



Collaborative Forest Landscape Restoration: A Meta-Analysis of Existing Research on the CFLR Program

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Executive Summary

The Federal government estimates that more than 65 million acres of the National Forest System is in need of restoration treatment via mechanical thinning and prescribed burning. The financial cost of this is staggering, with estimates ranging from \$5 billion to \$20 billion for requisite mechanical treatments. Current restoration activities on National Forests are being implemented at a rate of about 6% of the total need annually.

Accelerating the pace and scale of restoration has become the rallying cry of the Forest Service and collaborative landscape-scale restoration and adaptive management has become a primary institutional mechanism to achieve these ambitious objectives. Established in 2009, the Collaborative Forest Landscape Restoration Program (CFLRP) is now the vanguard of the federal government's efforts to accelerate the pace and scale of restoration activities on federal public lands. Since 2010 this program has annually allocated \$20 to \$40 million to jumpstart collaborative ecological restoration of forest ecosystems in the West and Southeast.

Now halfway through its 10-year authorization, progress is being made within individual CFLRP projects. Recently, the Forest Service completed a five-year progress report outlining key national indicators of program performance related to resource conditions. Collecting and reporting this monitoring information at the national level is a key component of learning and telling the story of CFLRP. In addition to reporting on these indicators, researchers from universities, the agency itself, and non-profits have been conducting independent research projects related to the CFLRP. This report focuses on this research, providing a meta-analysis of CFLRP-related research as of June 2015. The goal of this meta-analysis is to identify research gaps and position the agency and the research community to better address important research questions over the next five years of the CFLRP. Asking and answering key questions will be essential to continuing to inform collaborative landscape restoration and advancing the pace and scale of restoration.

This meta-analysis identifies a growing body of research addressing a variety of topics. The most studied topics to date include: issues of governance including structure and process, desired future conditions, monitoring, and learning. Conversely, there appears to be a gap in the current research related to leadership, the function of trust, the nature of

accountability, the legal context of large restoration projects and collaboration, and restoration targets. Among the topics needing more focus and attention include the process of establishing desired restoration outcomes or targets and subsequent linking of collaborative processes with achievement of such targets.

As the 23 current CFLRP projects advance into the next five years of landscape restoration and move from collaborative planning to collaborative restoration, a deeper examination into the nature and durability of relationships between the Forest Service and non-agency participants within collaboratives, including their ability to persist and lead to restoration outcomes, is a highly relevant research focus. Will the social capital and relationships developed over the past five years translate to forest restoration projects being implemented? How do these human dimensions affect the pace and scale of restoration? The CFLRP represents a unique moment in forest policy history as large investments have been made in building collaborative capacity and thus the CFLRP is a critical learning opportunity. Capturing the experiences and lessons learned within these projects promises to help create natural resource institutions as resilient as the landscapes they aim to restore.

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Introduction

There is a growing consensus among land managers that to address the large-scale impacts of wildfire, climate change, and other stressors on the landscape, forest restoration should be undertaken at the landscape scale. A recent report from the US Government Accountability Office (GAO) notes, “In the face of these large and increasing threats, there is growing agreement among land managers that efforts to restore forests should be undertaken at a scale commensurate with the scale at which disturbances, such as unnaturally severe wildfires that burn millions of acres annually, are occurring – that is, at a landscape scale (2015). According to the GAO report, there are 34 landscape-scale restoration projects on federal lands in the United States, 24 of which are being managed by the United States Forest Service (USFS)¹.

That landscape conservation is increasingly penetrating policy, science, and practitioner circles is not surprising and supports the efforts of the USFS to restore tens of millions of acres of forests and watersheds to become more resilient landscapes. The Forest Service has undertaken a number of initiatives in recent years to increase the pace and scale of forest restoration (USDA Forest Service 2012b) including but not limited to implementing a new forest planning rule (USDA Forest Service 2012a), the Watershed Condition Framework (USDA 2011), and a bark beetle strategy (USDA Forest Service

¹ Included in the 24 projects noted by the GAO report as USFS Landscape-scale restoration projects, 23 are affiliated with the CFLR program. The additional project is the “Black Hills Mountain Pine Beetle Response.”

2011) and the Collaborative Forest Landscape Restoration Program (USDA Forest Service 2015).

This report is specifically focused on the efforts of the USFS Collaborative Forest Landscape Restoration Program (CFLRP). The CFLRP, established by Title IV of the Omnibus Public Land Management Act of 2009, is a particularly interesting case and since 2010 \$20 to \$40 million has been appropriated annually for the ecological restoration of forests. The CFLRP is intended to:

- Encourage ecological, economic, and social sustainability
- Leverage local resources with national and private interests
- Facilitate the reduction of wildfire management costs, including through reestablishing natural fire regimes and reducing the risk of uncharacteristic wildfire
- Demonstrate the degree to which various ecological restoration techniques achieve ecological and watershed health objectives; and,
- Encourage utilization of forest restoration byproducts to offset treatment costs, to benefit local rural economies, and to improve forest health.

The objectives of the program, while ambitious, are aligned with the broader goals of increasing the pace and scale of restoration. Questions arise: How do we know if we're achieving the purpose of the Act? Perhaps more importantly, how do we know if the right mechanisms are in place to learn from this policy experiment, and learn in ways that inform future iterations of collaborative forest restoration policy and practice? According to the GAO (2015) report, no federal agency has undertaken a systematic assessment of its landscape-scale restoration activities or the extent to which projects have achieved their restoration objectives. Nonetheless, efforts to assess outcomes of landscape-level initiatives are increasing and a growing number of researchers are using the CFLRP as departure points for scientific inquiry. While still few, there are a growing number of studies on the CFLRP that are receiving scholarly attention.

The CFLRP has generally been credited for building collaborative capacity for landscape-scale forest restoration. However, questions remain regarding the transferability of the lessons from the CFLRP outside of the geographies of these 23 projects. Moreover, questions remain as to whether opportunities are being seized within each CFLR project to maximize learning in a way that will best inform future actions. The CFLRP is now half-way through its ten year authorization. This report is intended to assist the USFS and its partners by taking stock of where the CFLR-related research stands to help inform how best to capitalize on the next five years of the CFLRP. This report provides a synthesis of existing research and identifies topics not addressed in existing research. The objective of this synthesis is to inform prioritization of future inquiries and to distill lessons learned to increase efficiency and effectiveness of collaborative landscape restoration across the entire system of federal lands.

Collaborative Forest Landscape Restoration Background

Collaborative landscape restoration policy and practice involves two key components – landscape and collaboration. “Getting to the landscape scale” involves a matrix of planning and implementation activities focused on protecting and/or restoring ecosystem integrity and connectivity. As such, collaborative landscape restoration policy and practice address key questions regarding spatial heterogeneity, restoring and protecting water resources, providing important wildlife habitat and corridors, and increasing adaptive capacity in the face of a changing climate. Landscape ecology, fire ecology, and related scientific disciplines are in part driving this shift toward thinking in terms of the landscape. Science is increasingly informing planning processes and

implementation activities over large and complex landscapes.

Landscape conservation is also about collaborative governance processes that bring together organizations from the government, business, and nonprofit sectors to work on problems of mutual concern – a new approach to cross-boundary forest management. It is restoration that is multi-purpose to address a mix of issues including environment, economy, and community and includes relevant stakeholders including private, public, and non-governmental actors.

In 2009, Secretary Tom Vilsack offered a new vision for the USDA Forest Service that seeks to move beyond the conflicts of the past and instead emphasizes restoring our forests to benefit water resources, wildlife, and local communities. That same year, Congress established the CFLRP to fund a program to support collaborative, science-based forest restoration projects (called CFLR projects) in priority landscapes on Forest Service lands. This Congressional action is the latest and perhaps boldest institutionalization of collaborative governance related to the National Forest System (NFS). Over the last 25 years policies, such as stewardship contracting authority, have increasingly recognized the sharing of responsibility between federal agencies and non-federal entities. The 23 CFLR projects undertaken under special authority are an invaluable source of information on various approaches to collaboration with agency partners, environmental planning, and decision-making.

Through the CFLRP legislation, USDA Forest Service is authorized to appropriate funds as a competitive grant program to plan, implement, and monitor landscape restoration in America's National Forests. The purpose of the Act is to “encourage the collaborative, science-based ecosystem restoration of priority forest

landscapes...” In many ways, CFLRP is part of a longer-term shift in National Forest policy that has increasingly emphasized large-scale, collaborative, and adaptive planning (Schulz et al. 2012). The CFLRP is one experiment in the emerging suite of new governance approaches, which attempt to implement management in ways that are more flexible and adaptive, less hierarchical, and emphasize the role of collaboration and communities in setting goals and objectives on multiple-use landscapes. The policy has received praise as an innovative turn in forest management policy due to the focus on landscape scale restoration and requirements for collaboration in all phases of implementing the law (Schultz et al. 2012).

Title IV establishes the Collaborative Forest Landscape Restoration Fund to provide funding authority for:

- Requests by the Secretary of Agriculture of up to \$40 million annually for fiscal years 2009 through 2019 or until the entire \$40 million has been expended
- Up to 50% of the cost of carrying out and monitoring ecological restoration treatments on NFS land for each proposal selected
- Up to \$4 million annually for any one project
- Up to two projects per year in any one Forest Service region
- Up to 10 projects per year nationally.

In the first year of the program, 31 projects applied for funding and ten project proposals were accepted for CFLRP funding in 2010. In 2012, an additional 10 projects were funded. In 2013, an additional 3 projects were awarded bringing the total to 23. In order to be competitive, projects must aim to reduce wildland fire-management costs, enhance ecological health, and promote the use of small-diameter woody biomass as byproduct of restoration activities. Projects must also have plans to engage in collaboration with multiple stakeholders throughout planning, implementation, and monitoring.

Project landscapes vary widely and include a range of ecosystems, from high alpine peaks to ponderosa pine forests to grasslands. The scope and scale of the landscapes and projects vary as well, from 130,000 to 2,400,000 acres. The majority of the projects are located in the US West (17), and the remainder in the US Southeast (6). According to the USFS “Collaborative Forest Landscape Restoration Program: 5-Year Report” (USDA Forest Service 2015), the CFLR program has achieved a range of integrated outcomes, including:

- More than 1.45 million acres treated to reduce the risk of catastrophic wildfire.
- More than 84,570 acres of forest lands treated to achieve healthier condition through timber sales and stewardship contracts.
- More than 1.33 million acres improved for wildlife habitat.
- More than 73,600 acres treated for noxious weeds and invasive plants.
- \$661 million in local labor income, and
- An average of 4,360 jobs per year.

The USFS 5-year report, while serving an important purpose and highlighting progress toward five national indicators², fails to address some of the more difficult questions around and within the projects. By many measures, the CFLRP has been effective at facilitating collaborative landscape-scale restoration. How effective will be a question debated by policy-makers and scholars for some time to come, but one thing is clear: the Title IV of the Omnibus Public Land Management Act of 2009 was an innovative policy mechanism that incentivizes planning and action that is collaborative and adaptive, characteristics that scholars of ecosystem and landscape management have been

² The five national indicators are: (1) economic impacts, (2) fire risk and costs, (3) ecological condition, (4) collaboration, (5) leveraged funds. National indicators were developed to tell a national story about the CFLR program, measure outcomes across projects, encourage regular collection of data, and provide coarse-scale picture of programmatic impacts. For more information, see the CFLR 5-year report (USDA Forest Service 2015).

advocating for over a decade now. It only seems prudent, then, to maximize the opportunities to ask the right questions and learn from this policy in the five years that remain. This is made all the more relevant given that many of the projects are transitioning from a focus on collaborative planning to one of collaborative implementation.

Analytical Framework and Methods

In 2014, the Pinchot Institute for Conservation assembled an advisory team to guide the development of a framework to assess CFLR-related research. The advisory team included two representatives from the Forest Service, two representatives from the non-agency practitioner community, and two CFLR researchers. In September of 2014 we conducted interviews with members of the advisory team. Interviews lasted approximately an hour, and the participants were asked about their experiences with CFLR and the barriers and keys to success (see Appendix A for interview questions). Detailed notes were taken throughout the interviews and that information was used to build an analytical framework for synthesizing existing CFLR research.

Interviews informed the analytical framework that consists of a matrix of 10 “variables of interest” identified by the advisory team. Many of the categories of interest also have sub-dimensions. Finally, almost all participants made note of the different places where these variables of interest could occur, for example “leadership within the agency” or “accountability between the collaborative and the agency.” See Table 1 below.

Table 1. Meta-analysis Analytical Framework

Categories of Interest	Research Focal Areas		
	Within Agency	Within Collaborative	In-between
Leadership <ul style="list-style-type: none"> • Agency alignment • Civic 			
Accountability			
Trust <ul style="list-style-type: none"> • Levels of trust • Linking process with outcomes 			
Governance <ul style="list-style-type: none"> • Structure: Informal vs Formal • Membership: level of inclusion and diversity • Decision making process: level of consensus building • Forums for engagement: how and to what end are opportunities for dialogue created 			
Legal Context: opportunities and constraints <ul style="list-style-type: none"> • NEPA • FACA • Appellates • Objections Process • CFLRP - Legal variable in and of itself 			
History of Collaboration <ul style="list-style-type: none"> • History in place • Cultural conditions for collaboration 			
Desired future conditions <ul style="list-style-type: none"> • Level of social agreement • Ecological / scientific understanding 			
Learning <ul style="list-style-type: none"> • Monitoring 			
Scale <ul style="list-style-type: none"> • Spatial • Temporal • Multiple scales 			
Targets			

At its most basic level, the framework allowed for a simple “check” where research is occurring. This provides an easy reference to see “gaps” in the research and elaborate on what needs to be expanded and explored further. After working with the advisory team to establish the framework for assessing research articles, we then began identifying, compiling, and coding the published research according to the framework developed.

We conducted a systematic review of empirical research published as grey papers or research reports and in peer-reviewed academic journals. We searched the following four databases: (1) Academic Search Premier, (2) USFS Treesearch, (3) Google Scholar, and the (4) National Forest Foundation CFLR portal. The keywords searched included:

- “Collaborative Forest Landscape Restoration”
- “CFLR”
- “CFLRP”
- “Title IV of Omnibus Public Land Management Act of 2009”
- “P.L. 111-11”

Research was included in our review only if it assessed empirically one of the 23 CFLR projects, the first 10 projects as a group, the second 13 as a group, or all 23 as a group. We excluded opinion essays (of which we found two), and we also excluded monitoring reports or annual reports that were completed and submitted by individual CFLR projects. We recognize this is important research the projects are conducting; however it did not meet our criteria of being empirical research on CFLR-related programs, practices, or treatments. Similarly, we excluded articles that simply referenced CFLR as a federal forest management policy but did not actually conduct research on or with a CFLR project or conduct an empirical assessment on the broader program (i.e., the first 10 projects or the total 23 projects). We collected five articles in the database that met this criteria, but do not consider this to be a comprehensive list of those articles that

mention the CFLRP as a policy tool. Finally, it is also important to note that we are aware of published research that is based on data collected in the CFLR collaborative context but did not specifically reference the CFLR. If the research did not specifically mention the CFLR project as being the context or case study in either the methods or the discussion than it was excluded from this analysis.

We made initial decisions on whether to include articles based on the title and abstract, after which we read the full text to ensure that they met our criteria for inclusion. All articles that were published and available online or in print through April 2015 were stored in a Zotero database (www.zotero.org). We coded each article, recording author(s) name and institution, year of publication, publication outlet, the scale of analysis (i.e., specific project, subset of all projects, or all projects), the principal topics that were researched and if any sub-variables of interest were examined. The majority of the research reviewed only dealt with one or two of the variables of interest, however one article covered four of the topics identified by the advisory team. A couple of articles met our criteria for inclusion, but didn't actually address any of the topics of interest. Those are included in the database and discussed below.

The state of the research: a descriptive meta-analysis of CFLR research to date

In total, we found 19 peer-reviewed publications and grey-literature reports that met our criteria as being CFLR-related literature. Of the 19, eight were peer-reviewed publications in academic journals (six of those in the *Journal of Forestry*), eight were reports published either as USFS research station general technical reports (two), or through research institutes affiliated with universities (six), and three graduate projects

and associated thesis/dissertation on CFLR. As expected, we found a steady increase in the number of publications each year starting in 2012 (see Figure 1). We expect the number to continue to increase as the process of formulating research questions and securing funding, collecting and analyzing data, writing, and working through the peer review process takes several years. Several research projects are currently in progress and we expect reports and journal articles as future products of these projects.³

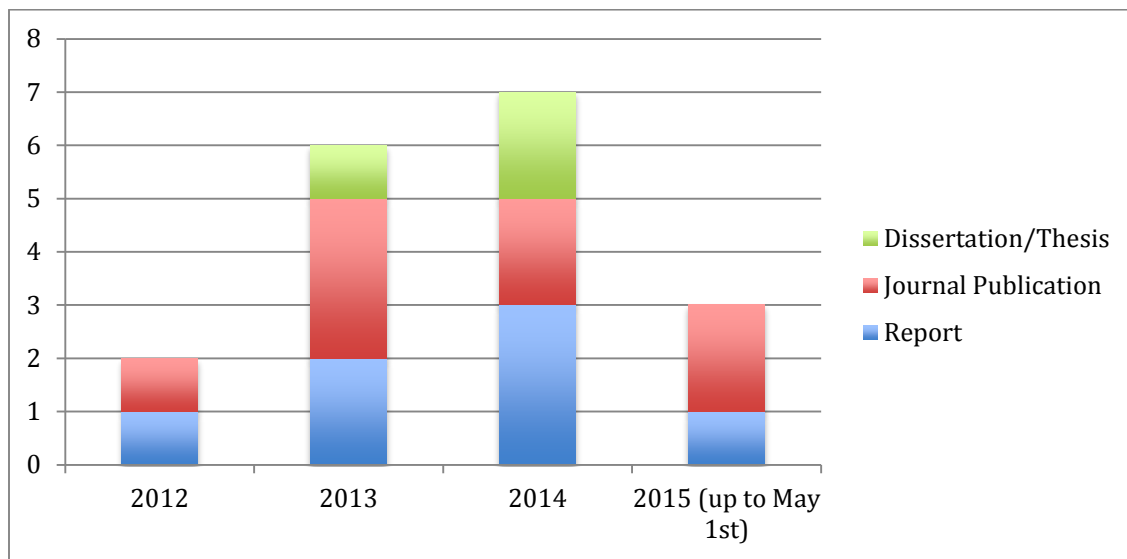


Figure 1. Research products by year

To date, the vast majority of the research is coming from the university community (78% of lead authors). Forest service researchers are contributing some (17% of the published research), and we found one piece of research that was led by an NGO involved in a CFLR project.⁴

³ See appendix B for a list of participants and projects in the “CFLRP Researchers Network” (as of May 2014).

⁴ Much of university-affiliated lead author research is funded by the USFS research stations and subsequently counts toward research station output. Funding sources for CFLR-related research was not a part of this analysis.

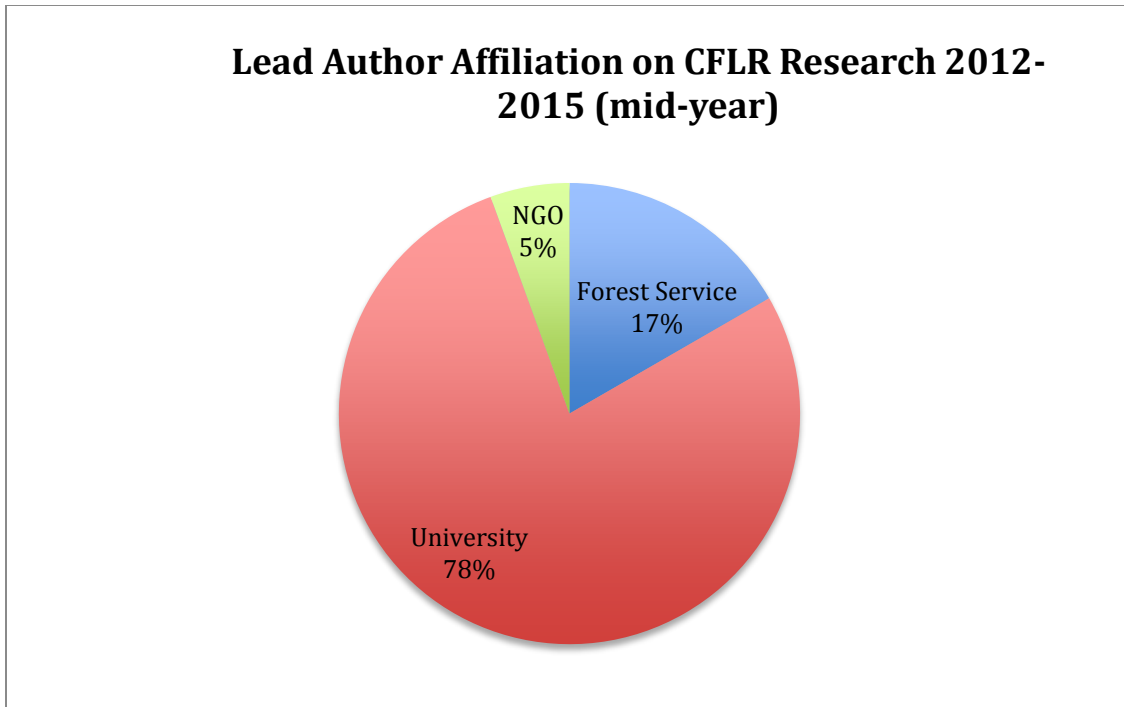


Figure 2. CFLR research by affiliation

Of the important variables of interest identified through the advisory team interview process, there appear to be a couple of clusters where research questions are being asked, and other areas where no or very little research is being conducted. For example, a relatively large cluster of research is looking at desired future conditions, considering historical ecologies, working to assess the current science, and considering the process of social agreement around desired conditions (Figure 3).

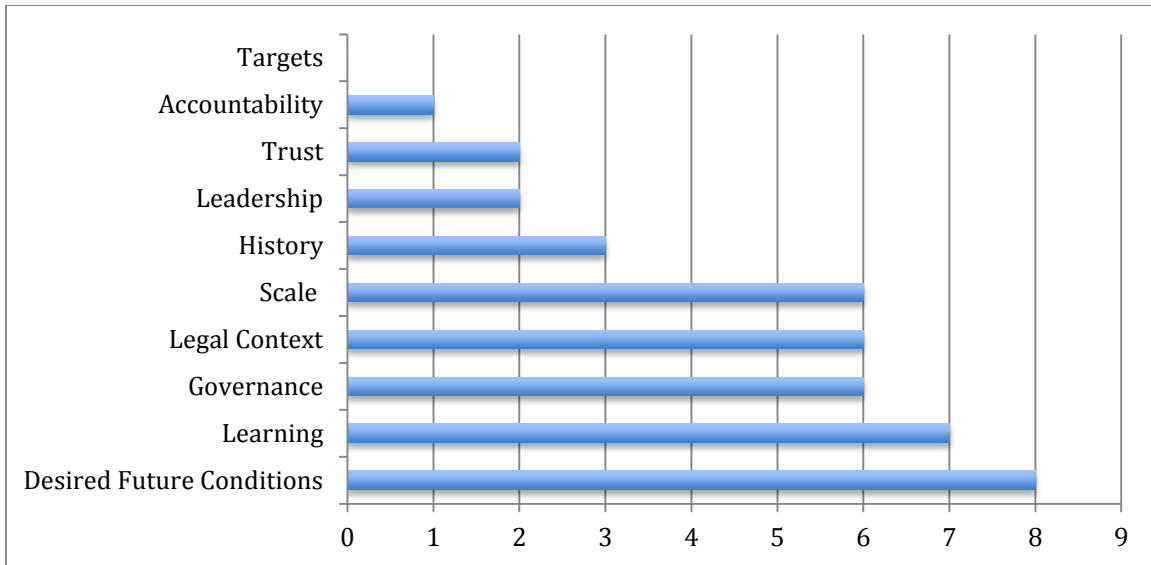


Figure 3. Number of research products by variable of interest

On the other end of the spectrum, we found no research considering “targets,” either a scientific assessment of what the targets actually are, whether projects were meeting targets, or whether targets identified within the projects align with the broader system of USFS targets (e.g. timber targets, restoration acres) more generally. We did not include monitoring reports in this analysis, and we suspect that the discussions around targets would be included in those. We did, however, find a large amount of research on monitoring and the process of monitoring. In total, 7 of the 19 publications considered some aspect of monitoring and learning from monitoring. Table 2 lists the categories of interest, the number of research publications or reports empirically assessing the category of interest, and the citations that include those variables.

Table 2. Categories of interest and citations

Categories of Interest	Citations and Summary: Research Focal Areas	# of pubs
Accountability	Butler et al. 2015;	1
Desired future conditions	Antuma et al. 2014; Bartlett 2012; Bosak and Belsky 2014; Cheng et al. 2015; Dickenson et al. 2015; Larson et al. 2013; Thompson et al. 2013; Underhill et al. 2014	8
<ul style="list-style-type: none"> Level of social agreement 	Antuma et al. 2014; Bartlett 2012; Bosak and Belsky 2014; Cheng et al. 2015; Larson et al. 2013;	5
<ul style="list-style-type: none"> Ecological / scientific understanding 	Antuma et al. 2014; Bartlett 2012; Cheng et al. 2015; Dickenson et al. 2015; Larson et al. 2013; Thompson et al. 2013; Underhill et al. 2014	7
Governance	Antuma et al. 2014; Bartlett 2012; Butler 2013; DuPraw 2014; Egan and Dubay nd; Spaeth 2014;	6
<ul style="list-style-type: none"> Structure: Informal vs Formal 	Antuma et al. 2014; Bartlett 2012; Butler 2013; Egan and Dubay nd;	4
<ul style="list-style-type: none"> Membership: level of inclusion and diversity 	Antuma et al. 2014; Bartlett 2012; Butler 2013; DuPraw 2014;	4
<ul style="list-style-type: none"> Decision making process: level of consensus building 	Spaeth 2014;	1
<ul style="list-style-type: none"> Forums for engagement: how and to what end are opportunities for dialogue created 	DuPraw 2014	1
History of Collaboration	Antuma et al. 2014; Schutz et al. 2012; Spaeth 2014;	3
<ul style="list-style-type: none"> History in place 	Schutz et al. 2012; Spaeth 2014;	2
<ul style="list-style-type: none"> Cultural conditions for collaboration 		0
Leadership	Antuma et al. 2014; Butler 2013;	2
<ul style="list-style-type: none"> Agency alignment 	Butler 2013;	1
<ul style="list-style-type: none"> Civic 	Antuma et al. 2014;	1
Learning	Cheng et al. 2015; Demeo et al. 2015; Larson et al. 2013;	7
<ul style="list-style-type: none"> Monitoring 	Butler et al. 2015; Demeo et al. 2015; Larson et al. 2013; Schultz et al. 2012; Schultz et al. 2015; Underhill et al. 2014	6

Legal Context: opportunities and constraints	Butler 2013; Butler et al. 2015; DuPraw 2014; Egan and Dubay nd; Schutlz et al. 2012; Spaeth 2014;	6
• NEPA	Egan and Dubay nd; Schutz et al. 2012;	2
• FACA	Butler 2013; Butler et al. 2015; Spaeth 2014;	3
• Appellates		0
• Litigation	DuPraw 2014; Schultz et al. 2012;	2
• CFLRP - Legal variable in and of itself	Butler et al. 2015;	1
Scale	Antuma et al. 2014; Butler et al. 2015; DuPraw 2014; Larson et al. 2013; Schultz et al. 2015; Tabor et al. 2014	6
• Spatial	Antuma et al. 2014; Butler et al. 2015; DuPraw 2014; Larson et al. 2013; Tabor et al. 2014	5
• Temporal	Butler et al. 2015; Schultz et al. 2015; Tabor et al. 2014	3
• Multiple scales	Antuma et al. 2014; Tabor et al. 2014	2
Targets		0
Trust	Antuma et al. 2014; Bosak and Belsky 2014; Spaeth 2014;	2
• Levels of trust	Antuma et al. 2014; Bosak and Belsky 2014;	2
• Linking process with outcomes		0

It is important to note one deviation from the original framework set up in collaboration with the advisory team. The original framework distinguished if the research associated with each variable of interest was conducted within the collaborative, within the agency, or in the conceptual space between agencies and collaborative. While analytically interesting, the additional dimensionality made the framework too complex for a streamlined meta-analysis. Some of the articles that we reviewed did clearly distinguish if the research was in the collaborative or in the agency, and where it was clear that is noted in the discussion below. In many cases, however, there was not a clear distinction, or making the distinction felt like an arbitrary or subjective decision. For

these reasons, that additional dimension is not be discussed in full here. We revisit this in the discussion. Below, we provide general reviews of the categories of interest.

Accountability

Only one research article, “Collaborative Implementation for Ecological Restoration on US Public Lands: Implications for Legal Context, Accountability, and Adaptive Management,” currently in press at the Journal *Environmental Management*, considered accountability. This article discusses the role of qualitative field reviews in building relationships, and in doing so, fostering informal accountability mechanisms. Butler et al. (2015) note the benefits of multi-party monitoring as a *process* that has the unintended effect of strengthening informal accountability: “The CFLRP process appears to strengthen USFS accountability to collaborators through such informal and relational mechanisms where understandings and concerns emerge through collaborative interaction” (Butler et al. 2015).

Desired Future Conditions

By design, all CFLR projects involve discussions and activities that have a strong scientific perspective. As the law (PL 111-11) states: “A collaborative forest landscape restoration proposal shall be based on a landscape restoration strategy that incorporates the best available science and scientific tools in ecological restoration strategies.” However in most cases, given the lack of rigorous scientific studies in these particular landscapes, defining desired future conditions is difficult, and often socially contested.

The Colorado Front Range project appeared to be leading the way in the forest

science guiding the desired future conditions conversations. These studies are being led by the Colorado Front Range Roundtable's Spatial Heterogeneity Subgroup that noted "defining the desired condition of forest structure across the Front Range landscape has been difficult...In particular, there was a lack of information describing the historic forest spatial patterns that influenced a number of ecosystem processes on the Front Range" (Dickenson et al. 2014, pg. 1).

Antuma et al. (2014) discuss the levels of social agreement between the collaborative and the Forest Service around the desired future conditions of the landscape, and report that developing a firm understanding among group members and between the collaborative group and USFS staff has helped to connect "soft" goals to particular outcomes (soft goals refer to flexible and less specific goals in an effort to find broader areas of agreement). For example, the 2010 Uncompahgre Plateau project found that setting "undesirable future conditions" rather than trying to agree on what was a very diverse set of desired future conditions allowed them to find agreement around what they did not want to see happen in the landscape (Antuma et al. 2014).

Governance

In describing the Dinkey Landscape Restoration project, Bartlett (2012) describes the role of the mediator, as well as five key steps of collaboration that the Dinkey has learned through their experiences: 1) include a broad range of participants; 2) establish a conceptual framework, purpose and need, and long-term desired condition; 3) use scientific experts as technical resources during meetings; 4) to sometimes move forward on intractable issues without consensus; and 5) use site visits to develop priorities and the

initial mark.

Across the 23 projects, there are a variety of governance structures being used to manage the projects. Antuma et al. (2014) note, “The 13 groups in the 2012 CFLRP cohort vary widely with respect to the formality of their processes. Several factors often align to determine collaborative structure – reasons for collaborative formation, percentage of public land, and regional differences in community dynamic.” This report differentiates between conflict-driven collaboration and opportunity-driven collaboration, and they note that a large percentage of public land surrounding a community is a strong variable predicting the formality of collaborative process (i.e., “surrounding communities have a highly vested interest in the management of those lands and collaborative groups tend to have more formal collaborative structures” (Antuma 2014).

There are many ways that Forest Service employees can, and do, engage in a collaborative process. Butler (2013) develops four typologies – leadership, membership, involvement, and intermittence – to explain different types of line officer engagement in the context of the first ten funded CFLRP projects. In her dissertation on CFLRP, DuPraw (2014) notes nine key challenges that collaborators must master in order to achieve landscape-scale collaboration. Five of the nine are governance challenges, including: (1) engaging legitimate and capable stakeholder representatives in the core collaborative dialogue; (2) choosing and tailoring a self-governance mechanism; (3) obtaining the resources to support the collaborative process, including implementation of results; (4) coordinating the efforts of stakeholders through a social process that makes their efforts manageable, which helps preclude “participatory fatigue”; and (5) securing the buy-in of in-house colleagues and external decision-makers not “at the table” such as

the National Oceanic and Atmospheric Administration or the US Fish and Wildlife Service.

History of Collaboration

Some project collaboratives have been working together for more than a decade, while others have formed more recently. Three research reports discussed the history of collaboration and the role that history has played in shaping the current collaborative. For example, Spaeth (2014) discusses the history of the Lakeview Stewardship Group in Oregon, and how that influenced its capacity to respond to a large wildfire event.

In discussing the first ten projects and the advisory team that selects CFLR projects, Shultz et al. (2012) notes that groups with strong track records of collaboration are prioritized. Groups must describe in their proposals their track record of successful planning and implementation, and list past accomplishments. The history of collaboration is thus a key variable in the selection of projects, although there was little current research asking questions of the significance of this history in successful planning and implementation. Moreover, there was no research working to assess the underlying cultural conditions that facilitate successful collaboration.

Leadership

Antuma et al. (2014) discuss leadership and define three different forms of leadership within the collaborative: (1) champions, (2) facilitators, and (3) coordinators. The authors note: “Champions are generally the charismatic community leaders who are able to rally people to come to the table and maintain momentum. Facilitators are

individuals who are able to build consensus and sustain a group's process to create a functioning governing body; typically, they are hired from neutral third parties.

Coordinators are internal administrators who keep the process of collaboration moving forward through information sharing and organization" (Antuma et al. 2014).

In the advisory team interviews, we heard many respondents discuss "agency alignment" in leadership. This referred to support for collaboration being encouraged in the regional and forest leadership down through the line officers. While this does seem like a critical variable in successful CFLR projects, we found no empirical research studying the collaborative leadership alignment in the Forest Service.

Learning

Cheng et al. (2015) remark that "the [Colorado Front Range] Roundtable lacked clear mechanisms through which its learning could be absorbed and acted upon by Forest Service managers...As the Roundtable sought to move from direction-setting to implementation, it was necessary, but not sufficient, to involve solely Forest Service leadership and program administrators in collaborative governance" because operational decisions about specific management actions are left to discretion of field staff and contractors.

In all CFLRP projects, ongoing ecological and socioeconomic monitoring is meant to play an integral role in making decisions and tracking progress on goals (Demeo et al. 2015). CFLRP program rules require that groups monitor ecological, social, and economic conditions for at least 15 years after implementation begins, and in interviews with the first 10 projects all groups stated a commitment to long-term, multiparty

monitoring (Schultz et al. 2012). Monitoring goals include understanding ecological baseline conditions, implementation and effectiveness monitoring, and tracking socioeconomic conditions and effects of project implementation.

Projects must include monitoring plans and provide regular reports to national Forest Service leadership on ecological and social indicators at both landscape and project scales. Monitoring is also intended to ensure that the collaborative's intent, the mutual understanding with the Forest Service, and the requirements of CFLRP-related legislation and funding are met. The collective nature of CFLRP efforts provides a fitting opportunity for monitoring to contribute to learning directed at informing and improving management over time, across scales, and between diverse stakeholders.

Larson et al. (2013) refer specifically to the potential that the CFLR projects have to engage in “Active Adaptive Management Monitoring,” referring to “systematic observations (i.e., measurements and data collection) of resource conditions and subsequent analysis and interpretation, all guided by specific monitoring question(s), leading to new information. Adaptive management occurs when adjustments to future management, based on the new information provided by monitoring, are implemented.”

Schultz et al. (2014) carried out one of the most in-depth analyses of monitoring on CFLR projects to date and found that monitoring programs are being designed for a variety of purposes, such as tracking ecological impacts, maintaining trust with stakeholders, supporting “adaptive” planning documents meant to cover multiple years of treatment, and “telling the story” of these projects in terms of social and economic impacts to communities.

Legal Context

For federal land management agency personnel, a central point of contention lies between their participation in collaborative recommendations and their autonomy in the decision-making process (Butler 2013). In their overview of the CFLRP, Schultz et al. (2012) note that one of the central challenges to these projects will be “striking a balance between honoring the zone of agreement [among] stakeholders...with the fact that the USFS must abide by the requirements of the Federal Advisory Committee Act, retain decision making authority within the agency, and avoid making specific decisions about on-the-ground actions prior to the National Environmental Policy Act of 1969 (NEPA) process.” The Federal Advisory Committee Act (FACA) was designed to ensure transparency in decision-making where federal agencies are involved and ensure representation of public interests on advisory committees (Butler 2013).

As mentioned in the governance section above, out of the four categories of involvement that Butler (2013) developed for Forest Service participation, the author suggests that the “involvement” category, where Forest Service staff do not vote on issues or collaborative decisions, but they “participate in committee work, provide information, data, opinions, and sideboards, and engage in dialogue at all levels of the collaborative, simply stopping short of voting on collaborative decisions” is an optimal position for the Forest Service, where the agency is engaged in dialogue, but limits concerns about FACA violations.

Scale

Tabor, et al (2014) note that size does matter in ecology because of the scale of processes and impacts, and, in general, the larger the scale of focus, the better chance of conserving critical ecological processes, such as hydrologic function, natural disturbance regimes, species life cycles, and functional trophic interactions. Importantly, the authors discuss the nested scale processes that occur both ecologically as well as collaboratively in the governance arrangements of the Southwestern Crown Collaborative (SWCC) having both smaller and larger scale processes (both ecological and governance) around the SWCC landscape. Similarly, Larson et al. (2013) specifically focus on the temporal scalar dimensions necessary to apply, and learn from, an “active adaptive management” framework (also using the SWCC as a case study).

Antuma et al. (2014) and DuPraw (2014) both discuss the challenges of taking collaboration and collaborative processes to the “landscape-scale,” a particular spatial scale that entails unique challenges as well as opportunities.

Targets

Interestingly, none of the reviewed research discussed targets. We elaborate on some of the reasons for this finding below.

Trust

In qualitative interviews, Bosak and Belsky (2013) asked respondents about their trust in public land managers and whether they had trust in the US Forest Service in the SWCC CFLRP and received about a 50/50 split (with a very small sample size of n=9).

One of the key dimensions of trust that the advisory team noted was “linking process with outcomes.” Although the review did not find any research that was operationalizing trust as being measured through the process that links collaborative efforts to outcomes, this was often implied and trust appeared as an underlying factor in support of many of the other variables of interest, for example leadership, learning, accountability, and governance. For example, Antuma (2014) remark that clear role definitions between the collaborative group and the USFS planning process can increase understanding and trust. However, this shared understanding and trust takes time to develop, and differences in understanding of responsibilities and roles can lead to further conflict and mistrust.

Discussion and Implications

The basis for this project emerged from conversations with practitioners and scholars who expressed an interest to learn as much as possible in the remaining five years of the CFLR program. The underlying intention is to take stock of where the state of the research is, identify gaps in key variables of interest, and work to set out a research agenda moving forward into the remaining five years of the framework. At the most basic level, we can “see” gaps by applying the framework.

Table 3. Gap analysis of categories of interest

Categories of Interest	Gap Analysis
History: Cultural conditions for collaboration	0
Legal context: Appellate	0
Targets	0
Trust: Linking process with outcomes	0
Accountability	1
Governance: Decision making process: level of consensus building	1
Governance: Forums for engagement	1
Leadership: Agency alignment	1
Leadership: Civic	1
Legal Context: CFLRP - Legal variable in and of itself	1
History: History in place	2
Legal context: Litigation	2
Legal context: NEPA	2
Scale: Multiple scales	2
Trust: Levels of trust	2
Legal context: FACA	3
Scale: Temporal	3
Governance: Structure: Informal vs Formal	4
Governance: Membership: level of inclusion and diversity	4
Desired future conditions: Level of social agreement	5
Scale: Spatial	5
Learning: Monitoring	6
Desired future conditions: Ecological / scientific understanding	7
Learning	7

One of the gaps clearly identified in the above chart is exploring the intersection of project *targets* and *linking process with outcomes in regards to trust*. There was some concern among the advisory team that many of the projects may be developing good processes, but that the outcomes were not being delivered at a pace or scale that the collaborative was expecting or intending. This has implications for maintaining sufficient levels of trust within the collaborative to continue with the good process. The risk of “participatory fatigue” (DuPraw 2014) is high, if process does not result in outcomes on the ground.

Interestingly, the scientific understanding of desired future conditions was one of areas where we found the most research having been conducted. Research that falls into this category is largely landscape-specific, i.e. a significant portion of this looks at spatial

heterogeneity and fire regimes in specific areas or landscapes. This research and information is invaluable for informing the collaborative process and project prioritization on specific projects, but is perhaps the least “scalable” in regards to extracting lessons learned to apply to other collaborative landscape forest restoration initiatives. It would be beneficial for future research in this area to make note of process, tools, and methods that help link the science-collaboration-implementation dimension of these projects (Cheng et al. 2015 makes a similar case with regard to learning).

Some of the more recently published research does explicitly make the connection, and distinction, between collaborative planning and collaborative implementation (Butler et al. 2015; Schultz et al. 2014; Spaeth 2014). This seems like a key area for emphasis as in the next five years many of the projects that have been planned, scoped, and prioritized in the first five will complete implementation of projects and for those projects that have already completed implementation longer-term monitoring results will continue to come in. Research that queries how the collaborative process transfers from planning to implementation will be key to harvesting lessons from the CFLRP that can be transferred into future landscape scale restoration.

There is a strong correlation between having university engagement and participation in the CFLR collaborative and research being conducted on projects. Some geographies, particularly those in the US West, were more researched than others. For example there were clusters of research articles with the Colorado Front Range Collaborative, the Southwestern Crown Collaborative (Montana), and the Lakeview Stewardship Group (Oregon). Within those CFLR projects, there is a sustained research presence from faculty at universities: Colorado State University, University of Montana,

and Oregon State University, respectively. In these cases, it is not clear if researchers are engaged in the CFLR collaboratives on a voluntary basis or if they have received funding for their CFLR-related research. Given the relationship between university engagement and research being published, we suggest more faculty engagement with the CFLRs would be beneficial to sustained learning around collaborative landscape restoration.

These clusters of research, and the particular areas of study that came from these clusters, were also highly correlated to specific sub-groups associated with the CFLRs. For example, the Colorado Front Range's Spatial Heterogeneity subgroup was actively researching and publishing work on the desired future conditions. The Southwestern Crown seemed to have a key focus on social, economic, and governance aspects of the CFLR project. These trends are interesting and highlight the importance of governance structure in not only facilitating effective CFLR process and implementation but also of asking questions and conducting research to find answers.

Although not necessarily outlined in the research evaluation framework the advisory team set up, we did find a few studies that looked explicitly at the economic outcomes of these projects. Two of the research inquiries looked specifically at the economic impacts on communities and to local contractor capacity. This was neither in the advisory team framework, nor in the majority of the studies, however, we believe this is and should be an important focus of research for the next five years, especially considering that projects expect to engage more contractors and forest products infrastructure. Understanding if the CFLRP is actually creating the economic opportunities that the legislation intends is important for collaborative forest restoration policy moving forward. The CFLRP

projects present some of greatest opportunities to evaluate the economic effects of restoration forestry in multiple ecological and economic contexts across the US.

Conclusions and next steps

National policy changes may open a window for collaborative forest landscape restoration initiatives to move from direction-setting to implementation. Moving from planning to implementation, and importantly harvesting the lessons learned in doing so, will be critical for increasing the pace and scale of restoration and achieving efficiencies in project costs and timelines, responding to litigation, and sustaining stakeholder participation over time. This should be a key focus of research moving forward.

As this meta-analysis indicates, a clear “gap” in research exists around targets. We believe the CFLR program provides a tremendous opportunity to have a conversation around “targets” and specifically how CFLR targets or desired outcomes align with traditional USFS unit-level performance measures. How does USFS line officer participation in CFLR projects that include their own collaboratively defined objectives affect how line officers approach USFS-centric targets? How do social and economic outcomes of forest restoration activities get reported and how can the agency tell the story of the positive impacts of landscape restoration? Answers to these questions go well beyond the CFLR program, but the CFLR projects provide a great platform for this broader conversation.

Research we assessed highlighted the role of agency leadership to broader collaborative success, but the legal matrix that must be navigated for Forest Service involvement is daunting. We suggest the development of a very brief guidebook that can

inform line officer involvement in collaborative forest restoration efforts. Valuable research is being conducted in this area and facilitating ways to enhance the uptake of that information for management is important. As Butler (2013) notes, the optimal role for Forest Service staff is to participate in committee work, provide information, data, opinions, and sideboards, and engage in dialogue at all levels of the collaborative, but stop short of voting on collaborative decisions. Another crosscutting theme that can inform on-the-ground management is to encourage the use of field tours. As CFLR-related research attests, field tours have a variety of direct and indirect value, including: a tool for building trust, an informal mechanism of accountability, and a way to facilitate learning among diverse groups of stakeholders.

The CFLR projects are clearly contributing to a much broader shift to adaptive management on US federal forestlands. While one of the most researched topics to date, we hope that the examination of the extensive use of monitoring within CFLR projects and the connection between monitoring and learning continues into the next five years and that it continues to inform the process of adaptive management. As the recent GAO report attests, we should not only be sharing these lessons learned between CFLR projects, but between the five land management agencies that collectively manage 728 million acres of land in the United States (GAO 2015). A clear link should be made between research occurring in the CFLR community and other landscape conservation initiatives, such as the US Department of the Interior Landscape Conservation Cooperatives and non-federal large landscape conservation initiatives. In our review, we found no evidence that these broader conversations were occurring. Harvesting lessons learned within all landscape conservation initiatives is essential for increasing the pace

and scope of restoration activities. Moreover, a thorough examination of lessons learned will be critical for institutionalizing adaptive management on all state and federal lands.

Finally, we suggest a broader empirical assessment to measure the performance in each of these projects. Moving beyond traditional indicators, this research would assess the link between *process* and *outcomes* and empirically link the development of collaborative capacity to restoration outcomes. What kinds of relationships exist between Forest Service and non-agency stakeholders, and what is the structure of those relationships? Does the social capital developed over the past five years translate to forest restoration projects being implemented? If so, what are the key institutional and network structures leading to success and what are the key barriers that are inhibiting effective linking between process and outcomes? These would appear to be key questions for the remaining five years of the CFLR program that can inform collaborative forest landscape restoration into the future.

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Appendix A

TO: Advisory Team, Collaborative Forest Landscape Restoration Research Synthesis

FROM: Pinchot Research Team – Patrick Bixler and Brian Kittler

DATE: September 16, 2014

RE: Interview background and questions

Thank you for your participation on this advisory team (see page 2 for advisory team contact information). As our earlier correspondence has indicated, this project involves talking to a mix of stakeholders and researchers associated with the CFLR projects to identify several variables or “categories of interest” that have been key to achieving objectives in the CFLR projects. We’re also interested in barriers you’ve encountered or experienced. The first step of this project is to get feedback from you to frame an analytical framework to assess the current research occurring on CFLR projects. Using the collective framing we develop as a team, we will then ask of the current research – are we asking the right questions? Is the research getting at the most important variables of the CFLR projects? Are we researching the right categories of interest? How do we distill actionable information from this research?

Through your contribution we will develop a list of key variables for collaborative forest landscape restoration. Please reflect on the questions below and consider both social and ecological dimensions, including what collaborative process (social) and restoration implementation variables (ecological) are relevant to your CFLR project.

Some questions that may facilitate identifying these categories of interest:

- What challenges has your collaborative faced in planning and in implementation?
- How do you balance honoring collaborative input and agreements with the FS maintaining decision authority? Does the collaborative exercise oversight and, if so, is it successful in doing so?
- What are your reflections on the extent to which you feel your project has made progress toward restoration goals as expected by this point in the program? What challenges or surprises have emerged?
- Have you been involved with project-level monitoring? What has the collaborative identified as the key indicators to monitor? What barriers have there been to effective monitoring? Has monitoring influenced project planning? What is missing in the monitoring?
- Have you been involved with the 5-year reporting?

- What has facilitated reaching the objectives for ecological? For social?
- What indicators of success or progress are missing from the 5-year reporting? Are there tangible (economic or ecological) indicators that are not included that would help clarify the extent to which the project is progressing toward restoration goals?
- Are there more intangible outcomes through participation in this program that demonstrate progress toward restoration and secondary goals
- What significant learning and innovation has taken place and do you believe it can and will endure?
- What factors do you see as fundamental to making progress toward landscape scale forest restoration?"

We are pleased to have your contribution to what we believe will be a significant addition to the growing body of literature on collaborative landscape restoration. Should you have any comments, questions or suggestions on this process, please contact Patrick at the email address above or at (202) 797-6531.

Many thanks,

Patrick

CFLR Synthesis Advisory Team

Name	Participant Organization and Role	Contact Information
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Brian Kittler	Project Support	bkittler@pinchot.org, 202-797-6585

Appendix B: CFLR Researchers Network

Note: this is a self-organized participant network and the information below was filled in by the researcher's themselves. We did not verify if these projects were still ongoing and we acknowledge that some of this information is not up-to-date. This information was last updated in May of 2014.

Researcher's and Research Teams	Research Area
<p>Will Butler, Assistant Professor, Florida State University, Department of Urban and Regional Planning</p> <p>Sarah McCaffrey, Research Social Scientist, USFS Northern Research Station (2nd project)</p> <p>Ashley Monroe, PhD Student, Florida State University, Department of Urban and Regional Planning</p>	<p>We are examining how practitioners, particularly public land managers, navigate tensions and challenges that emerge when collaboratives transition from planning to implementation of projects. In particular, we are clarifying what participants in the collaborative process mean by “collaborative implementation,” identifying the types of tensions and challenges that emerge in the transition, and how participants are addressing these tensions over time. The research will identify collaborative structures and practitioner responses to tensions to build theory around how these landscape collaboratives have navigated this transition. Phase 1 of the research assessed all 10 of the 2010 CFLRP sites. Phase 2 will focus more in depth on 5 sites and will involve tracking learning and change over time.</p> <p>Other areas that animate our data collection and analysis include issues of trust and scaling of NEPA. These topics are being incorporated into our research in cooperation with Marc Stern of Virginia Tech.</p> <p>Research methods:</p> <ul style="list-style-type: none"> Phase 1 (2011-2012): Comparative case study work across all ten of the 2010 CFLRP landscapes through phone interviews (4-10 on each site) and document review. Grounded theory approach to data analysis. Phase 2 (2012-2016): Longitudinal comparative case study work through more in depth engagement with 5 CFLRP sites. The longitudinal study will rely on periodic interviews with key informants, multiple site visits over the three years, and ongoing review of documents. Again, grounded theory will drive the data analysis approach.
<p>Courtney Schultz, Assistant Professor, Colorado State University, Department of Forest and Rangeland Stewardship</p>	<p>My grad students and I published an article in <i>Journal of Forestry</i> in 2012 entitled “CFLRP: A History and Overview of the First Ten Projects.” Our more recent research looked at the monitoring plans developed for the first ten funded CFLRP projects. It was published in <i>Journal of Forestry</i> in 2014 and is entitled “The Design and Governance of Multiparty Monitoring under the USDA Forest Service’s Collaborative Forest Landscape Restoration Program.”</p> <p>Will Butler and I plan to work on a follow up piece combining some of our data from the first ten projects on collaborative monitoring and implementation to discuss policy implementation learning under CFLRP.</p>

<p>David Seesholtz, NEPA for the 21st Century Initiative Lead, US Forest Service, Pacific Northwest Research Station</p> <p>Lee Cerveny, Research Social Scientist, US Forest Service, Pacific Northwest Research Station</p> <p>Marcella Barnes, Social Science Research Tech, US Forest Service, Pacific Northwest Research Station</p>	<p>All Lands Management within the US Forest Service</p> <p>Although not limited to CFLRP projects, this study explores four thematic topic areas surrounding line-officer reception of the all lands management direction: awareness, implementation, administrative constraints and supports, and strategies for alignment. The study draws upon in-depth interviews with 31 line officers (17 Forest Supervisors and 14 District Rangers) from the Pacific Northwest Region of the National Forest System.</p> <p>The study finds no consensus on a definition of all lands management, which—given the lack of definition in the literature—is perhaps not surprising. District Rangers are more likely to express lack of knowledge or uncertainty about the concept of all lands management. In fact, 43% of the District Rangers interviewed reported to being unsure what constituted all lands management. Overall, line officers in the region perceive two dominant justifications for engaging in all lands: cooperation and its potential to integrate and maximize the efforts of land managers across the landscape. However for the most part line officers in this region do not see all lands management more dramatically different than how they have previously operated. Challenges surrounding collaboration were identified as the biggest concern due to the difficulty of bringing multiple interests to the table, lack of interest in participation among potential partners, and lack of employee skills related to collaborating, such as facilitation, meeting management, and consensus building. Additionally, complicated internal bureaucratic processes—especially concerning the grants and agreements process and NEPA analysis—were identified as challenging and discouraging to doing all lands work. Based upon this sample population there are some notable differences between the views of the Forest Supervisors and District Rangers on this national emphasis area</p>
<p>Dennis Becker, Associate Professor, University of Minnesota, Department of Forest Resources</p>	<p>The Tapash CFLRP is unique in that the treatment area is multi-jurisdictional. This is also complicating treatment outcomes. The collaborative is also using a unique design/structure, with an executive committee comprising the directors/commissioner-types from each of the five primary land holders (US Forest Service, Yakama Nation, WA Department of Natural Resources, WA Department of Fish and Wildlife, and The Nature Conservancy).</p> <p>My research specifically is to pilot a biomass feasibility assessment tool. The tool itself is less Tapash focused, but the implementation is interesting because it may take center stage in where and how the partners agree to implement projects across boundaries.</p>
<p>Erik Nielsen, Assistant Professor, Northern Arizona University, School of Earth Sciences & Environmental</p>	<p>Research on the 4 Forests Restoration Initiative (4FRI) has been ongoing prior to its inception in 2009. Research objectives/questions include:</p>

<p>Sustainability</p> <p>Tony Cheng, Associate Professor, Colorado State University, Dept. of Forest and Rangeland Stewardship; Director, Colorado Forest Restoration Institute</p>	<p>Case History: Document and understand the antecedent conditions and precedents that have led to the formation and development of the 4FRI with an emphasis on the role of participatory landscape assessment and science and its role in building social agreement, actors, previous small scale collaborative efforts, USFS leadership roles, political coalition building and triggering events.</p> <p>Governance structures, rules, processes, and dynamics of collective action across scales:</p> <ul style="list-style-type: none"> • How has actual performance matched up with intention expressed in foundational documents (charter, MOU, Path Forward)? • How have the structures and processes performed in reaching the desired collaborative goals? • How are conflicts managed, information used and decisions made and with what results? • How is power conceived, used and legitimized within the stakeholder group, between the stakeholder group and the USFS, and at other institutional scales external to the collaborative and how do the dynamics of power influence conflict, competition and collaboration? How does the collaborative increase total power and collective empowerment in relation to increased interdependency? How does trust mediate the use of power? • How are the rules defining how the resource is managed achieved and integrate social license and best available science? • What institutional (e.g., organizational culture, NEPA, FACA) challenges exist for the Forest Service to collaboratively plan, contract and implement restoration across 4 national forests at all levels of the agency (region, line officers, IDT, district staff)? <p>Landscape Science and Collaborative Performance: How do the scientific uncertainties and questions associated with landscape scale restoration affect collaborative dialogue and governance?</p> <p>Measuring change over time: Develop a comparative tool to track collaborative performance and outcomes over time in terms of substance, process, relationships and learning.</p> <p>Research methods include:</p> <ul style="list-style-type: none"> • Participant Observation (monthly meetings, working groups, web communication) • Survey of participants • In-depth interviews • Archival document review
<p>Lauren Urgenson, Post-doc, University of Washington, School of Environmental and Forest Sciences</p>	<p>We are examining how forest collaboratives face the challenges and develop solutions to defining desired conditions for landscape-scale restoration. Desired conditions can be viewed as</p>

<p>Project collaborators: Charles Halpern (UW), Jerry Franklin (UW), Jon Bakker (UW), Clare Ryan (UW), Ernesto Alvarado (USFS and UW), Cara Nelson (U of Montana), Travis Belote (TWS), Amy Waltz (ERI), Ryan Haugo (TNC) and Phil Chang (COIC).</p>	<p>models of the biophysical, social, and economic, characteristics of forest landscapes achieved through management (e.g., reduced risk of stand-replacing fires, maintenance of large old pines, enhanced use of timber resources, and improved recreational values) and of the kinds of stand and landscape structures likely to support these characteristics. There are challenges to establishing desired conditions in frequent- and mixed-fire regime landscapes including: technical capacity to characterize variation in vegetation structure and process; uncertainty in the use of historic conditions as a reference for current forest landscapes or climates; and dissonant stakeholder perspectives on scientific data and values.</p> <p>The objectives of our research are to:</p> <ul style="list-style-type: none"> • Summarize how forest collaboratives develop a shared vision for desired conditions including the role of reference conditions. • Acquire and synthesize information on challenges and accomplishments among collaboratives in developing desired conditions. • Analyze similarities and differences in how collaborative groups develop desired conditions, and identify reasons for these differences (e.g., differing interests, ecological or social contexts, scientific capacities, collaborative structures). • Identify “lessons learned” for collaboratives to consider in developing and incorporating desired conditions into restoration approaches and monitoring strategies. <p>Research methods: A comparative case study analysis across six collaboratives in the North- and Southwest U.S. Our case studies include CFLRP collaboratives established in the 2010 funding cycle including the Tapash, Deschutes, Clearwater, Southwestern Crown of the Continent, 4FRI, and Southwest Jemez Mountains. Our research methods include stakeholder interviews and document review.</p>
<p>Marc Stern, Associate Professor, Virginia Tech, Department of Forest Resources and Environmental Conservation Kimberly Coleman, Ph.D. Candidate, Virginia Tech, Department of Forest Resources and Environmental Conservation</p>	<p>My main lines of research within this realm include:</p> <ul style="list-style-type: none"> • How trust develops within and between multiple entities within natural resource planning • The role of NEPA in constraining collaborative landscape scale restoration • The role of risk perceptions and associated strategies • Governance structures that constrain or catalyze effective social capital development and collaboration <p>I’ve injected a few questions into Will Butler’s interviews regarding decisions about scale of proposed actions for NEPA and trust development.</p>
<p>Marci DuPraw, PhD Student, Nova Southeastern University, School of Conflict Analysis and Resolution</p>	<p>Primary research questions:</p> <ul style="list-style-type: none"> • What is unique about collaborating at the landscape scale? • Based on that, what does an organization need to do to

	<p>support the success of its personnel in collaborating on this scale (could include a wide range of insights – e.g., organizational structure, procedures, policies, skills training)?</p> <p>I am nearing completion of the above dissertation. I've used constructivist grounded theory methods. For data collection, I interviewed 13 of the 15 members of the CFLR FACA and conducted telephonic focus groups with 9 of the original 10 CFLR projects. The emerging theory suggests five unique characteristics of landscape-scale collaboration, eight key challenges that must be mastered to achieve the full potential of this approach, three levels at which collaborative capacity is needed and the particular "capacities" needed at each level, as well as several dimensions of the relationship between landscape-scale collaboration, conflict, and conflict resolution. I am working on 2 briefing papers to enable the Forest Service to readily make use of the findings, and looking for the right venue to do a webinar on the findings for interested Forest Service personnel and perhaps others as well.</p>
<p>Melanie Stidham, Research Associate, Ohio State University, School of Environmental and Natural Resources</p> <p>Emily Hutchins, Masters Student, Ohio State University, School of Environment and Natural Resources</p> <p>Robyn Wilson, Assistant Professor, Ohio State University, School of Environmental and Natural Resources</p> <p>Eric Toman, Assistant Professor, Ohio State University, School of Environmental and Natural Resources</p> <p>Sarah McCaffrey, Research Social Scientist, USFS Northern Research Station (1st project)</p>	<p>Restoring Landscapes in the Context of Environmental Change: A Mental Models Analysis</p> <p>As the CFLRP emphasizes, the long-term success of ecological restoration will be influenced by the capacity of Forest Service personnel to: understand current and future ecological conditions, identify and understand ongoing changes, develop appropriate goals for ecological restoration, and draw upon the best available science and practical information to develop and implement management approaches to achieve goal conditions. This project is designed to address a critical need in the successful implementation of landscape level ecological restoration by examining how Forest Service researchers and managers define ecological restoration, their beliefs about the role of disturbances (particularly wildland fire) in achieving and maintaining ecological conditions, and the challenges posed by ongoing environmental change. Using the scientific literature on forest restoration we will build an expert model with which to compare characterizations made by the Forest Service personnel that we interview. We are currently planning on ~30 interviews spread across 2-6 CFLRP areas (depending on final focus).</p> <p>2013 Project Update: Melanie Stidham and Emily Hutchins collected data at Tapash in March of 2013, which consisted of 7 interviews with participating Forest Service staff and significant collaborators. Data were also collected in September, 2013 at Pine Oak, with a total of 9 interviews. Planning is currently underway for our final data collection trip in autumn, tentatively at Southern Blues.</p> <p>Spring 2014 Project Update: Melanie Stidham and Emily Hutchins conducted 9 interviews with Forest Service staff and significant collaborators at the Southern Blues project area in November, bringing our study sample to a total of 25 interviews at 3 sites. Transcription was completed in January, with code</p>

	<p>manual edits and inter-coder reliability checks conducted in March. Data coding is now underway using MaxQDA software, with anticipated completion in mid-May. Following data analysis, publications will be developed during July and August in correlation with Emily completing her M.S. thesis.</p>
<p>Peter Williams, Collaborative Planning and Multiparty Monitoring Specialist, US Forest Service, Ecosystem Management Coordination</p>	<p>I'm part of a national effort in the Forest Service to establish a national Inventory, Monitoring, and Assessment strategy that speaks to Secretary Vilsack's All Lands vision and dovetails with the Landscape Conservation Cooperatives in DOI. We're also looking at integrating a strong emphasis on collaboration that draws from another effort I'm involved in which is the "empowering collaborative stewardship" initiative. Marci has been engaged in that as well. There's also a link to the All Lands assessment that Jamie, Lee, and David are working on. I've been involved in that effort, but somewhat more peripherally than those folks.</p> <p>Another effort to know about is the Practitioners' Network for Large Landscape Conservation. We're in the final stages of establishing a challenge cost share agreement with the University of Arizona, with extensions to the University of Montana and Harvard's Lincoln Institute, among others. I'm serving as the FS's project manager on that one and would be glad to look for ways to integrate with the CFLRP efforts given the parallel interest in large landscape conservation. Lastly, let me mention a recent Interagency Agreement we just set up with the NPS to identify existing FS resources (databases, analytical tools, modeling tools, etc.) that could be leveraged on behalf of integrated vegetation management.</p>
<p>Rebecca McLain, Research Faculty, Portland State University (Institute for Sustainable Solutions) Lee Cerveny, Research Social Scientist, Pacific Northwest Research Station Kristin Wright-Smith, Graduate Research Assistant, Portland State University</p>	<p>Eastside Restoration Network Analysis (E-RNA): A Tool for Public Engagement in Accelerated Restoration Projects</p> <p>Purpose: To conduct a social network assessment in support of public engagement efforts for an accelerated restoration in eastern Oregon's national forests (Umatilla, Malheur, Wallawa-Whitman, Ochoco). This pilot study will focus on one project within in the broader Eastside accelerated restoration effort. The study team will design a protocol for conducting a stakeholder analysis, social network assessment, socio-spatial output, and a set of strategy recommendations for public engagement around accelerated restoration. This protocol can then be adapted and applied to other accelerated restoration projects on the Eastside, Westside, or other regions.</p> <p>Primary Activities: The E-RNA project will use standard social assessment approaches (stakeholder analysis, social network assessment) to identify and highlight existing linkages among organizations and to identify both gaps and overlaps. Projected activities are as follows:</p> <p>(a) Stakeholder Analysis. Conduct a stakeholder analysis of the variety of actors and agencies, both formal and</p>

	<p>informal, with an interest or ‘stake’ in that particular project location. Stakeholders may include groups engaged in stewardship, conservation, non-timber commercial use, provisioning use, recreation use, cultural or traditional use, or may be civic organizations with special interest in a particular locale. Identify each stakeholder’s primary resource interests, uses, priorities, and values associated with the chosen project area.</p> <p>(b) Social Network Assessment. Complete a social network assessment of the relationships among these stakeholders to identify overlapping interests, values, uses and priorities;</p> <p>(d) Socio-Spatial Analysis. Using maps, identify the specific locations and sites where primary shareholders and resource users have an interest or where resource use actually takes place within the project area.</p> <p>(e) Engagement Strategy. Develop recommendations for a coordinated public engagement strategy and protocol for the chosen project in collaboration with national forest officials and the Eastside Accelerated Restoration Team. The strategy will emphasize engagement of primary stakeholders/partners and the general public.</p>
<p>Andrew Spaeth, Master of Public Policy Graduate Student, Oregon State University</p>	<p>Resilience in Collaborative Forest Landscape Restoration: The Lakeview Stewardship Group’s Response to the Barry Point Fire</p> <p>The study examines the attributes and characteristics of the Lakeview Stewardship Group, a CFLRP selected project, and takes a whole network approach to understanding how network composition affects the resilience of the collaborative to a large exogenous shock, the Barry Point Fire. The Barry Point Fire started on the Fremont-Winema National Forest in August of 2012. The fire burned over 93,000 acres on and around the national forest including over 30,000 acres of private timber land and approximately four years worth of NEPA ready restoration project acres. Relationships between private landowners and public land managers were strained by communication challenges during the rapid and sporadic expansion of the fire. In total, more than 50 local land owners lost timber or grazing resources including livestock, hundreds of miles of fencing, and active timber sales. First, the study maps the network of organizations and relationships that comprise the Lakeview Stewardship Group. Second, the research operationalizes the position of actors within the collaborative network to examine how the structure of social ties, including the density of the network, reachability of actors across the network, and level of centrality influence the capacity of the network to maintain structural complexity and functional diversity in the aftermath of a large exogenous shock. Third, the study supplements the social network data with qualitative interview data to understand how the collaborative responded to the Barry Point Fire and adapted to the post-fire conditions.</p>

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