ul style="list-style-type: none"> • Maps of fire severity compiled (United States) and developed (Canada) showing our custom fire-severity classifications • Decision tree of how to identify fire-affected refugia in different landscapes • Map of the observed refugia
Helping managers prioritize conservation and identify climate adaptation strategies for Yellowstone cutthroat trout	<ul style="list-style-type: none"> • Presentations on the prioritization framework and criteria: how it was developed, identification of priority areas for conservation throughout range, and priority conservation actions • Identification of research needs to better conserve native salmonids
Developing management guidelines for creating resilient whitebark pine ecosystems using spatial simulation modeling	<ul style="list-style-type: none"> • Authoritative Restoration Guide and Toolkit for managers • Restoration workshop to share project results
A science-based decision support tool for prioritizing mitigation of road impacts on wildlife corridors	<ul style="list-style-type: none"> • Inventory of the condition of corridors with respect to road impacts • Decision support tool to focus road mitigation efforts where they matter most by pinpointing actual and potential high-value corridors bisected by high-impact road segments

➤ Read more about science projects: <http://greatnorthernlcc.org/supported-science-projects>

Photo credits from left to right: riparian habitat, Becky Petrashek; zebra mussels, USFWS; post-fire forest, NPS; Yellowstone Cutthroat trout, Fish Eye Guy Photography; whitebark pine mortality, Mary McFadzen



DECISION SUPPORT AND DATA INTEGRATION

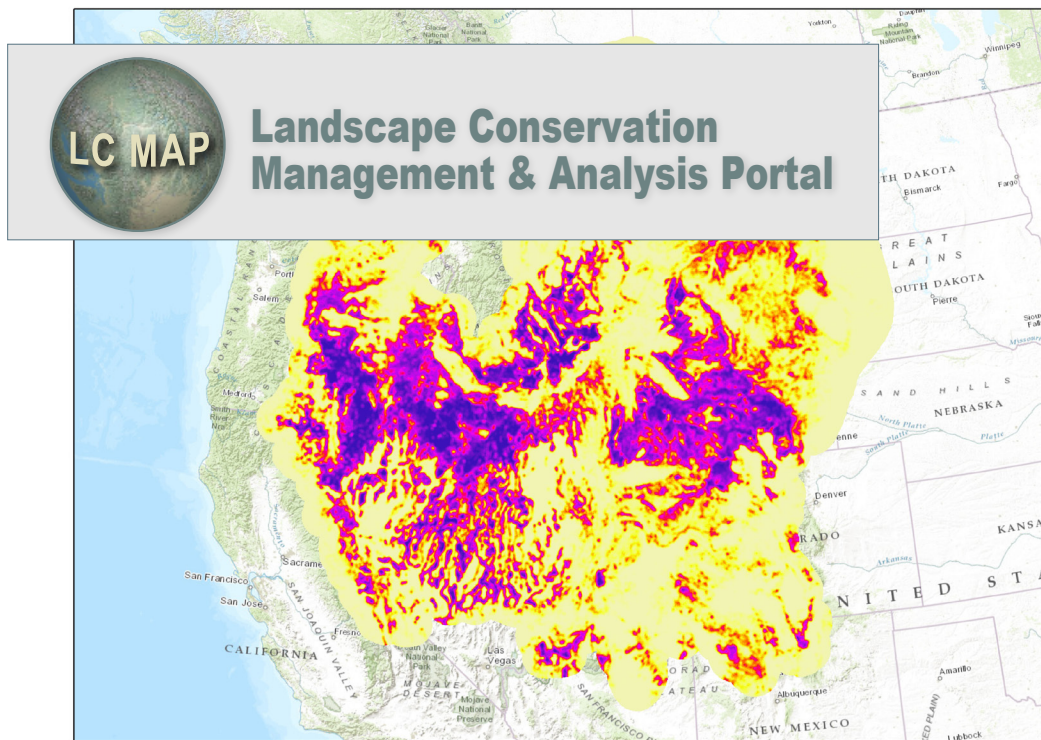
LC MAP, the Landscape Conservation Management and Analysis Portal, provides a collaborative virtual workspace allowing partners of the GNLCC to securely share, access, and analyze common datasets and information to further coordinate research, management, and resource conservation. LC MAP, which is built upon ScienceBase, an open source Scientific Data Management system, was developed by GNLCC with the express intent of being a scalable tool that supports inter-organizational data management in a highly secure, easy-to-access manner.

The value of that scalability was again proven in 2013 as two additional LCCs (making 12 total) adopted LC MAP as their primary data vehicle. In addition, the Inter-LCC Greater Sage-grouse Project has placed LC MAP as the focus of coordinated data synthesis and analysis supporting greater sage-grouse research and conservation. The LC MAP user community has grown to well over 500 members working on collaborative projects.

We have furthered data integration in 2013 across the Great Northern and the broader conservation community by leading an effort to integrate and support the Western Governors' Association Crucial Habitat Assessment Tool (CHAT); building integration pathways with Data Basin through the Integrated Data Management Network and development of a Conservation Gateway; and developing a Project Tracking tool that scales efficiently with LCC Network project tracking efforts.

GNLCC projects and partners are also developing a suite of decision support tools including a spatial planning tool for the Columbia Basin; a corridor-focused decision tool to offset road and highway pinch points in the Rocky Mountains; and the Landscape Integrity Index spatial model that is a key product described in our Science Plan. Completion of these tools is a primary focus in 2014.

► View details of LC MAP, including how to apply for an account: <http://greatnorthernlcc.org/lcmap>



The LC MAP user community has grown to well over 500 members working on collaborative projects.

COMMUNICATIONS AND OUTREACH

Through implementation of the FY12–13 Communications and Outreach Strategy, the GNLCC is working to achieve the broad outcome of the Strategic Conservation Framework — creating the conditions that enhance individual and collective partner implementation of landscape-level conservation. In FY13, GNLCC supported many opportunities for information exchange, science dissemination, and collaboration. These opportunities included hosting a monthly science webinar series; presenting at and sponsoring workshops and conferences; and providing information via e-newsletter and website.

Listed below, are a few of our outreach activities for this fiscal year. More information can be found in the Communications and Outreach Strategy Progress Report, FY12-13.

► *View the Communications and Outreach Report:*
<http://greatnorthernlcc.org/business>

■ Events

- Supported the 3rd Annual Pacific Northwest Climate Science Conference, Oct 2012, Boise, ID
- Presented at the Wildlinks Conference, Oct 2012, Sedro Woolly, WA
- Supported the 11th Biennial Scientific Conference on the Greater Yellowstone Ecosystem, Oct 2012, Yellowstone National Park, WY

- Supported the Northern Rockies Fire Science Network's Traditional Knowledge and Fire Workshop, Nov 2012, Salish Kootenai College, Pablo, MT
- Co-hosted the North Central Climate Science Center's Greater Sage-grouse Conservation Management in Montana Workshop, Dec 2012, Lewistown, MT
- Presented at the American Fisheries Society, Western Division, April 2013, Boise, ID
- Hosted the GNLCC Science Plan Workshop, April 2012, Leavenworth, WA
- Participated in the State Wildlife Action Plan Summit, June 2013, Shepherdstown, WV
- Co-organized and presented at the Four States Conservation in Energy Design Workshop, July 2013, Seattle, WA
- Presented at the National Climate Change and Wildlife Science Center Climate Boot Camp, July 2013, McCall, ID

■ Science Webinars

Recipients of our science funding, our staff, and invited presenters conducted 14 webinars this fiscal year. These sessions helped us share scientific findings as well as progress on funded research. Webinars continue to be well attended, averaging 44 participants per webinar.

► *View webinar recordings:* <http://greatnorthernlcc.org/webinars>



The High Divide Collaborative works to achieve shared goals for the landscape between Yellowstone National Park and the protected wilderness of Central Idaho. Photo credit: Michael Whitfield



Great Northern LCC Coordinators, Staff, and Support

Yvette Converse, Coordinator
406.994.7486
yvette_converse@fws.gov

Tom Olliff, Coordinator
406.994.7920
tom_olliff@nps.gov

Madeline Maley, British Columbia Coordinator
250.828.4444
madeline.maley@gov.bc.ca

Sean Finn, Science Coordinator
208.426.2697
sean_finn@fws.gov

Matt Heller, Information Systems Administrator
406.994.7333
matthew_heller@fws.gov

Mary McFadzen, Outreach Specialist
406.994.2388
mmcfadzen@montana.edu

Nina Chambers, Special Projects
406.333.2228
nchambers@bresnan.net

GreatNorthernLCC.org

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From the headwaters in British Columbia, Canada, the North Fork of the Flathead bisects Glacier National Park, the Flathead National Forest, and private lands in northwest Montana. Photo courtesy: Becky Petrashek