



NASA - NPS

Landscape Climate Change Vulnerability Project (LCCVP)

Meeting with Rocky Mountain National Park, Estes Park, CO, Thursday November 29

Meeting Context

The LCCVP project is using NASA data and products to inform the assessment of climate and land use vulnerability in the Great Northern and Appalachian Landscape Conservation Cooperatives. ROMO anchors the southern end of the Great Northern LCC and offers the opportunity to compare climate and land use change vulnerability and adaptation strategies with the Greater Yellowstone and Crown of the Continent systems. In addition to a GNLCC-wide vulnerability analysis, we have discussed potential projects in ROMO focusing on five-needle pine communities and grassland phenology.

Purpose

- 1) To identify key ecological, monitoring, and management issues at ROMO and in the wider ecosystem where science information needs are greatest and where our team can contribute to issues of interest to ROMO.
- 2) Evaluate opportunities for comparative studies between ROMO and other NPS units in the GNLCC.

Outcomes

- All participants understand the general goals of LCC-VP and how these can be used to inform decisions in ROMO and the surrounding area.
- All participants understand the current climate adaptation philosophy at ROMO as well as high priority science needs that would improve implementation of adaptation strategies.

Background

In advance of the meeting, we encourage everyone to quickly read our 10-page LCC-VP overview: <https://irma.nps.gov/App/Reference/Profile/2175571> (download PDF under “Holdings”). This document provides a summary of goals/objectives, primary audiences, deliverables, and timelines.

Expected participants:

- Ben Bobowski - Chief of Resource Stewardship
- Jeff Connor – Natural Resource Specialist
- Dennis Ojima – North Central Climate Sciences Center
- Jason Sibold – Colorado State University
- LCC-VP team – Bill Monahan, John Gross, Dave Theobald, Tom Olliff, Nate Piekielek, Regan Nelson, Erica Garrouette, Andy Hansen

Meeting Notes

Introductions

Ben B. – Chief of Stewardship
John Mack – Branch Chief of Natural Resources
Larry Gamble – Chief of Planning and Compliance
Jeff Connor – Research Learning Center
Jim Cheatham – Air and Water
Mary-Kay Watry – Biologist
Judy Visty – Research Coordinator
Mike Britten – Rocky Mountain I&M coordinator
Pam Benjamin – NPS Intermountain Region CC Coordinator
Nate Williamson – Fire Ecologist
Jason Sibold – Colorado State University
Dennis Ojima – Colorado State University and North Central Climate Science Center

Overview of LCCVP project

Discussion of key ecological, monitoring, and management issues at ROMO in the context of climate and land use change vulnerability

NCCSC and USGS climate vulnerability projects in ROMO

LCCVP approaches and progress

Climate change
Five needle pine
Grassland phenology
Science/Management collaboration in adaptation planning

D. Theobald

SSURGO Available Water Storage (AWC) – available as an ESRI package, sub 10-meter resolution.

Park issues and concerns etc.

Big horn sheep, are they a lost cause?
Is there something about elevation alone that's unique about ROMO?

Measuring forage quality in elk and veg monitoring

Therese Johnson – primary contact
Tom Hobbs dissertation project
Ptarmigan study for fine-scaled forage quality?

Opportunity to work across agencies on management adaptation stuff (Regan)

How can climate change be justification for restoring beaver in ROMO?

Viruses, disease and fungus – CWD increasing in elk herd for example. Is there a climate signal?
Sudden aspen decline, took off and now declining, might it speed up again with current mild climates

Manage germplasm on east and west sides of park very expensive
Stop managing germplasm for parks and start managing for landscapes?

N deposition from front-range within the context of CC reorganizing biodiversity within the park
Also exotic plants

Alpine is our high-elevation grassland and very important for ROMO

GLORIA sites within ROMO for alpine tundra/grasslands

Ben B.

Success for this project will be connecting ROMO across a larger landscape
ROMO has global partners that they are already working with to see how they are adapting to CC (Monte Verde, Costa Rica).

Need for communication plan as a way to engage other federal partners in the area
John G. – northwest forest hired a postdoc (to do all of the communication between partners) and this was an important way that communication actually happened – but required additional resources

Conclusions and next steps

Brain-storm activities, future projects and collaborations

5 needle pine

Alpine zone

Invasives

Tree line shifts (ROMO is 2/3 forest and 1/3 alpine tundra), up and down slope

Already some work going on

Forage phenology (good way to link with Dennis project?)

N deposition

Landscape scale linkages – climate patterns and consequences at large scales

ROMO representing southern extent of regional shifts

For example snow phenology and whether there are predicted to be continuous snow cover over winter months from GLAC to ROMO

Climate summary

Have lots of data, but little ability to tell stories that are relevant to specific biota/biophysical zones etc.

Focus on entire package from white paper to 15-minute ppt

Communication plan to engage interagency collaboration

Want actionable items that can be incorporated into planning process

Climate strategy (e.g. in planning for micro-refugia)

I&M network wants access to the data for other purposes

Broad capacity building

NPS Climate adaptation program (John G) would greatly benefit from having a park to go from not having a climate adaptation plan to working through the vulnerability assessment and developing that planning document

Top priorities of what we can deliver:

- Big picture story of past to present climate, land use, ecological response to that into future (John G., Andy, Dave)
- Rigorous ecological system modeling of key types including 5-needle pine and others (Bill)
- Land surface phenology and forage quality/productivity (Erica, Nate)
 - Links to Dennis's work
- Recolonizing species and connectivity as a big picture story that links ROMO on the southern end to parts north (YELL and GLAC)

Ben B.

Maybe success could be one big picture project that clearly links ROMO to neighbors such as 5-needle pine

And maybe one that's focused specifically on ROMO such as forage phenology and elk

Projects to be done by others:

Invasives, N deposition, hydrology, partnership with neighbors

Next steps:

1. One page work plan for each top priority above
2. Revisit priority list to see what's realistically achievable and revise work plan iteratively
3. Establish working groups organized around each priority including partners from YELL and ROMO both to attend quarterly group conference calls
4. Complete pre-survey for NASA
5. Convene expert panels to interpret science results and develop management strategies etc.
6. Erica and Regan get back to ROMO before the end of the calendar year so that they can work out the logistics of being able to house them (mid-April to mid-August capacity to respond to groups like ours goes way down for park staff)
7. Look for opportunities to link LCCVP, NCCSC, NPS I&M, USFS, and Jill Baron's programs with a focus on ROMO.

