PAG Report No. 41
September 2020

The Impact of Collaboration on the Pace and Scale of Restoration in Idaho

by
Chelsea Pennick McIver,[1] Jace Hogg,[2] Dennis R. Becker,[3] and Philip S. Cook[4]

ABSTRACT

Broad concern exists about the pace and scale of federal land management activities in the West in the face of threats to forest health and communities from wildfire. Meanwhile, timelines for completing environmental analyses have been steadily increasing, while the number of staff dedicated to non-fire related duties is the lowest in years. As a result, the need to increase the pace and scale of forest restoration and wildfire risk reduction on public lands while improving environmental assessment and decision-making processes has been acknowledged both in academic literature and by land management agencies and their partners.

Collaborative forest partnerships represent one response to these challenges and are characterized by deliberative processes that foster dialogue between members who may have historically been adversaries while seeking to find common ground. These groups contribute to planning processes, help to shepherd resources, and facilitate public involvement. However, little is known about their influence on project outputs and outcomes such as: time to completion, acres treated, diversity of activities, and occurrence of appeals and litigation.

This report presents the results of a study of the impact of collaboration on the pace and scale of forest management and restoration. The study uses administrative data collected by the USDA Forest Service and therefore represents a methodology that can be replicated in other areas and over time.

Findings from our analysis suggest that collaborative decision-making is associated with increases in planning efficiency and the scale and complexity of project activities. These findings have important implications for policies related to public participation and decision-making as well as managers desiring information on the expected outcomes of collaborative partnerships.

University of Idaho
College of Natural Resources
Policy Analysis Group
875 Perimeter Drive MS 1134
Moscow, Idaho 83844-1134
208-885-5776
pag@uidaho.edu
uidaho.edu/cnr/pag

[1] Doctoral Research Analyst, Policy Analysis Group.
[2] Undergraduate Research Assistant, Policy Analysis Group.
[3] Dean, College of Natural Resources.
[4] Principal Researcher (retired), Policy Analysis Group.

ACKNOWLEDGEMENTS

The authors would like to thank Andy Brunelle, Anna Santos, and John Robison for their reviews of previous versions of the report.

1.0 INTRODUCTION

Broad concern exists about the pace and scale of land management activities on national forests in the West relative to the need and there is interest in learning how to build on the successes that are occurring.[1] As of 2015, experts estimated that between 62 and 85 million acres of national forest lands were in need of restoration in order to reduce the threat of uncharacteristic wildfire, mortality from insect and disease outbreaks and the exacerbating effects of climate change. [2,3] In comparison, the number of acres actually treated in 2014 was 4.6 million, less than eight percent of the stated need, a situation aggravated by fire suppression costs and other budgetary impacts. Meanwhile, the timelines for completing environmental analyses have been steadily increasing, while the number of USDA Forest Service staff dedicated to non-fire related duties is the lowest in years.[4] As a result, the need to increase the pace and scale of forest restoration and wildfire risk reduction on national forest lands has been acknowledged both in academic literature[5] and by the agency and its partners.[6,7]

In response to these challenges, there has been an increasing reliance on non-federal partners to supplement agency capacity in the form of funding and staff for planning, implementation, and monitoring. Collaborative forest partnerships represent one such example. Collaborative partnerships represent a move towards identifying and addressing issues earlier in the project planning process. To accomplish this, collaboratives engage diverse stakeholders working together to find common ground on issues formerly mired in conflict. Collaborative groups contribute to forest planning and project development by engaging in the National Environmental Policy Act of 1969 (NEPA) process and the National Forest Management Act of 1976 (NFMA) process. Collaboratives draft recommendations for restoration projects, review and evaluate management prescriptions, help to shepherd resources to local districts, and facilitate public involvement. Resources, access to expertise, and political mobilization

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[1] USDA Forest Service. 2012. "Increasing the Pace of Restoration and Job Creation on Our National Forests." Washington, DC.

[2] Buford et al. 2015. "From Accelerating Restoration to Creating and Maintaining Resilient Landscapes and Communities Across the Nation: Update on Progress From 2012." Washington, DC.

[3] Urgenson, Lauren S., Clare M. Ryan, Charles B. Halpern, Jonathan D. Bakker, R. Travis Belote, Jerry F. Franklin, Ryan D. Haugo, Cara R. Nelson, and Amy E.M. Waltz. 2017. "Visions of Restoration in Fire-Adapted Forest Landscapes: Lessons from the Collaborative Forest Landscape Restoration Program." Environmental Management 59 (2): 338–53. https://doi.org/10.1007/s00267-016-0791-2.

[4] National Forest Foundation. 2018. "Environmental Analysis and Decision-making Regional Partner Roundtables: National findings and leverage points." Missoula, MT.

[5] Haugo et al. 2015. "A New Approach to Evaluate Forest Structure Restoration Needs across Oregon and Washington, USA." *Forest Ecology and Management* 335

[6] Oregon Department of Forestry. 2014. "Increasing the Pace and Scale of Restoration on Federal Forestland: Oregon's Leadership Role." Corvallis, OR: State of Oregon.

[7] Davis, Emily Jane, Eric M. White, Lee K. Cerveny, David Seesholtz, Meagan L. Nuss, and Donald R. Ulrich. 2017. "Comparison of USDA Forest Service and Stakeholder Motivations and Experiences in Collaborative Federal Forest Governance in the Western United States." *Environmental Management* 60 (5): 908–21.

increasingly flow through collaborative processes. The Collaborative Forest Landscape Restoration Program (CFLRP) is one example, established by Congress in 2009 and administered by the USDA Forest Service. [8].

At least 10 collaborative groups are actively working across Idaho to bring together diverse interests and resolve long-standing conflicts related to land use on public forests while meeting ecological, social and economic objectives (see **Figure 1**). Three of the 10 groups have been recipients of 10 years of dedicated restoration funding through the CFLRP.

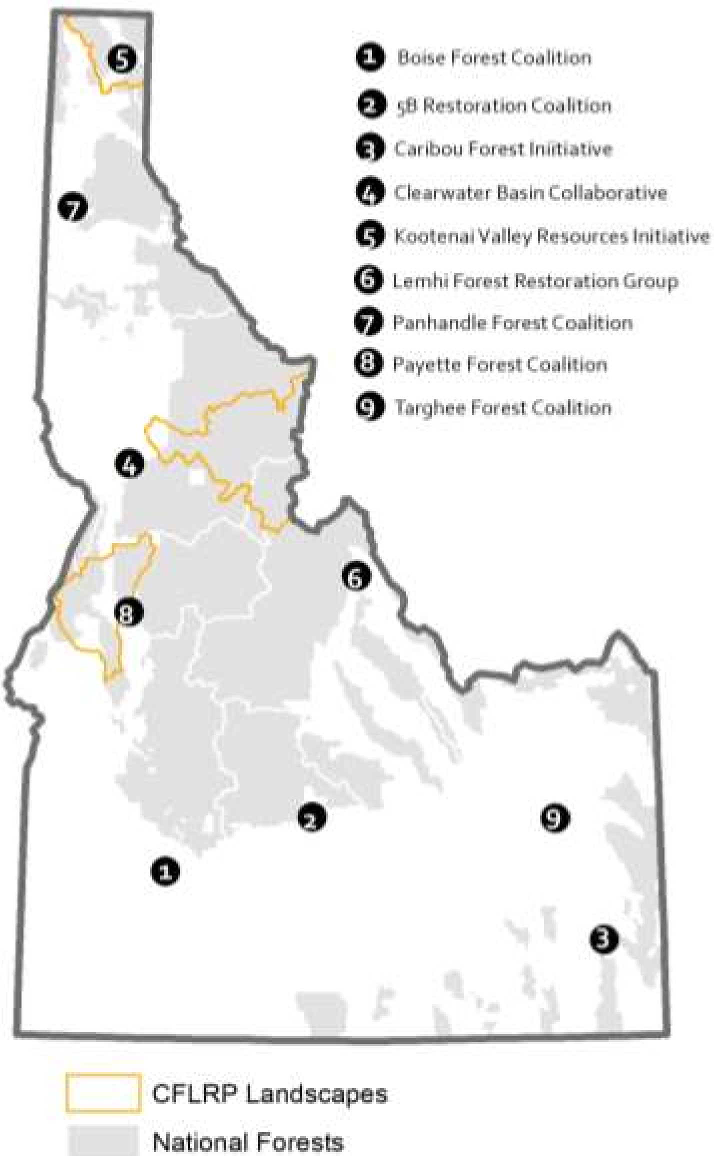

Figure 1. Map of collaborative groups is Idaho

[8] Idaho Forest Restoration Partnership. www.idahoforestpartnership.org.

This report presents the results of a study of the impact of collaboration on the pace and scale of forest management and restoration. We assess the impact of collaboration by evaluating collaborative and traditional projects on a range of outputs and outcomes including: time to completion, acres treated, diversity of activities, and occurrence of appeals and litigation. The study uses administrative data collected by the USDA Forest Service and therefore represents a methodology that can be replicated in other areas and over time.

2.0 BACKGROUND ON ENVIRONMENTAL PLANNING

NEPA requires all federal agencies to analyze and disclose the potential environmental, social, and economic impacts of major proposed actions. The law and associated rules developed by the Council on Environmental Quality define procedures that must be followed, including: the level of analysis, public comment periods, and notices of final decision. In addition, each agency is responsible for developing its own specific set of rules, which define in more detail the specific resources that will be analyzed as well as categories of actions that do not require analysis because they have been determined to not cause significant impacts, are routine in nature, smaller in size and environmental effects well understood. This latter category of actions fall under the broad term “categorical exclusions” or CE’s. The next level of analysis for actions not covered by CE’s is the Environmental Assessment (EA) which are analyses that may result in a Finding of No Significant Impact (FONSI). For actions where significant impacts are found or anticipated, the most thorough level of analysis, the Environmental Impact Statement (EIS), is required wherein significant impacts and associated mitigation measures are addressed and affirmed in an associated Record of Decision.

3.0 METHODS

3.1 Data Sources

This study utilized USFS administrative data on project-level planning and accomplishments for work taking place in Idaho (portions of USFS Northern Region (Region One) and Intermountain Region (Region Four)) between 2006 and 2017. NEPA planning data were extracted from the USFS’s Planning, Appeals, and Litigation System (PALS) database. PALS data are organized by NEPA analysis leading to a specific decision on a resource management project or planning for an area, include a unique identifying code, and attributes such as: project initiation and decision dates, decision type, number of elapsed days between project initiation and decision, and whether the project was administratively appealed (objected to) or litigated (in court). Project accomplishments data were derived from the USFS’s Forest Service Activity Tracking System (FACTS) database. The FACTS database contains information on project activities planned, accomplished, and completed (e.g. acres of harvest by method, acres of prescribed burning, acres of invasive plant treatment by method); and major program to which accomplishments were attributed (e.g., fuels, timber, watershed, wildlife). While PALS and FACTS databases are separate, the project identifying codes are the same.

Over 900 projects were initiated during the study period encompassing a range of forest restoration, timber harvest, wildfire fuels reduction, wildlife and fish habitat enhancement, transportation network management, and related activities. Unique project identifying codes for each NEPA project were used to connect the two data sources in order to analyze planning and accomplishments data together for each project. Many projects have activities that are conducted over multiple years, thus activities included in this analysis represent project activities accomplished as of the date the data were downloaded. After removing projects that did not contain a match in both data sets, the resulting database used in our analysis contained 421 records.[9]

Information used to identify collaborative projects were obtained from various sources including websites for collaborative groups, state-level networks of collaborative groups, organizations providing technical and financial support to collaborative groups (e.g., National Forest Foundation), and from USFS records indicating projects associated with the CFLRP. More than 60 projects included direct involvement of a local collaborative in some aspect of project planning or implementation. The majority of projects had no formal collaborative involvement.

3.2 Variable descriptions

We operationalized six primary variables of interest (dependent variables) in order to estimate the influence of collaboration on management outcomes: Pace, Efficiency, Scale, unique Activities, and Objectives met (**Table 1**). Our primary independent variable was *Collaboration*, operationalized as a binary variable indicating whether or not a collaborative group had been involved in the project planning process. CFLRP projects, which are tracked within the USFS's administrative databases, were marked as collaborative. Thus, collaborative engagement in projects spanned both ad hoc forms to more formal and policy-mandated forms (e.g. CFLRP).

Pace was operationalized as the number of days from project initiation to signed decision. In order to control for the effect of project size, we also included a measure of efficiency, which is the ratio of planning days to acres treated. *Scale* was operationalized as the total number of acres of treatments accomplished (defined as under contract by the agency), which allowed for counting multiple treatments on the same acre. Project complexity was operationalized using two metrics: the number of unique *Activities* accomplished in a planning area and the number of programmatic *Objectives* met. We employed these two measures to account for projects accomplishing multiple activities that all meet the same objective (e.g., fuel reduction).

[9] The majority of projects removed from the final dataset were missing accomplishments data, most likely indicating that either implementation had not begun or accomplishments data had not yet been entered into the system.

Table 1. Description of measures used in study.

Variable Name	Description	Unit of Measure
Collaboration	Binary variable indicating whether a project was collaboratively developed or not.	Y/N
Pace	Time from project initiation to signed decision	Days
Efficiency	Acres treated per planning day	Acres/day
Scale	Acres treated including multiple treatments on the same acres	Number of acres
Activities	Unique activities accomplished per project	Number of activities
Objectives	Unique programmatic objectives met per project	Number of objectives

In addition to our dependent and independent variables, we included five control variables to account for factors exogenous to collaborative efforts that we expected to impact our dependent variables: *Decision Type*, *National Forest*, *Year* a NEPA decision was signed, *Appealed* and *Litigated*. *Decision Type* refers to the level of analysis and is a nominal variable with three levels: Decision Memos (DM), Decision Notices (DN), and Records of Decision (ROD). Decision Memos (DM) rely on the least analysis and are decisions made pursuant to a categorical exclusion. Decision Notices (DN) are the next higher level of analysis and result from an environmental assessment. The final category, Record of Decision (ROD), is the result of an environmental impact statement. *Decision Type* was predicted to have a significant effect on planning timelines because each type of decision (DM, DN, ROD) is the culmination of increasing levels of analysis such that CE's require the least intensity of analysis and EIS's require the most intensity. Therefore, to measure the impact of collaboration on each of pace and scale variables, we controlled for the intensity of analysis using the *Decision Type* variable.

The variable *National Forest* is a nominal variable with seven categories representing each of the national forests in Idaho: Boise National Forest (BNF), Caribou-Targhee National Forest (CTNF), Idaho Panhandle National Forest (IPNF), Nez Perce-Clearwater National Forest (NPCNF), Payette National Forest (PaNF), Sawtooth National Forest (SaNF) and Salmon-Challis National Forest (SCNF). We predict that agency decision-making and its influence on project outcomes would vary across national forests due to the highly decentralized nature of the agency and the variable social contexts in which they work.

Year refers to the fiscal year in which a NEPA decision was signed and was specified as a continuous variable spanning from 2004 to 2017. External expectations of land management agencies and internal agency culture inevitably change over time, as do the policies and programs that govern how agencies conduct NEPA analysis. Over the last 10 years, the USFS has moved towards more landscape-level planning (which we hypothesized would increase planning timelines), while also utilizing new authorities to reduce planning timelines (such as new categorical exclusions which we hypothesized would reduce planning timelines). We controlled for the year in which a NEPA document was signed to account for these changes.

We also included two variables to control for the legal outcomes of NEPA projects, that is whether a project was appealed or received any objections (*Appealed*), and whether a project was litigated (*Litigated*).

Logistic and linear regression methods were used to determine the significance and magnitude of relationship between collaborative decision-making and pace and scale variables while controlling for exogenous variables as described above.[10]

4.0 RESULTS

4.1 Environmental Planning Trends in Idaho

Since 2004 the number of projects decisions signed has remained relatively constant between 60 and 80 per year (**Figure 2**). The majority of signed decisions are categorical exclusions (78 percent), followed by environmental assessments (18 percent). Environmental impact statements accounted for only 4 percent of signed decisions.

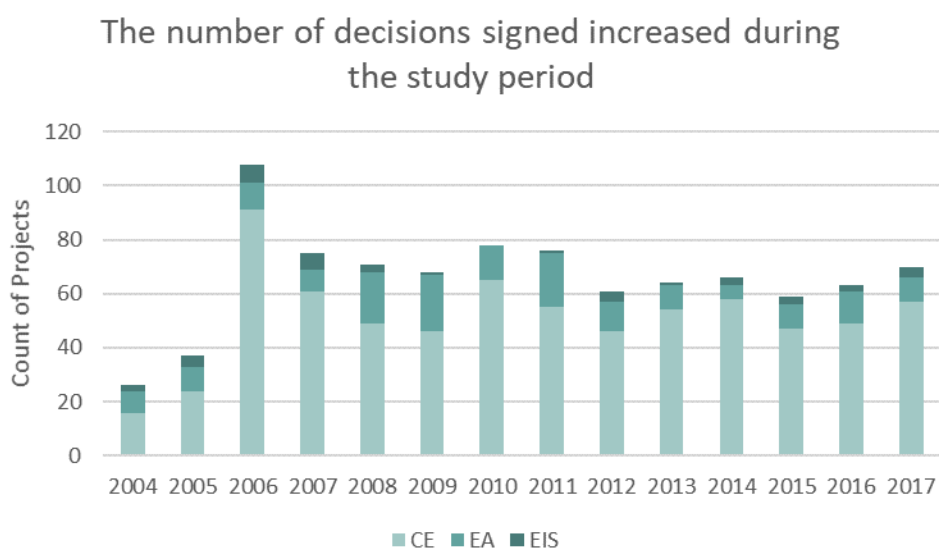

Figure 2. Count of NEPA projects signed by year and decision type for national forests in Idaho.

However, the number of acres of planned treatments has been more variable, in recent years falling between 20,000 and 40,000 acres (**Figure 3**). Treatment acres are nearly equally split between categorical exclusions and environmental assessments (38 percent each), with the remaining 23 percent of acres planned under environmental impact statements.

[10] For more detailed information on the statistical analysis methods and models, see McIver and Becker's forthcoming article in *Forest Science.*

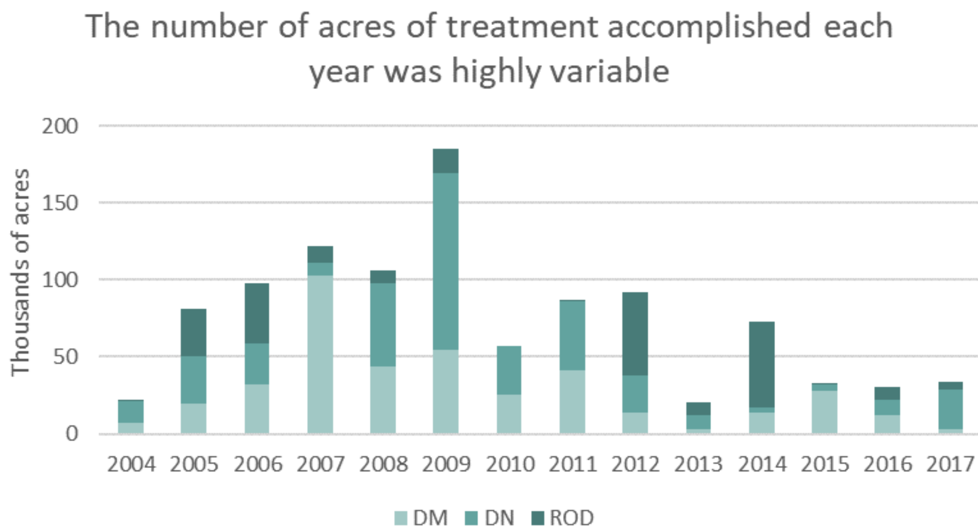

Figure 3. Acres planned per year by decision type for national forests in Idaho.

Of the 421 projects accomplished between 2004 and 2017, 67 were identified as collaboratively developed. The majority (63%) of all projects fell under a CE, thus allowing for the lowest level of effort. Accordingly, these projects displayed the shortest planning timelines and smallest scale in terms of size (acres) and complexity (unique number of activities and objectives accomplished). On the other end of the spectrum, Records of Decision for EIS's represented the smallest share of projects (8%), the longest planning timelines, and the largest scale as measured by the number of acres and unique activities and objectives (**Table 2**).

Table 2. Descriptive statistics (means)

		Days		Acres/Day		Acres		Activities		Objectives	
Variables	N	Collab.	Trad.	Collab.	Trad.	Collab.	Trad.	Collab.	Trad.	Collab.	Trad.
N	410	67	343	67	343	67	343	67	343	67	343
All Projects		636.4	392.6	8.5	4.8	5,410.6	1,890.2	9.1	4.6	3.1	2.1
Decision Type											
Decision Memo	257	248.2	237.8	4.4	6.6	1,086.8	1,580.8	4.8	3.4	2.4	1.9
Decision Notice	121	704.1	565.5	7.8	4.0	5,497.5	2,282.5	10.4	6.8	3.3	2.7
Record of Decision	32	1,212.9	1,363.3	12.1	2.7	14,651.9	3,663.3	13.3	9.0	3.6	2.6
National Forest											
Boise NF	117	345.2	312.4	17.8	7.3	6,141.4	2,286.7	3.8	3.9	2.6	2.0
Caribou-Targhee NF	44	-	362.4	-	6.8	-	2,450.8	-	4.1	-	2.4
Idaho Panhandle NF	368	750.0	504.2	3.5	2.8	2,611.8	1,436.1	10.7	7.3	2.8	2.4
Nez Perce-Clearwater NF	252	528.3	585.2	2.4	5.8	1,243.9	3,387.4	6.6	8.8	2.3	2.8
Payette NF	52	628.6	269.0	14.3	3.5	8,986.8	936.2	9.7	3.7	3.7	1.7
Sawtooth NF	47	250.0	319.2	0.1	4.0	24.0	1,262.2	2.0	3.5	2.0	2.0
Salmon-Challis NF	47	942.0	532.2	17.7	2.4	16,677.6	1,265.3	12.0	3.0	4.0	1.9

4.1 Collaboration's Impact on Pace

Collaboratively developed projects took an average of 636 days from initiation to decision (median: 451 days), compared to 393 days for projects developed using traditional methods (median: 267 days). However, planning days varied substantially by level of analysis, as described above. For this reason, we analyzed the impact of collaboration on planning timelines for each level of analysis separately (**Figure 4**). Planning timelines also varied by national forest; this finding is largely a function of the mix of projects and associated levels of analysis. For example, forests that plan larger projects and therefore conduct more EIS's will have longer average planning timelines than forests that conducted more CE's.

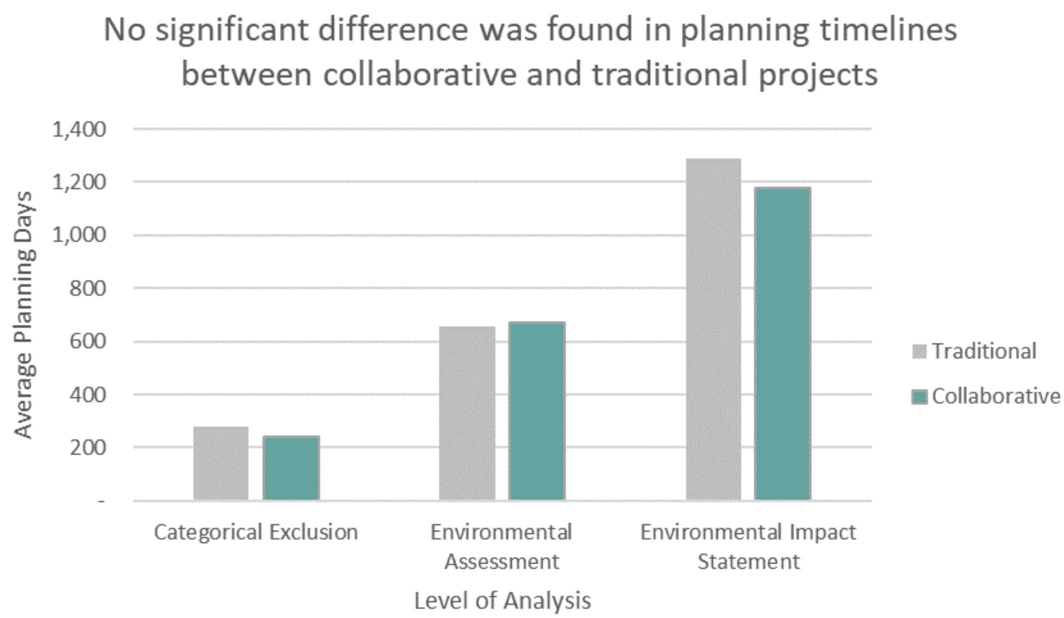

Figure 4. Mean number of planning days by level of analysis and collaboration status.

After accounting for variations among forests and project/analysis types, planning timelines for collaborative projects were not statistically different from traditional projects. This finding was significant at the 95 percent confidence limit.

Between 2004 and 2017, planning timelines for traditional projects increased for all decision types except CE's. In contrast, collaborative planning timelines decreased during the same period for all decision types (**Figure 5**), although these differences were not statistically significant.

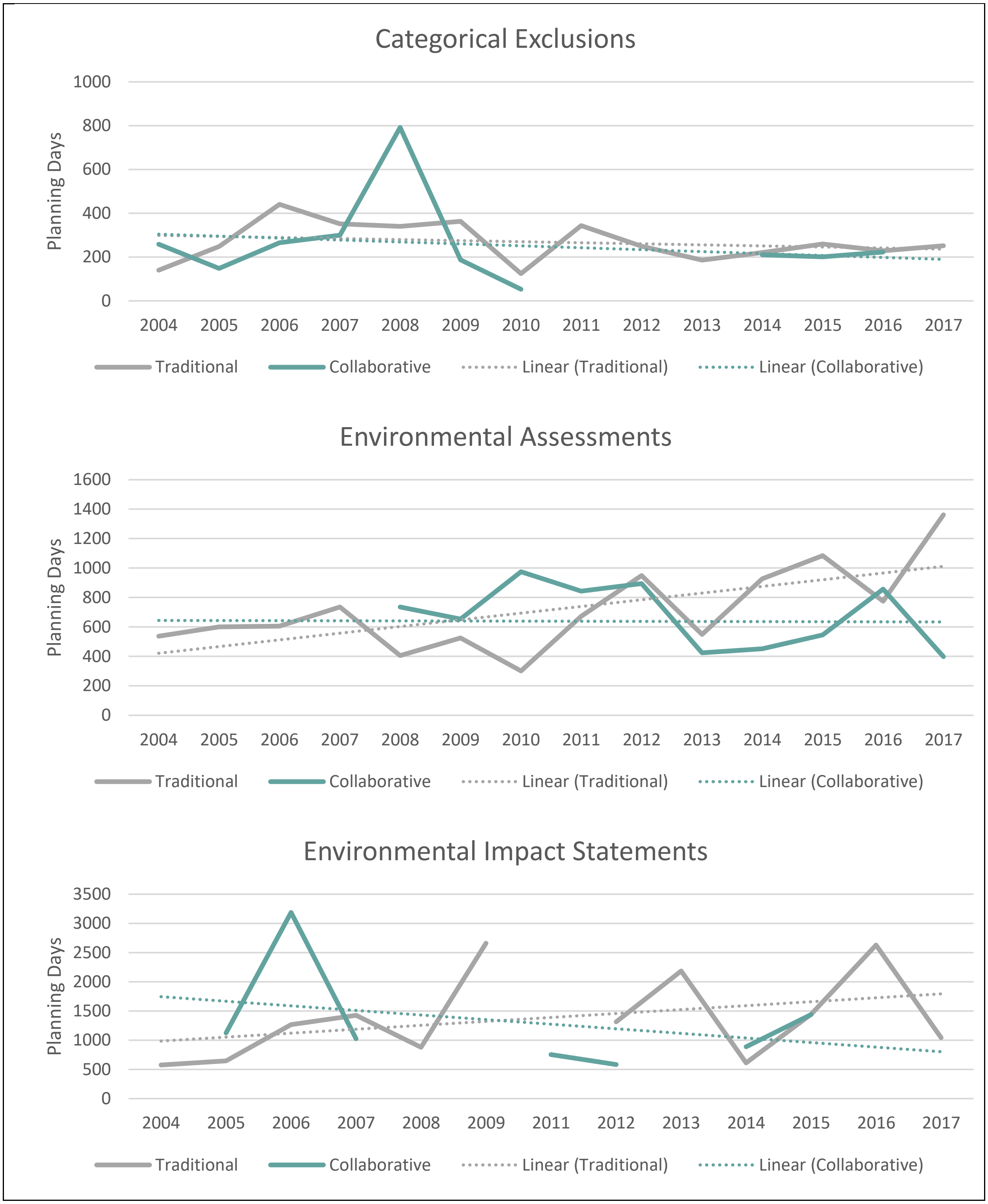

Figure 5. Mean number of planning days by year and collaboration status with linear trend lines.

Collaborative projects also displayed greater efficiency in the planning process. When the size of projects, as measured by acres treated, was taken into account, the ratio of acres of treatment accomplished per planning day was 14.3 for collaboratively developed projects, compared to 9.6 for traditional projects (median: 3.8 versus 2.2; **Figure 6**).

Figure 6. Mean and median number of acres treated per planning day by collaboration status.

4.2 Collaboration's Impact on Scale and Complexity

Collaboratively developed projects were larger, on average, as measured by the number of acres receiving treatments. Collaborative projects exceeded traditional projects in size by nearly a factor of three. The average traditional project treated 1,890 acres, while the average collaborative project treated 5,410 acres (median 572 and 1,790 acres, respectively). During the study period, the average number of acres treated as a result of collaborative projects increased, while the average number of acres treated as a result of traditional projects decreased. The latter trend may be attributed to the increased availability and use of CE's, which generally involve acre limits (**Figure 7**).

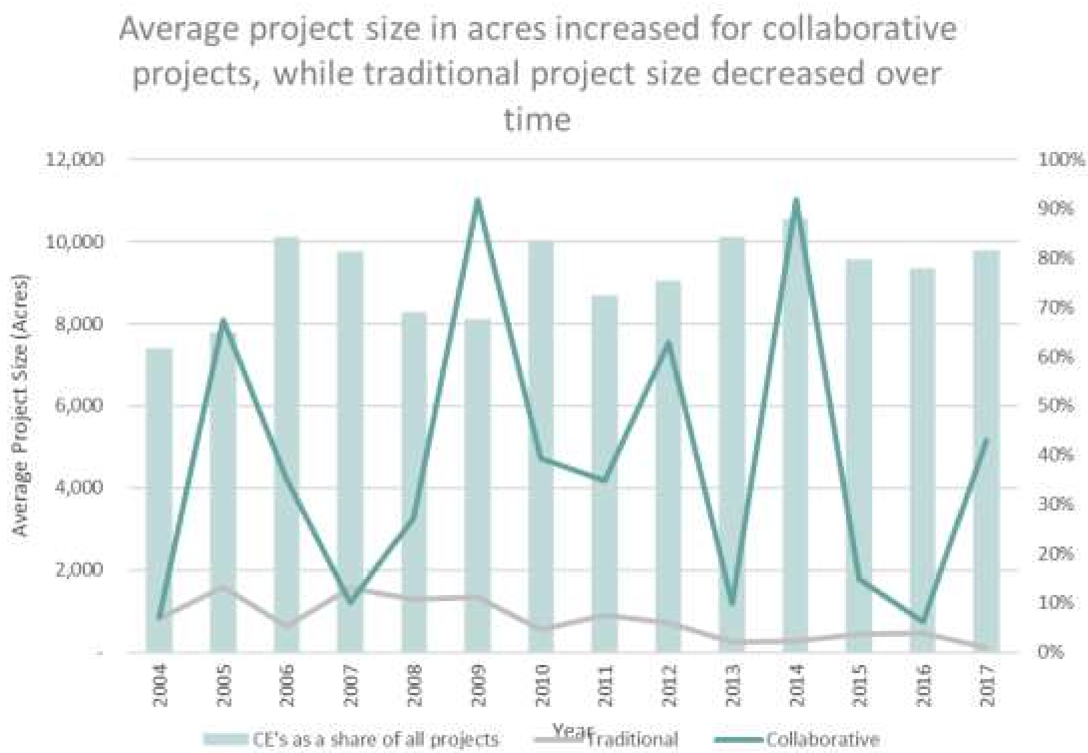

Figure 7. Average project size by year and collaboration status

Collaborative projects were also more complex than traditional projects. Collaborative projects were more complex by a factor of more than two when measured by the number of unique activities accomplished (**Figure 8**) and by a factor of 1.4 when measured by the number of objectives (**Figure 9**).

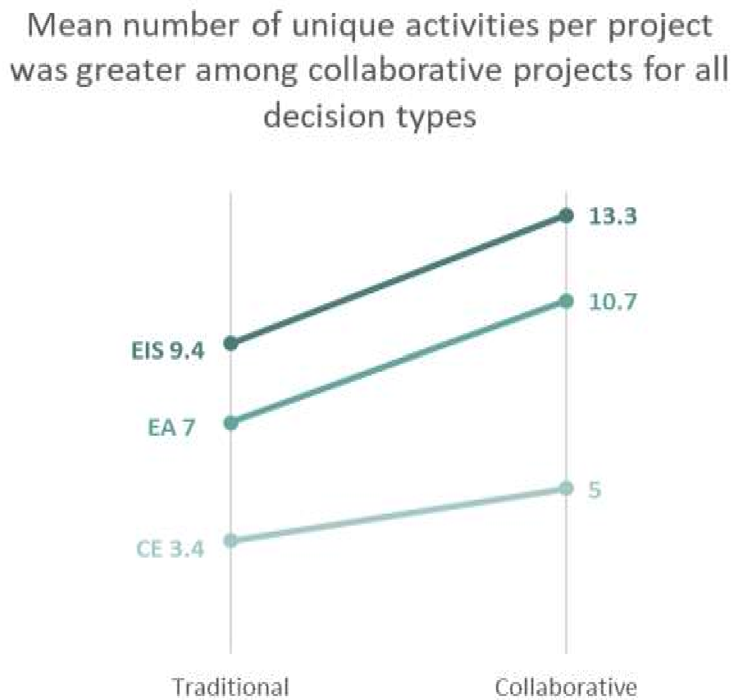

Figure 8. Mean number of unique activities by collaboration status and level of analysis

Figure 9. Mean number of unique objectives by collaboration status and level of analysis

4.3 Collaboration's Impact on Legal Outcomes

Between 2004 and 2017, approximately 15% of projects in Idaho were appealed or objected and 4.5% were litigated. These projects tended to be larger and more complex than projects without objections or litigation. After controlling for differences in scale and complexity, we found that collaborative projects were no more likely to be appealed and were 2.7 times more likely to be litigated. Further investigation is needed to understand whether the higher probability of litigation is associated with unobserved variables such as the presence of threatened and endangered species,[11] the ideological preferences of judges.[12]

5.0 DISCUSSION

The results of this study have important implications for practitioners, public managers, and policymakers. In an era of declining budgets and staff capacity, new strategies are needed for addressing the scale of forest health, fire adaptation and restoration needs on public lands. This study suggests that collaborative forms of decision-making can have a positive influence on outcomes related to pace, scale, complexity, and efficiency.

First, our finding that collaborative governance has little effect on the time to complete environmental planning requirements contradicts criticisms that collaborative governance is inefficient and thus wasteful of public resources. It also may alleviate concerns by public managers that efforts to increase public involvement and build social support must come at the expense of planning costs (i.e. time). Second, our finding that collaborative governance of forests is associated with larger and more complex projects is significant because it reinforces the perception of participants that investments in collaborative forms of natural resource governance have positive influences on various measures of performance.[13,14,15]

Together these results provide a more nuanced picture of planning which takes into account variations in scale and complexity of projects. It suggests that measures of efficiency, or the ratio of outputs (acres) to inputs (time spent planning), is a preferable way of analyzing agency productivity within the NEPA process, particularly given the current focus on improving environmental assessment and decision-making by the US Forest Service.

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[11] Laband, David N., Armando González-Cabán, and Anwar Hussain. 2006. "Factors That Influence Administrative Appeals of Proposed USDA Forest Service Fuels Reduction Actions." Forest Science 52 (5): 477–88. https://doi.org/10.1093/forestscience/52.5.477.

[12] Keele, Denise M., Robert W. Malmsheimer, Donald W. Floyd, and Lianjun Zhang. 2009. "An Analysis of Ideological Effects in Published Versus Unpublished Judicial Opinions." *Journal of Empirical Legal Studies* 6 (1): 213–39.

[13] Mattor, Katherine M., and Antony S. Cheng. 2015. "Contextual Factors Influencing Collaboration Levels and Outcomes in National Forest Stewardship Contracting." Review of Policy Research 32 (6): 723–44.

[14] Davis, Emily Jane, Eric M. White, Lee K. Cerveny, David Seesholtz, Meagan L. Nuss, and Donald R. Ulrich. 2017. "Comparison of USDA Forest Service and Stakeholder Motivations and Experiences in Collaborative Federal Forest Governance in the Western United States." Environmental Management 60 (5): 908–21.

[15] Bothwell, Karin N. 2019. "Practicing Collaborative Natural Resource Management with Federal Agencies: Keys to Success across Partnership Structures." Journal of Forestry 117 (3): 226–33.

5.1 Limitations

The treatment of collaborative governance as dichotomous and mutually exclusive is theoretically useful but practically problematic. Many collaborative groups work at a programmatic scale to influence the USFS's plans and priorities and develop prescriptive and technical agreements. Some argue that the work of collaborative groups at this scale has positive spillover effects onto all projects, not just formal collaborative projects. If this were the case, we would expect to see convergence of trends related to pace and scale over time. However, our data did not reveal such a trend; in fact, we documented diverging trends on measures of pace and scale, indicating that such positive spillover effects are either not occurring at the rate expected, or not yet evident in the data.

Second, there is an increasing trend for collaborative groups or members of collaboratives to submit "supportive objections" in order to demonstrate support for the Forest Service's decision and to give the collaborative a "seat at the table" in the objections process. Such supportive objections have been filed on at least four projects in Idaho. Collaboratives have also submitted amicus ("friend of the court") briefs in support of projects in litigation. There is no systematic tracking of these activities by collaboratives or their impact on legal outcomes. The authors believe this is an area ripe for further research.

Finally, a number of latent variables exist for which data were not available that are hypothesized to have a significant impact on pace and scale metrics, including changes in staff capacity within the agency, leadership transitions and changing expectations to meet administrative targets in the form of timber outputs.[16] We believe this is another area in need of further research.

6.0 CONCLUSION

The implications of these findings for policy suggest that incentives and investments or mandates to collaborate may be an effective means for addressing more than just the restoration and fuel reduction needs on national forest system lands, but also for meeting the objectives of improving environmental assessment and decision-making. Such incentives or mandates could be accompanied by individual performance incentives for line officers that reward collaboration.

In addition, this approach to monitoring outcomes using administrative data points to opportunities for replicating the study in other areas and for other administrative units. It also highlights the need for greater data integration and availability to improve our understanding of project-level outcomes for both traditional and collaborative projects. Integration of more

[16] Schultz, Courtney A., and Cassandra Moseley. 2019. "Collaborations and Capacities to Transform Fire Management." *Science*, no. October 4: 38–40.

databases, such as Timber Information Manager (TIM), Watershed Improvement Tracking (WIT) and the Federal Procurement Data System (FPDS) would provide a richer picture of project outputs and outcomes. It is our understanding that such an effort is underway within the Forest Service.