DISSERTATION

EVOLVING INSTITUTIONS OF ENVIRONMENTAL GOVERNANCE:

THE COLLABORATIVE IMPLEMENTATION OF

STEWARDSHIP CONTRACTS BY THE USDA FOREST SERVICE

Submitted by

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ABSTRACT

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Collaborative forest management policies are increasingly being enacted in the U.S. Increased pressure to implement collaborative forest management processes emphasizes the need to understand the extent to which such policies are being adopted, the factors influencing their implementation, and how well these efforts are meeting policy intentions. This dissertation provides practical and theoretical insight to the adoption of collaborative forest management approaches by focusing on the implementation of stewardship-end-result contracting (stewardship contracting).

A mixed-methods research design was used to systematically assess the collaborative implementation of stewardship contracts by the USDA Forest Service (USFS). The first phase of this research employed a statistical analysis of the adoption of USFS stewardship contracts from 1999 to 2011 to provide a foundational understanding of its use. This analysis identified consistent adoption of stewardship contracts across USFS regions, with a significant increase in the number of contracts and associated acres during this time period.

The second phase of this research statistically analyzed the levels of collaboration associated with USFS stewardship contracts. This large-N analysis determined collaboration has a significant role in meeting stewardship contract objectives. Key process indicators identified in the collaborative governance literature - the number of interests involved, the amount of outreach

used, the roles of the community, and who initiated the project - have a strong association with the levels of collaboration. This analysis identified a significant variation in the levels of collaborative stewardship contract implementation across USFS regions.

The third phase of this research utilized a qualitative multiple-case study approach to build upon the previous statistical analyses and to attain an in depth understanding of the contextual factors influencing the levels of collaboration associated with stewardship contracts in the USFS Rocky Mountain Region.

The results reveal a combination of institutional, community, and individual attributes are essential for the use of collaboration in USFS stewardship contracting processes. These attributes include guidance and support from the USFS, high levels of social capital within the community, and strong leadership from individuals within both the agency and community. The results indicate the collaborative forests identified and achieved a greater number of objectives than the non-collaborative forests and thereby confirm previous findings of this dissertation in which collaborative stewardship contracting processes achieved more forest management and community social and economic objectives than non-collaborative processes. Collaboration therefore has a critical role in achieving the policy intentions of stewardship contracting.

This dissertation advances the existing collaborative governance literature by quantitatively analyzing collaborative process components and outcomes across a large population of similar efforts, while providing a detailed qualitative analysis of the factors influencing the adoption of collaborative processes and the associated outcomes. Additional comprehensive evaluations of the adoption of collaboration, the factors associated with its use, and its role in achieving the policy intentions are necessary to determine the first- and second-tier influences and outcomes of collaborative processes. Such comprehensive evaluations of

collaboration can improve its application in policy and management and prevent it from being

falsely identified as a panacea to address all social-ecological management issues.

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CHAPTER ONE: INTRODUCTION

1.1. Introduction

Collaborative forest management is a form of collaborative governance in which public agencies engage diverse interests in a formal shared decision-making process to reach forest management objectives while addressing local social and economic needs (Ansell & Gash, 2008; Moote, 2008). The anticipated beneficial outcomes of collaboration have led to a considerable increase in the number of policies incorporating collaborative processes in USDA Forest Service (USFS) forest management activities since the beginning of the century (Burns & Cheng, 2005; Cheng, 2006; Crawford & Wilson, 2005; Moote, 2008). This includes the 2002 National Fire Plan Implementation Strategy, the 2003 Healthy Forest Restoration Act, the 2003 Stewardship Contracting Legislation, the 2009 Collaborative Forest Landscape Restoration Program, and the 2012 National Forest System Land Management Planning Rule.

The above-mentioned legislation, with the planning rule excluded, comprise a soft-policy approach where the social and ecological policy objectives are intended to be achieved without using mandatory directives to force actions (Hertin et al., 2004). The legislation instead provides 'soft' voluntary opportunities through procedural changes rather than introducing 'hard' legal or policy constraints (Hertin et al., 2004; Schneider & Ingram, 1990). These soft policy approaches are established on top of broader institutional contexts, including existing policies, rules, and norms, creating tensions between prevailing institutional contexts and these new collaborative approaches (Armitage et al., 2012; Jordan et al., 2005; Nie, 2008; Predmore et al., 2011; Raitio, 2012; Steelman, 2010).

Though collaboration has been promoted by the USFS and its use has increased during the past twenty years its implementation across the National Forest System has varied (Leach, 2006; Moseley, 2010). Collaboration has been strongly integrated into management procedures in some national forests but has not even been attempted in others. While these soft collaborative forest management policies have been approved through the passage of legislation, their adoption requires changes at the resource management level where the application of new procedures can be exceedingly challenging (Armitage et al., 2012; Butler & Koontz, 2005). A broad scale assessment of the adoption of these collaborative forest management policies by the USFS has not been conducted (Cheng, 2006). In addition, the collaborative governance literature provides limited insight to the underlying contextual conditions influencing the implementation of these collaborative forest management policies (Cheng, 2006; Emerson et al., 2012), or if they are achieving their intended social, economic, and ecological objectives (Bellamy et al., 2001; Hardy, 2010; Hertin et al., 2004; van der Heijden, 2012). Increased pressure to implement collaborative forest management processes through legislative mandates and agency direction emphasizes the need to understand the extent existing collaborative forest management policies are being implemented, how well they are meeting the policy objectives and the contextual factors influencing their implementation.

This dissertation addresses these needs by analyzing the adoption of USFS stewardship end-result contracting (stewardship contracting), the associated levels of collaboration, and the factors influencing its collaborative implementation. Stewardship contracting is a distinct population of collaborative forest management projects. It therefore provides an opportunity to identify the institutional and other contextual factors influencing the decision to use or not use this soft policy approach, especially the collaborative implementation of policy goals. While this

is a salient topic for USFS managers, community forestry practitioners, and others, it also provides an opportunity to advance broader theoretical issues.

The following section provides an overview of stewardship contracting. The subsequent sections outline relevant literature on collaborative governance. The chapter concludes with an overview of the methods used in this analysis.

1.2. An Overview of Stewardship Contracting

1.2.1. History

Stewardship contracting provides enhanced opportunities for the USDA Forest Service (USFS) to achieve resource management objectives while contributing to local socioeconomic needs on the 193 million acres of national forests and grasslands for which it is responsible. In the current discussions of forest restoration on U.S. national forests, stewardship contracting is increasingly identified as a policy tool for achieving forest management objectives while also contributing to local economies (USDA Forest Service, 2012a; Wilent, 2012).

Stewardship contracting emerged in response to two primary drivers. First, the sharp decline in the USFS timber program in the late 1980's and early 1990's resulted in decreased resources available for restoration and land stewardship activities, such as road decommissioning, habitat improvement, seedling planting, and invasive species removal. Receipts from USFS timber sales were a primary funding mechanism for such activities (Mitsos & Ringgold, 2001; Ringgold, 1998; Ringgold & Mitsos, 1996). Combined with flat-to-declining congressionally appropriated funds for non-timber management objectives, a need for a new policy instrument that could generate financial resources to compensate in some part for the funding gap materialized (Mitsos & Ringgold, 2001; Pinchot Institute for Conservation, 2012).

Second, community-based forestry groups seeking to increase collaborative approaches to defining and achieving land management goals and sustaining livelihood opportunities for forest-reliant community needs desired new mechanisms that allowed local residents to compete for long-term land management contracts (Brunner et al. 2005; Schultz et al. 2012). Community-based forestry practitioners played a leading role in the development of stewardship contracting policy by lobbying Congress to enact legislation that met both forest management objectives and local community socio-economic needs. They promoted collaborative decision-making as a way to define and achieve land management goals, while sustaining livelihood opportunities for forest-reliant communities (Cromley, 2005; Pinchot Institute for Conservation, 2012). These groups assumed that if local communities could take part in defining desired land management outcomes and receive the benefits from implementing projects, then the ecosystem, local communities, and society at large would simultaneously benefit. In particular, these groups sought to overcome the low-cost bid emphasis of USFS contracting and advocated for other criteria in selecting winning bids. The argument was that local operators with strong ties to the community and land would provide a better public value than larger non-local operators.

During the early 1990's, several USFS field staff began experimenting with new approaches combining separate timber sale contracts with service contracts and eventually piloting a handful of "land management service contracts" or LMSCs (Ringgold 1998; Ringgold & Mitsos, 1996). In 1998, Congress began to formalize these approaches by authorizing a pilot program to test whether stewardship contracting could meet forest management objectives and local community needs. The initial success of the pilot projects resulted in the authorization of stewardship contracting mechanisms through the Interior Appropriation Act of 2003 (Sec. 323 of P.L. 108-7). This legislation ended the pilot program, allowed an unlimited number of projects

nationwide, and extended the authority to both the USFS and the U.S. Department of the Interior's Bureau of Land Management through September 30, 2013.

1.2.2. Summary of Stewardship Contracting Mechanisms

The intent of stewardship contracting is "to achieve land management goals for the national forests and the public lands that meet local and rural community needs" (Title 16, United States Code, Section 323). According to the USFS handbook, the objective is to accomplish resource management, with a focus on restoration. In addition, the handbook directs the agency to collaborate with key stakeholders and local interests to identify local needs and provide input on the contract implementation (USDA Forest Service, 2008). The stewardship contracting legislation does not replace existing timber sale contract or service agreement mechanisms but is another 'tool in the toolbox' providing additional options to achieve management objectives while complying with existing laws and regulations.

Stewardship contracting differs from timber sales and service contracts traditionally used by the USFS in seven key respects:

1. It requires the USFS to use a *best-value basis* to evaluate proposed bids for stewardship contracts and agreements. The best-value selection of a contractor uses both price and non-price criteria such as past work performance, work quality, and local benefits to choose the winning bid. The underlying assumption of this approach is it provides increased efficiency and improves the overall end-result.

2. Stewardship contracts can be awarded with *less than full and open bidding competition* across contractors as a means to address local economic growth, difficult pricing circumstances, and complex jurisdictional patterns.

3. The legislation permits the USFS to create *partnerships* with other public agencies (federal, state, or local) and/or private organization to use stewardship contracts or agreements, though the contracting authority remains with the USFS.

4. The policy authorizes the *retention of receipts*, where the national forest can retain monetary receipts generated from the sale of timber or other forest products to conduct additional stewardship activities; rather than returning these receipts to the U.S. Treasury Department as required of timber contracts.

5. The legislation allows for the use of *end-result contracting*, specifically "designation by description" and "designation by prescription" authorities. The first authority permits the agency to specify the characteristics of the trees to be retained or removed without physically marking them. Under the latter authority the agency provides the contractor with a description of the desired end-result, allowing the contractor to identify the most effective approach for reaching the management objectives.

6. The USFS is able to enter into *multi-year contracts* for a period of up to ten years.

7. The USFS is allowed to *exchange goods for services* where commercial products from the contract (i.e. goods) can be traded for the services (e.g. habitat restoration, riparian improvements) received in the project area.

The intent of these stewardship contracting mechanisms is to meet context-specific forest management and local socioeconomic objectives with increased efficiency. These mechanisms allow the USFS greater flexibility to combine and implement contracts and agreements to better meet these objectives.

1.2.3. The Identified Benefits and Challenges of Stewardship Contracting

With the current stewardship contract legislation set to expire in September 2013, a great deal of discussion surrounds its implementation and the associated benefits and challenges. The legislation requires programmatic-level monitoring of public involvement, outcomes, and local benefits. The monitoring has been completed by the Pinchot Institute for Conservation (PIC) since 2005. The most recent PIC report on community involvement for Fiscal Year 2012 identifies broad overall support for this approach, with the most commonly cited reasons being the achievement of on-the-ground results and increased social and economic benefits (Pinchot Institute for Conservation, 2013). More specifically, the report identified the development of local workforce capacity to address ecological management needs, improved public involvement and trust in the agency, greater integration of work on the ground, and increased administrative and fiscal efficiencies as key benefits of stewardship contracting (Pinchot Institute for Conservation, 2013). The most common challenges identified in the PIC report included: the varied use of collaboration across projects; public involvement efforts limited by time, expertise, and motivation; the difficulty in quantifying the full array of social and ecological benefits; managers' interpretation of the associated rules and processes; limited infrastructure, markets, and funding; and local government aversion to stewardship contracts because of perceived negative fiscal impacts (Pinchot Institute for Conservation, 2013).

In addition to the annual PIC monitoring reports, the U.S. Government Accountability Office (GAO) has conducted two reviews of the stewardship contracting programs. A 2004 report focused on levels of community involvement in stewardship contracts where the GAO recommended additional guidance and minimum requirements for public involvement to increase trust in the agencies and provide increased accountability (U.S. General Accounting

Office, 2004). The 2008 GAO report concentrated on the extent to which stewardship contracting was being used. The GAO found the methods of project implementation, levels of community involvement, and types of monitoring programs varied across projects. It reported the benefits of stewardship contracting included the ability to accomplish more work on the ground, the development of collaborative partnerships, and more effective use of appropriated funds (U.S. General Accountability Office, 2008). The challenges identified include resistance from contractors and agency staff to use stewardship contracts, wood market uncertainties, and insufficient funds to implement long-term stewardship contracts (U.S. General Accountability Office, 2008). The GAO also found the USFS had incomplete and inconsistent data collection systems which prevented the development of a comprehensive understanding of stewardship contracting at that time (U.S. General Accountability Office, 2008).

These successes and challenges are echoed in several additional papers monitoring the efforts of stewardship contracting. In many cases stewardship contracting has been endorsed for increasing community capacity through local workforce training, employment, infrastructure development, and improved relations across diverse interests (Abrams & Burns, 2007; Fitzpatrick, 2003; Sitko & Hurteau, 2010).

Stewardship contracting is seen as a way to address forest restoration and hazardous fuels mitigation, as well as a mechanism to improve watershed and habitat quality (Neary & Zieroth, 2007; Rural Voices for Conservation Coalition, 2011; Sitko & Hurteau, 2010). It has been found to provide economic benefits to local communities and increased administrative efficiencies, with the combination of timber and service activities distributing economic benefits across a wider variety of economic sectors than timber harvesting alone (Kerkvliet, 2010; Rural Voices for Conservation Coalition, 2010; Sitko & Hurteau, 2010).

Stewardship contracting faces criticisms that it reduces the accountability of the agencies and continues the unsustainable linkage between timber production and forest restoration (Cosgrove, 2003; Kerkvliet, 2010). It also faces resistance from local government, contractors, and agency members due to complexities associated with contracting procedures, small diameter wood utilization, and the administration of funding mechanisms (Kerkvliet, 2010; Sitko & Hurteau, 2010).

The current literature on stewardship contracting and its collaborative implementation does not identify the extent to which it is being adopted, or the contextual factors affecting its adoption. The goal of this dissertation is to address this need.

1.3. Theoretical Background

This research incorporated collaborative governance and policy implementation theories to analyze the implementation of stewardship contracting and associated collaborative processes. This section outlines relevant findings and research needs from this literature.

Broadly defined, collaborative governance is a process by which public and private individuals and/or organizations work collectively to address a common issue or interest they would not be able to tackle effectively independently. Over the past twenty years natural resource management has witnessed a shift from command-and-control government regulations toward decentralized collaborative management approaches to better address resource issues across broader social and ecological landscapes (Ansell & Gash, 2008; Burns & Cheng, 2005; Conley & Moote, 2003; Hardy, 2010; Hardy & Koontz, 2009; Koontz & Thomas, 2006; Steelman, 2010; Weber, 2000). This shift toward collaborative governance approaches is due in large part to the inability of traditional government approaches to effectively address gaps caused by macro-level political and economic forces, as well as changing social and environmental

conditions at the local level (Armitage et al., 2012; Cheng & Fernandez-Gimenez, 2006; Steelman, 2010; Wondolleck & Yaffee, 2000).

The increased use of collaborative governance mechanisms is attributed to the benefits it is anticipated to achieve, including improved social, economic, and ecological outcomes (Ansell & Gash, 2008; Cortner & Moote, 1999; Leach, 2006a; Moote, 2008). The primary social benefits of collaboration identified include reduced conflict and increased levels of trust, improved communication, social learning, and increased social capital (Ansell & Gash, 2008; Burns & Cheng, 2005; Conley & Moote, 2003; Daniels & Walker, 2001; Flora, 1998; Gray, 1985; Koontz & Thomas, 2006; Leach & Sabatier, 2005; Sturtevant et al., 2005; Wagner & Fernandez-Gimenez, 2008; Wondolleck & Yaffee, 2000). Commonly identified economic outcomes of collaborative processes are employment and personal income, increased efficiency, and the pooling of resources through collaboration (Conley & Moote, 2003; Gray, 1985; Sturtevant et al., 2005; Thomson & Perry, 2006). Collaborative processes are intended to improve environmental conditions through better management of the resource and the achievement of collaboratively identified project goals (Bentrup, 2001; Mandarano, 2008; Munoz-Erickson et al., 2007; Sturtevant et al., 2005; Thomas & Koontz, 2011).

The collaborative governance literature recognizes the effectiveness of collaborative governance mechanisms relies on associated contextual factors, including drivers across local, regional, and national institutional levels (Armitage et al., 2012; Berkes, 2010; Steelman, 2010). First, previous levels of collaboration and conflict between the agency and stakeholders, as well as the associated power or resource balance across stakeholders, jurisdictions, and/or institutional levels have been identified as important factors to the adoption of collaborative processes

(Armitage et al., 2012; Berkes, 2010; Emerson et al., 2012; Leach, 2006; Thomson & Perry, 2006).

Second, agency support for collaborative processes has been identified as a primary factor influencing the agency's decision to use collaborative processes (Blahna & Yonts-Shepard, 1989; Davenport et al., 2007; Koontz et al., 2004; Leach, 2006; Predmore et al., 2011). This support may be provided through resources (i.e. funding, training, staff), administrative policy providing flexibility to managers on the ground, or through leadership providing guidance and support for the use of collaboration (Davenport et al., 2007; Sabatier et al., 2005; Wondolleck & Yaffee, 2000).

Lastly, government agencies' decision to use collaborative processes may also be affected by the communities' willingness to work with the agency. A community's willingness to work with the USFS is influenced by the values of behavior generally accepted in the community, whether stakeholders perceive the benefits will outweigh the costs of participating, and whether previous interactions involved collaboration or conflict situations (Ansell & Gash, 2008; Cheng & Mattor, 2006; Ostrom, 2005; Sabatier et al., 2005; Steelman, 2010; Thomson & Perry, 2006; Wondolleck & Yaffee, 2000). The collaborative governance literature does not systematically compare the influence of the contextual factors identified above. The current collaborative governance, and more specifically the collaborative forest management literature, remains thin in regard to its analysis of factors influencing the implementation of collaborative processes by government agencies and the role of collaboration in meeting intended policy outcomes (Emerson, et al., 2012; Hardy, 2010).

1.4. Methods

The purpose of this dissertation was to determine the extent to which stewardship contracting has been implemented, determine the extent collaboration has been utilized, identify the factors influencing the use of collaboration in stewardship contracting, and determine the role of collaboration in meeting the intended policy objectives. Three research questions guided this analysis:

1. Are the policy intentions of stewardship contracting legislation being met?

2. What is the role of collaboration in meeting the policy objectives of stewardship contracting?

3. What contextual factors influence the level of collaboration used in stewardship contracting?

A mixed methods approach was used to address the research questions and objectives. A mixed method approach triangulates data using quantitative approaches to accurately generalize across a population and qualitative approaches to obtain greater depth of understanding of the phenomenon studied (Creswell, 2003). Quantitative methods employ post-positivist claims (i.e. reductionist, cause-and-effect approach), typically using experiments or surveys to gather numerical data which is statistically analyzed (Creswell, 2003; Denzin & Lincoln, 1998). Qualitative methods employ constructivist claims (i.e. socially or historically constructed meanings, multiple meanings of individuals experiences) and use methods other than statistical or quantitative methods (i.e. narratives, interviews) to generate results (Creswell, 2003; Denzin & Lincoln, 1998; Strauss & Corbin, 1998). It is an approach where the researcher "collects open-ended, emerging data with the primary intent of developing themes from the data" (Creswell 2003, p. 18).

This research was conducted in three sequential phases to provide a comprehensive analysis of the implementation of stewardship contracts (See Figure 1.1). The relation between the research phases, the research questions and the related objectives are outlined in Table 1.1. The research design for each phase is detailed in the following sub-sections.
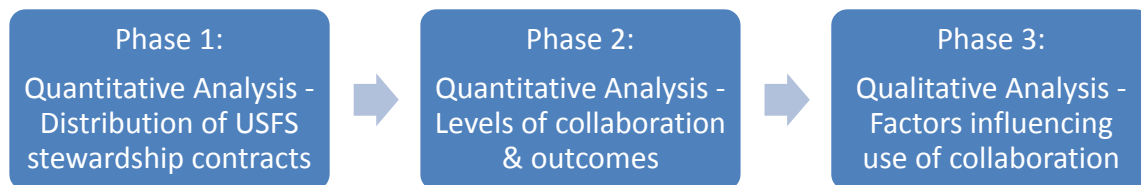
Figure 1.1. The Mixed Methods Sequence Used for this Dissertation

1.4.1. Phase One Methods

To establish a foundational understanding of the extent to which stewardship contracting is being adopted by the USFS the distribution of the number of stewardship contracts and associated acres over time (1999-2011) was analyzed across the nine USFS regions and across national forests within each region. Records from the USFS Washington Office on all stewardship contracts from 1999 to 2011 were obtained to conduct this analysis. Analysis of variance (ANOVA) statistical tests were used to analyze the number of contracts and acres over time, across USFS regions, and across national forests within regions.

1.4.2. Phase Two Methods

The second phase builds upon the first by analyzing levels of collaboration and associated factors and outcomes over time (2007-2010) and across eight USFS regions. The Pinchot Institute for Conservation (PIC) has conducted annual programmatic-level monitoring of stewardship contracting for the USFS since 2005 to determine the state of community and

Table 1.1. Dissertation Research Questions and Objectives

Research Questions	Objectives	Phase One	Phase Two	Phase Three
1. Are the policy intentions of stewardship contracting legislation being met?	(1.1) To what extent is stewardship contracting being used, over time and across USFS regions?	X		
	(1.2) To what extent is collaboration being used in stewardship contracting?		X	
	(1.3) Are forest and community objectives being achieved through stewardship contracting?		X	X
2. What is the role of collaboration in meeting the policy objectives of stewardship contracting?	(2.1) What is the relation between levels of collaboration and the outcomes associated with stewardship contracting?		X	X
3. What factors influence the level of collaboration used in stewardship contracting?	(3.1) What process indicators are associated with the levels of collaboration used in stewardship contracting?		X	X
	(3.2) What factors are associated with the levels of collaboration used in stewardship contracting?			X

interest group involvement in stewardship contracts. Monitoring data for years 2007 to 2010 was obtained from PIC to conduct this analysis across eight USFS regions over time. A dataset of variables pertaining to levels of collaboration in USFS stewardship contracts and associated factors and benefits was developed using these records. These variables included: the perceived degree of collaboration, who initiated the project, the sum of interests represented, the number of community roles, the number of outreach mechanisms, and the benefits of stewardship contracting and community involvement. Two-way ANOVA statistical tests were used to measure if and how the perceived level of collaboration varied over time and across regions. Pearson's chi-square statistical tests were used to determine differences across regions and over time for the perceived levels of collaboration, as well as the associated factors and benefits. Pearson's chi-square tests were used to analyze the relation between the perceived degree of collaboration with the associated collaboration factors and perceived benefits of stewardship contracting and community involvement.

1.4.3. Phase Three Methods

The third phase of the research used qualitative case study methods to build on the quantitative analysis of stewardship contracts conducted in phases one and two. The case study approach is "an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 2009, p18). This approach is used to improve the understanding of causal factors in specified situations and to better comprehend situations in which there is not a clear single set of outcomes. The multiple-case study approach uses replication design where specific variables of interest are selected using a theoretical framework and cases are selected

purposively. This design therefore allows inferences to be made to theory rather than to populations (Yin, 2009).

During this phase two lower level collaboration cases were compared with two higher level collaboration cases within a single region. Analyzing this variation within one region limits the potential variation of institutional attributes influencing the use of collaboration at the regional and national levels, and allowed for a focus on the factors influencing decisions at the operational level.

The USFS Rocky Mountain Region was identified through document review, informal interviews with key informants, participation in three regional PIC programmatic monitoring meetings, and a review of the results from earlier phases of this research. The results from the previous phases of this research were reviewed to identify a region with: (1) the level of collaboration closest to the average across all regions; (2) relatively even numbers of USFS-initiated and jointly-initiated contracts; and (3) a broad distribution across the number of interests involved. The USFS Rocky Mountain Region best met these criteria. Four national forests, two with higher levels of collaboration and two with lower levels, were identified through document review and informal interviews with key informants. The location and names of the national forests used for this research are being retained to maintain levels of confidentiality and respect for the persons interviewed, while also providing an improved opportunity for readers to apply the findings to their experiences in different forests and regions.

Data collection for the case studies included document review and semi-structured interviews. The document review provided important contextual information for each of the forests and the associated stewardship contracts and projects. In-depth semi-structured interviews were conducted with USFS personnel, non-USFS agency members, and community members

involved with stewardship contracts on each forest. A total of 32 interviews were conducted. Five interviewees were involved across multiple forests or had a regional perspective, resulting in ten interviews for each forest.

A thorough review of the collaborative governance and stewardship contracting literature was incorporated with the structure of the Institutional Analysis and Development (IAD) framework (i.e. institutional, community, biophysical, and individual attributes) to develop key propositions for this research. An interview guide was developed using these propositions.

The semi-structured interview format provided an opportunity to explore the interviewees' areas of expertise and interest in regards to collaboration and stewardship contracting. A conversation-style approach for the interviews was used while following the interview guide, which improved the ability to develop rapport with each of the interviewees (Kvale, 1996). The interview coding was structured according to the IAD framework themes, while open and axial coding was also used to uncover themes and sub-themes that had not previously been identified (Creswell, 2003; Denzin & Lincoln, 1998a; Strauss & Corbin, 1998).

1.5. Summary

The subsequent three chapters (Chapters Two to Four) individually report the findings from each of the three phases. These chapters have been written in manuscript format for future publication in peer reviewed journals as follows: Chapter Two will be submitted for publication in *The Journal of Forestry*; Chapter Three will be submitted to the *Journal of Natural Resources Policy Research*; and Chapter Four will be submitted for publication in both *Society & Natural Resources* and the *Journal of Environmental Management*. Each chapter includes an introduction, applied and/or theoretical background, methods, results, and discussion sections. While this format provides an opportunity for each chapter to be read and understood

independently of the other chapters, the reader may encounter some repetition across chapters. Chapter five provides a summary of the findings from each phase, followed with a comprehensive discussion of the overall implications.

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CHAPTER TWO: THE ADOPTION OF USDA FOREST SERVICE STEWARDSHIP

CONTRACTS

2.1. Introduction

Stewardship end-result contracting, or stewardship contracting, provides enhanced

opportunities for the USDA Forest Service (USFS) to achieve forest management objectives

while contributing to local socioeconomic needs on the 193 million acres of national forests and

grasslands for which it is responsible. In the current discussions of forest restoration on U.S.

national forests, stewardship contracting is increasingly identified as an important policy tool for

addressing forest management needs. It was given semi-permanent authority through the

Omnibus Appropriations Act for Fiscal Year 2003 (section 323 of Public Law 108-7) after four

years of pilot programs and is scheduled to expire on September 30, 2013.[1]

Despite its frequent mention as an ideal approach (see for example: Pinchot Institute for

Conservation, 2013 and USDA Forest Service, 2012) and its nearly decade-long existence, no

thorough statistical analyses of its overall adoption exist. A system-wide investigation of the

adoption of stewardship contracting is necessary to determine if the intentions of this policy

instrument are being met and would provide a foundation to assess the collaborative

implementation of stewardship contracting processes.

This chapter begins to address this need through an analysis of the adoption of the

stewardship contract authority across the National Forest System. The study serves as the first

evaluation of the adoption of this forest management tool through a statistical analysis of the

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[1] At the time of this writing, permanent authority for stewardship contracting had been written into the Senate version of the 2013 Farm Bill legislation. This legislation did not pass and further discussions are currently stalled in Congress.

number of contracts and associated acres over time and across USFS regions. The chapter begins with the background of stewardship contracting, including its history, key provisions and current assessments of its implementation. A description of the data and methods used in this analysis and a presentation of the results follow. The chapter concludes with a discussion of the key policy implications of these findings and recommendations for additional research to understand the factors affecting the adoption of stewardship contracting.

2.2. Background

2.2.1. The History of Stewardship Contracting

Stewardship contracting emerged in response to two primary drivers. First, the sharp decline in the USFS timber program in the late 1980's and early 1990's resulted in decreased resources available for restoration and land stewardship activities, such as road decommissioning, habitat improvement, seedling planting, and invasive species removal. Receipts from USFS timber sales were a primary funding mechanism for such activities (Mitsos & Ringgold, 2001; Ringgold, 1998; Ringgold & Mitsos, 1996). Combined with flat-to-declining congressionally appropriated funds for non-timber management objectives, a need for a new policy instrument that could generate financial resources to compensate in some part for the funding gap materialized (Mitsos & Ringgold, 2001; Pinchot Institute for Conservation, 2012).

Second, community-based forestry groups seeking to increase collaborative approaches for defining and achieving land management goals and sustaining livelihood opportunities for forest-reliant communities, desired new mechanisms that would allow local contractors to compete for long-term land management contracts (Brunner et al., 2005; Schultz et al., 2012). These groups assumed that if local communities could take part in defining desired land management outcomes and receive the benefits from implementing projects, then the ecosystem,

local communities, and society at large would simultaneously benefit. In particular, these groups sought to overcome the low-cost bid emphasis of USFS contracting and advocated for other criteria in selecting winning bids. The argument was that local operators with strong ties to the community and land would provide a better public value than larger non-local operators.

During the early 1990's, several USFS field staff began experimenting with new approaches combining separate timber sale contracts with service contracts and eventually piloting a handful of "land management service contracts" or LMSCs (Ringgold, 1998; Ringgold & Mitsos, 1996). These contracts were similar to designation-by-prescription end-result contracting, where the agency specifies desired conditions and outcomes and the contractor identifies the most efficient methods to meet those objectives. The LMSCs were the first attempt to incorporate timber sale contracts with work done through separate non-timber service contracts (Hausbeck, 2007; Mitsos & Ringgold, 2001; Ringgold & Mitsos, 1996). In 1998, Congress began to formalize these approaches by authorizing a pilot program to test whether stewardship contracting could meet forest management objectives and local community needs. These initial stewardship contracts led to additional congressionally authorized pilot programs. A total of 84 stewardship contract pilot projects were authorized through annual appropriations bills from 2000 to 2002, with 28 pilot projects authorized every year (U.S. General Accounting Office, 2004). The initial success of the pilot projects resulted in the authorization of stewardship contracting mechanisms through the Interior Appropriation Act of 2003 (Sec. 323 of P.L. 108-7). This legislation ended the pilot program, allowed an unlimited number of projects nationwide, and extended the stewardship contracting authority to both the USFS and the U.S. Department of the Interior's Bureau of Land Management through September 30, 2013.

2.2.2. Summary of Stewardship Contracting Mechanisms

The intent of stewardship contracting is "to achieve land management goals for the national forests and the public lands that meet local and rural community needs" (Title 16, United States Code, Section 323). According to the USFS Handbook, the objective is to accomplish resource management with a focus on restoration. In addition, the handbook directs the agency to collaborate with key stakeholders and local interests to identify local needs and provide input on the contract implementation (USDA Forest Service, 2008). The stewardship contracting legislation does not replace existing timber sale contract or service agreement mechanisms but is another 'tool in the toolbox' providing additional options to achieve management objectives while complying with existing laws and regulations (See Table 2.1).

Stewardship contracting differs from traditional timber sales and service contracts in seven key respects. First, it requires the USFS to use a best-value basis to evaluate proposed bids for stewardship contracts and agreements as specified by the Federal Acquisition Regulations. The best-value selection of a contractor uses both price and non-price criteria such as past work performance, work quality, and local benefits to choose the winning bid. The underlying assumption of this approach is it provides increased efficiency and improves the overall end-result.

Second, stewardship contracts can be awarded with less than full and open bidding competition as a means to address local economic growth, difficult pricing circumstances, and complex jurisdictional patterns. The agency is not required to advertise sales of $10,000 or more as required by the National Forest Management Act of 1976.

Third, the legislation permits the agencies to create partnerships with other public agencies (federal, state, or local) and/or private organization using stewardship contracts or

Table 2.1. Attributes of USDA Forest Service Contracts and Agreements

Attribute	Stewardship Contracts & Agreements	Timber Sale Contracts	Service Contracts
Objective:	Implement management objectives and meet local community needs	Sell timber to implement USFS management objectives	Purchase forest restoration services to implement USFS management objectives
Solicitation:	Less than full and open bidding competition permitted	Full and open bidding competition	Full and open bidding competition
Length:	Up to 10 years	Up to 10 years	Up to 5 years
Evaluation standards:	Best value basis required	Highest bid sale	Best value basis
Project Oversight:	Allows partnerships with other entities; Authorizes end-result contracting	Designation and oversight by USDA Forest Service	Designation and oversight by USDA Forest Service
Revenue:	Retention of receipts by National Forest; Exchange goods for services; Funded with appropriated dollars.	Receipts always returned to the U.S. Treasury	Funded with appropriated dollars

agreements, though the contracting authority remains with the USFS. Similarly, it allows non-federal agency employees to supervise timber marking and harvesting on USFS-managed land.

Fourth, the legislation authorizes the retention of receipts, where the national forest is allowed to retain the monetary receipts generated from the sale of timber or other forest products rather than returning these receipts to the U.S. Treasury Department as required of timber contracts. These retained receipts must be used to conduct additional stewardship contract-related restoration activities.

Fifth, the legislation allows for the use of end-result contracting, specifically "designation by description" and "designation by prescription" approaches. The first authority permits the agency to specify the characteristics of the trees to be retained or removed without physically marking them. Under the latter authority the agency provides the contractor with a description of the desired end-result, allowing the contractor to identify the most effective approach for reaching the management objectives. Prior to the stewardship contracting legislation it was illegal for any tree to be cut if it was not marked or otherwise designated by an agency employee.

Sixth, the USFS is able to enter into multi-year contracts for a period of up to ten years. Timber contracts of up to ten years were already authorized for the USFS but not commonly used. Standard service contracts and agreements are limited to five years (U.S. General Accountability Office, 2008).

Lastly, the USFS is allowed to exchange goods for services. Through this authority the agency can exchange the value of commercial products from the contract (e.g. goods, such as timber or other forest products removed) for the performance of service work (e.g. habitat restoration, riparian improvements) received in the project area.

The intent of these stewardship contracting mechanisms is to meet context-specific forest management and local socioeconomic objectives with increased efficiency. These mechanisms allow the USFS greater flexibility to combine and implement contracts and agreements to better meet these objectives.

2.2.3. Current Assessments of Stewardship Contracting

With the current stewardship contract legislation set to expire in September 2013, a great deal of discussion surrounds its implementation and the associated successes and challenges. The following section summarizes available research and information on USFS stewardship contracting to provide a better understanding of the scope and scale of the implementation of stewardship contracting.

The current legislation requires programmatic level monitoring of public involvement, outcomes, and local benefits. Since 2005, the Pinchot Institute for Conservation (PIC) has been contracted by the USFS to conduct annual programmatic level monitoring for the USFS and BLM. The most recent PIC report on community involvement for Fiscal Year 2012 identifies broad overall support for this approach, with the most commonly cited reasons being the achievement of on-the-ground results and increased social and economic benefits (Pinchot Institute for Conservation, 2013). More specifically, the report identified the development of local workforce capacity to address ecological management needs, improved public involvement and trust in the agency, greater integration of work on the ground, and increased administrative and fiscal efficiencies as key benefits of stewardship contracting (Pinchot Institute for Conservation, 2013). The most common challenges identified in the PIC report included: the difficulty in quantifying the full array of social and ecological benefits; the varied use of collaboration across projects; public involvement efforts limited by time, expertise, and

motivation; limited infrastructure, markets, and funding; and local government aversion to stewardship contracts because of perceived negative fiscal impacts (Pinchot Institute for Conservation, 2013).

In addition to the annual PIC monitoring reports, the U.S. Government Accountability Office (GAO) has conducted two reviews of the stewardship contracting programs. A 2004 report focused on levels of community involvement in stewardship contracts where the GAO recommended additional guidance and minimum requirements for public involvement to increase trust in the agencies and provide increased accountability (U.S. General Accounting Office, 2004). The 2008 GAO report concentrated on the extent to which stewardship contracting was being used and found the agencies had incomplete and inconsistent data collection systems which prevented the development of a detailed understanding of stewardship contracting at that time (U.S. General Accountability Office, 2008). The GAO did find that the USFS relied primarily on timber-focused stewardship contracts awarded through full and open competition, while the methods of project implementation, levels of community involvement, and types of monitoring programs varied across projects. It also reported the benefits of stewardship contracting included the ability to accomplish more work on the ground, the development of collaborative partnerships, and more effective use of appropriated funds (U.S. General Accountability Office, 2008). The challenges identified include resistance from contractors and agency staff to use stewardship contracts, wood market uncertainties, and insufficient funds to implement long-term stewardship contracts (U.S. General Accountability Office, 2008).

These successes and challenges are echoed in several additional papers monitoring the efforts of stewardship contracting. In many cases stewardship contracting has been endorsed for

increasing community capacity through local workforce training, employment, infrastructure development, and improved relations across diverse interests (Abrams & Burns, 2007; Fitzpatrick, 2003; Sitko & Hurteau, 2010). Stewardship contracting is seen as a way to address forest restoration and hazardous fuels mitigation, as well as a mechanism to improve watershed and habitat quality (Neary & Zieroth, 2007; Rural Voices for Conservation Coalition, 2011; Sitko & Hurteau, 2010). It has been found to provide economic benefits to local communities and increased administrative efficiencies, with the combination of timber and service activities distributing economic benefits across a wider variety of economic sectors than timber harvesting alone (Kerkvliet, 2010; Rural Voices for Conservation Coalition, 2010; Sitko & Hurteau, 2010).

Stewardship contracting faces criticisms that it reduces the accountability of the agencies and continues the unsustainable linkage between timber production and forest restoration (Cosgrove, 2003; Kerkvliet, 2010). It also faces resistance from local governments, contractors, and agency members due to complexities associated with contracting procedures, small diameter wood utilization, and the administration of funding mechanisms (Kerkvliet, 2010; Sitko & Hurteau, 2010). Insufficient or uneven levels of collaboration across national forests have also been reported (Fitzpatrick, 2003; Kerkvliet, 2010; Moseley, 2010).

This review of the literature indicates that although there have been individual case studies and broader-scale assessments of stewardship contracts, a statistical analysis of the implementation of stewardship contract authority across the National Forest System is lacking. Statistical analysis provides an improved understanding of its adoption, a key component of whether the policy intentions are being met.

2.3. Methods

2.3.1. Research Questions

This analysis addresses the first research question of this dissertation: Are the policy intentions of stewardship contracting legislation being met? And more specifically, to what extent is stewardship contracting being used, over time, and across USFS regions?

2.3.2. Data

In an effort to better understand how stewardship contracting is being used by the USFS, an analysis of the distribution of the number of stewardship contracts and associated acres over time (1999-2011), across the nine USFS regions, and across national forests within each region was conducted. The USFS has maintained records on all stewardship contracts since 1999. Data obtained from the USFS Washington Office for this analysis included the contract name, the number of associated acres, and the year it was awarded by the national forest and the USFS region in which it was located. These records were used to determine if there was variation in the number of stewardship contracts and the associated acres treated across the regions from 1999 to 2011.

2.3.3. Independent Variables

The independent variables for this analysis included: the nine USFS regions, a total of 165 national forests[2], and four time periods. The thirteen-year timeframe was divided into four time periods. The first time period marks the pilot phase of the stewardship contracting authority from 1999 to 2002, during which there were a limited number of stewardship contracts. The

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[2] The U.S. has 155 National Forests. The data gathered included stewardship contracts for 10 'combined' National Forests, where the administration offices of two or more forests have been combined to a single office (e.g. The Beaverhead-Deerlodge National Forest in Region 1). The stewardship contracts listed under the ten combined forests did not overlap with contracts listed under individually listed forests (e.g. The Beaverhead National Forest) and both were therefore included.

second (2003-2005), third (2006-2008) and fourth time periods (2009-2011) equally divide the remaining years of data. This allowed a statistical analysis of the extent stewardship contracting has been used over time while separating the pilot phase from the semi-permanent phase.

2.3.4. Dependent variables

An aggregate dataset was developed from the USFS data to calculate the sum total of stewardship contracts awarded for each national forest, region, and year. For example, if a forest had one contract in 2003 and another for 2005 it would have a total of 2 contracts for the second time period. A second aggregate dataset was developed to calculate the sum total of stewardship contract acres for each national forest, region, and year. The total number of stewardship contracts and the total number of acres treated under stewardship contracting authority were used as the dependent variables and allowed for a comparative spatial and temporal analysis.

2.3.5. Analysis

The second aggregate dataset was weighted to accurately reflect the acreage for each region in proportion to the total National Forest System acreage. It was unnecessary to weight the aggregate dataset of contract numbers as the dataset incorporates the differing numbers of national forests in each region. Analysis of variance (ANOVA) statistical tests were used to evaluate the number of contracts and acres over time, across USFS regions, and across national forests within regions.

2.3.6. Research Caveat

One caveat for the research analysis presented in this chapter concerns the records obtained from the USFS Washington Office. These records are compiled from annual lists obtained from each of the nine USFS regions where there is some variation in how the stewardship contracts are recorded, as identified in the GAO 2008 report. Although these

discrepancies may influence the number of contracts identified in this research, preventing a

comprehensive total of stewardship contract use during this time period, the dataset obtained

from the USFS was confirmed to be the official record of stewardship contracts. The potential

for such discrepancies can be reduced in future USFS records by developing a standardized

template for the regions to utilize. Such a template could categorize contracts by contract type,

the authorization used, the length of the contract, and the date it was awarded.

2.4. Results

2.4.1. Number of Stewardship Contracts over Time

Between FY1999 and FY2011, a total of 1,064 stewardship contracts were recorded by

the USFS (Figure 2.1). The number of stewardship contracts increased significantly from 1999 to

2011, with 48 stewardship contracts during the pilot phase of stewardship contracting in 1999-

2002, 138 contracts enacted in 2003-2005, 315 contracts in 2006-2008, and 563 in 2009-2011
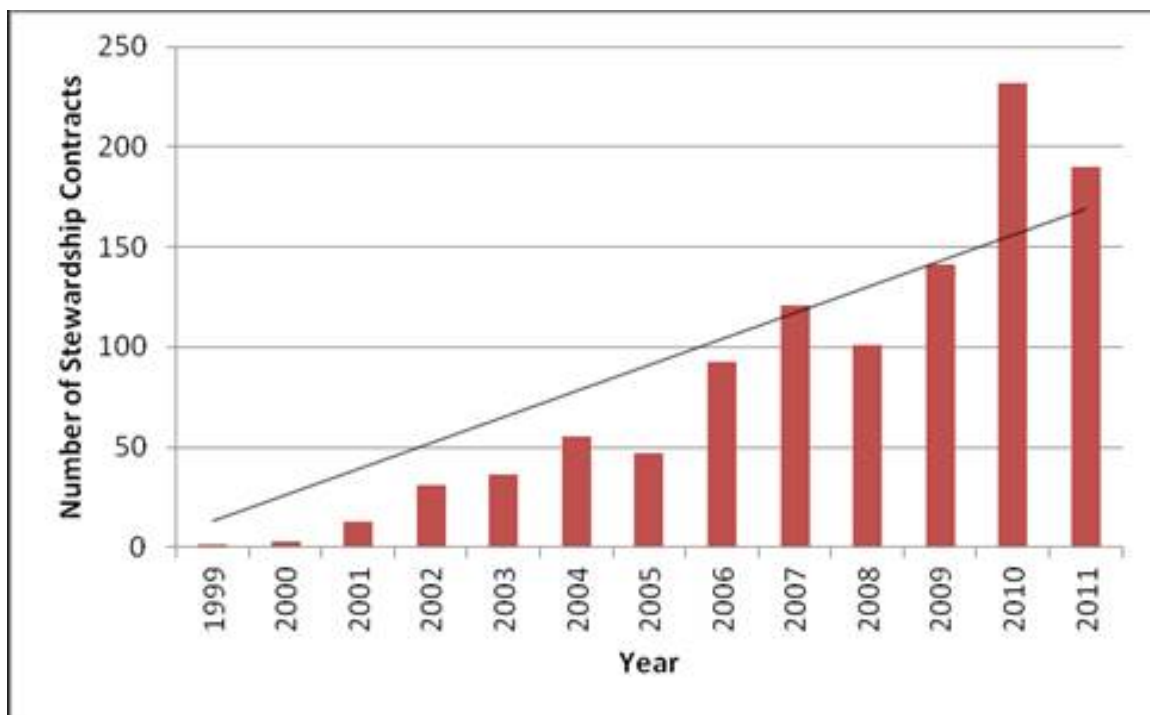
Figure 2.1. The Number of USFS Stewardship Contracts by Year, 1999-2011.

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(one-way analysis of variance, $p < .001$). The average number of contracts across regions

provides another indication of this significant increase. There was an average of 0.29 contracts

awarded across all regions in 1999-2002, 0.84 contracts in 2003-2005, 1.90 contracts in 2006-

2008, and 3.38 contracts in 2009-2011 (one-way analysis of variance, $p < .001$).

2.4.2. Number of Stewardship Contracts across USFS Regions

The total number of stewardship contracts ranged from 6 to 237 across the nine USFS

regions between 1999 and 2011. There were also wide ranges across regions for each of the four

time periods: from 1999 to 2002 the number of contracts ranged from 0 to 13, from 2003 to 2005

the number of contracts ranged from 1 to 30, from 2006 to 2008 the number of contracts ranged

from 2 to 86, and from 2009 to 2011 the number of contracts ranged from 3 to 133 (Figure 2.2).

Region 10 had the lowest number of stewardship contracts in each of the four time periods, while
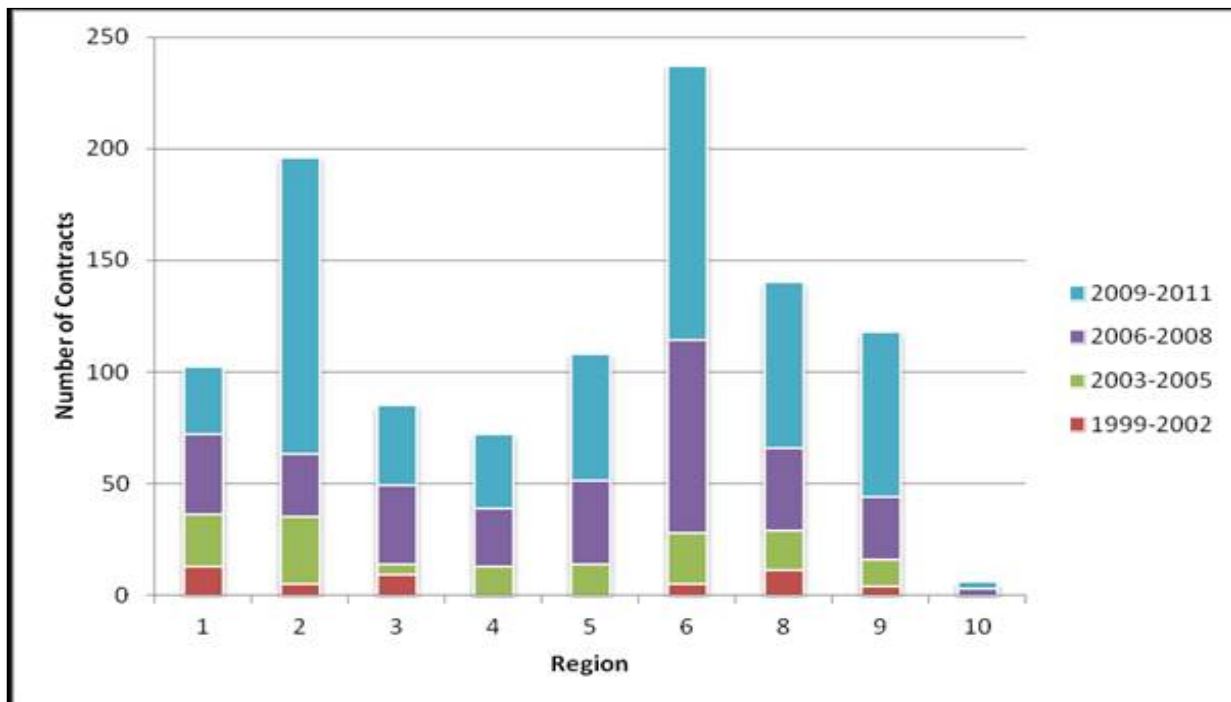
Figure 2.2. The Number of Stewardship Contracts by Region and Time Period, 1999-2011.

Region 1 had the highest number of contracts in 1999-2002, Region 2 had the most in 2003-2005, Region 6 had the highest number of contracts in 2006-2008, and Region 2 again from 2009-2011.

Although the raw averages appear to vary substantially between regions within each time period, each region has a different number of national forests, ranging from two to 35. Taking this into account by weighting the aggregate dataset according to the number of forests per region there were no significant differences in the mean number of stewardship contracts between the nine USFS regions from 1999 to 2011 (two-way analysis of variance with Bonferroni post-test; $p = .061$). Additional one-way analysis of variance tests with the Games-Howell post-test were used to examine differences across regions within each of the time periods and account for the variability in the number of forests. No significant differences were found across regions in each of the four time periods. The mean number of contracts per region ranged from 0 to 0.81 in 1999-2002 ($\mu = 0.29$, $p = .138$), 0.38 to 1.58 in 2003-2005 ($\mu = 0.84$, $p = .557$), 0.97 to 3.54 in 2006-2008 ($\mu = 1.90$, $p = .137$), and 1.50 to 7.00 contracts in 2009-2011 ($\mu = 3.38$, $p = .157$) (Table 2.2).

2.4.3. Number of Stewardship Contracts across National Forests within Each Region

The number of stewardship contracts across national forests within each USFS region provides greater detail of the extent stewardship contracting has been used. The average number of stewardship contracts for each of the national forests ranged from 0 to 15 contracts between 1999 and 2011. The majority of the national forests within each region had at least one stewardship contract between 1999 and 2011, ranging from 50% of the forests in Region 10 to 84% of the forests in Region 5 having at least one contract (Table 2.3). Regions 2, 4, 5, and 8 each had one national forest with a much higher number of contracts than the regional average.

Table 2.2. The Mean Number of Stewardship Contracts and Acres by Region and Time Period

Region	1999-2002		2003-2005		2006-2008		2009-2011	
	Contracts	Acres	Contracts	Acres	Contracts	Acres	Contracts	Acres
1: Northern	0.81	471	1.44	424	2.25	2,351	1.88	1,699
2: Rocky Mountain	0.26	74	1.58	689	1.47	963	7.00	1,985
3: South-western	0.69	411	0.38	1,442	2.69	2,803	2.77	2,548
4: Inter-mountain	0.05	154	0.63	294	1.53	1,091	1.68	1,732
5: Pacific Southwest	0.00	0	0.78	797	2.06	1,395	3.17	2,877
6: Pacific Northwest	0.21	161	0.96	688	3.54	1,801	5.04	2,492
8: Southern	0.31	47	0.51	369	0.97	466	2.06	1,524
9: Eastern	0.21	46	0.63	71	1.47	273	3.89	1,090
10: Alaska	0.00	0	0.50	20	1.00	45	1.50	768

Table 2.3. The Mean Number of Stewardship Contracts and Acres across National Forests within each USFS Region (1999-2011)

Region	Contracts			Acres			National Forests with Contracts (%)
	p	Mean	Range	p	Mean	Range	
1: Northern	.055	1.59	0 - 7.25	.269	1,236	0 – 6,489	73
2: Rocky Mountain	.483	2.58	0 - 15.25	.424	928	0 - 3,034	76
3: South-western	.053	1.63	0 - 7.75	.078	1,801	0 – 12,172	83
4: Inter-mountain	.307	0.97	0 - 4.50	.077	818	0 – 5,667	72
5: Pacific Southwest	.513	1.50	0 - 7.50	.650	1,267	0 – 5,885	84
6: Pacific Northwest	.582	2.44	0 - 9.00	.286	1,286	0 – 6,367	76
8: Southern	.708	0.96	0 - 7.50	.938	602	0 – 4,789	71
9: Eastern	.510	1.55	0 - 4.00	.995	370	0 – 1,121	76
10: Alaska	.059	0.75	0 - 1.50	.308	208	0 – 416	50

Nonetheless, as with the distribution of contracts across regions, the number of contracts did not differ significantly across national forests within any of the nine USFS regions between 1999 and 2011 (one-way analysis of variance with Games-Howell post-tests; p = .053 to .708; Table 2.3).

2.4.4. Number of Stewardship Contract Acres Over Time

The number of acres associated with stewardship contracts increased considerably between 1999 and 2011 (two-way analysis of variance, p < .001; Figure 2.3). A total of 635,126 acres were associated with stewardship contracts during this thirteen-year period. There were 23,598 acres associated with stewardship contracts in 1999-2002; 89,374 acres in 2003-2005; 203,910 acres in 2006-2008; and 319,038 acres in 2009-2011. The weighted average number of acres associated with stewardship contracts across all regions also indicates a significant increase. There was an average of 144 acres across all regions in 1999-2002; 516 acres in 2003-2005; 1,216 acres in 2006-2008; and 1,908 acres in 2009-2011. The average number of acres associated with stewardship contracts began to slow down in the latter half of the 2000's as the
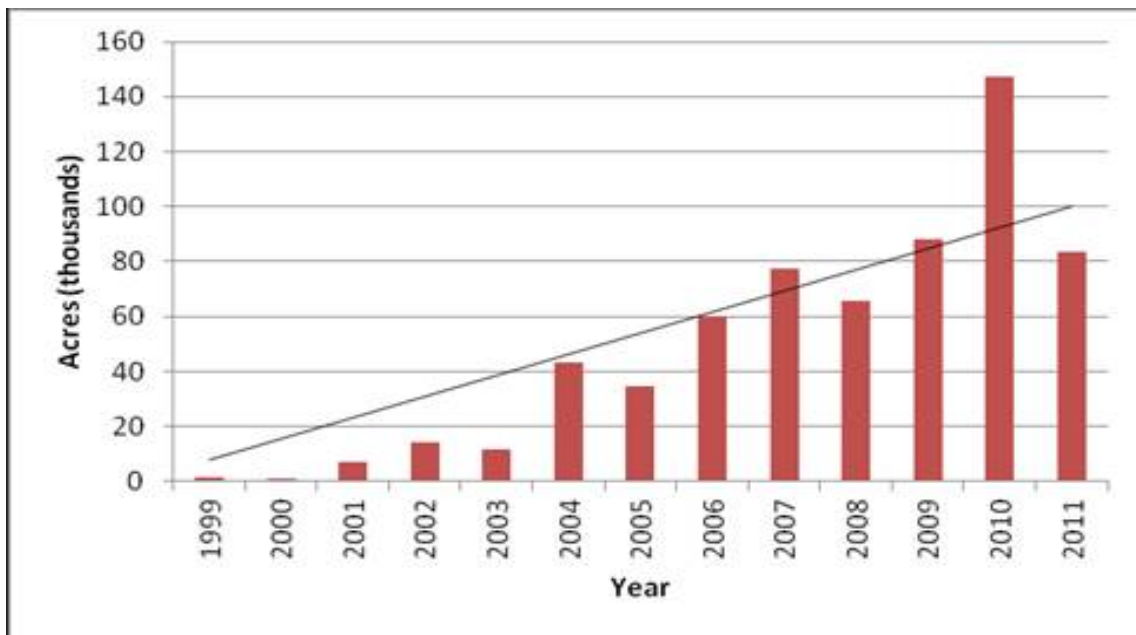
Figure 2.3. The Acres Associated with USFS Stewardship Contracts, 1999-2011.

2006-2008 and 2009-2011 time periods were not significantly different (one-way analysis of variance with Games-Howell post-test, $p = .347$).

2.4.4. Number of Stewardship Contract Acres across USFS Regions

The average number of acres associated with stewardship contracts ranged from 208 to 1,801 acres during the 1999-2011 timeframe. There was an average of 0 to 471 stewardship acres across the nine regions in 1999-2002; an average of 20 to 1,442 acres during 2003-2005; an average of 45 to 2,803 acres in 2006-2008; and an average of 768 to 2,877 acres in 2009-2011 (Figure 2.4). Region 10 had the lowest number of acres associated with stewardship contracting in each of the four time periods, while Region 1 had the most acres in 1999-2002, Region 3 had the highest number of acres in 2003-2005 and 2006-2008, and Region 5 had the highest number of acres in 2009-2011.

While the raw averages seem to indicate wide variation in the number of stewardship contract acres across regions, these numbers do not account for differences in the total acreages
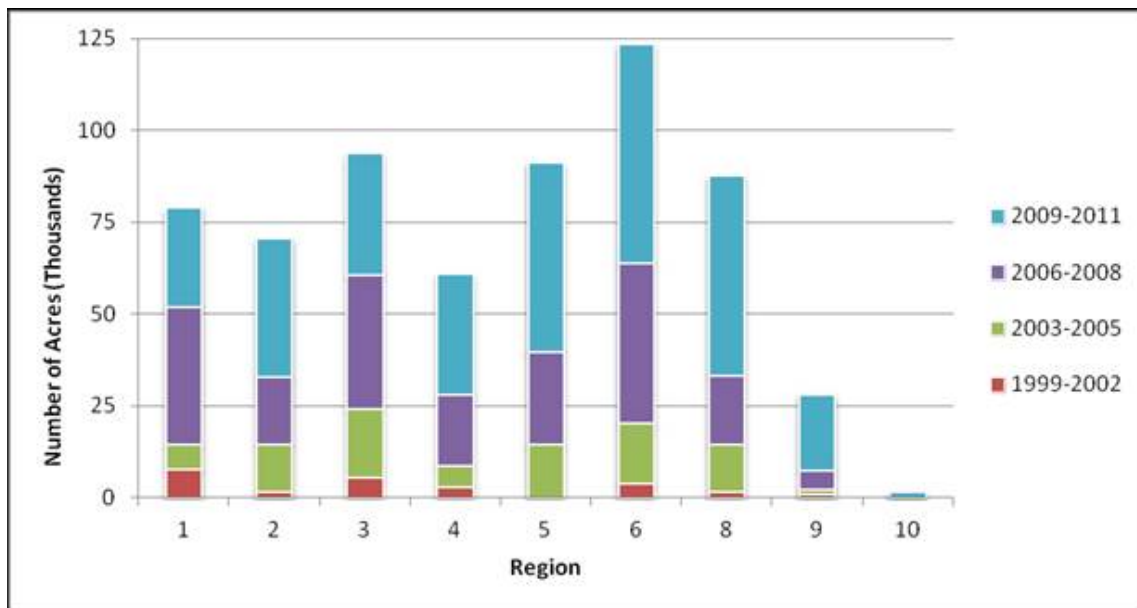
Figure 2.4. Total Stewardship Contract Acres by Region and Time Period, 1999-2011.

within each region, ranging from approximately 12,000 to 32,000 acres. In order to account for these differences, the data was weighted by the proportion of the regional acreage to the total National Forest System acreage. When accounting for these differences the number of acres associated with stewardship contracts did not vary across regions between 1999 and 2011 (two-way analysis of variance with Bonferroni post-test; $p = .057$). Additional one-way analyses of variance with the Games-Howell post-tests were used to test across regions within each of the time periods. No significant differences were found across regions in each of the four time periods with a mean of 144 acres in 1999-2002 ($p = .282$); a mean of 516 acres in 2003-2005 ($p = .691$); a mean of 1,216 acres in 2006-2008 ($p = .085$), and a mean of in 2009-2011 ($p = .956$) (Table 2.2).

2.4.5. Number of Stewardship Contract Acres across National Forests within Each Region

The number of stewardship contract acres across national forests within each region also illustrates how this authority has been used. The number of acres associated with stewardship contracts for each of the national forests ranged from 0 to 9,766 acres between 1999 and 2011. There were no significant differences in the number of acres associated with stewardship contracts across forests within each USFS region between 1999 and 2011 (one-way analysis of variance with Games-Howell post-tests; $p =. 077$ to $.995$; Table 2.3).

2.5 Discussion and Implications

Stewardship contracting is a relatively new policy instrument for addressing both national forest management and local socioeconomic objectives. This research adds to our collective understanding of stewardship contracting by providing a statistical analysis of how it has been used over time and across USFS regions and national forests. Between 1999 and 2011, a total of 1,064 stewardship contracts occurred across 635,126 National Forest System acres. The

authorities endorsed by the stewardship contracting legislation are intended to increase the USFS' capacity to meet context-specific management objectives with greater efficiency. This enlarged capacity is being realized by the USFS, evidenced by the significant growth in the number of contracts and associated acres during the initial thirteen years of stewardship contracts. The number of contracts and associated acres essentially doubled across each of the time periods analyzed in this study.

The initial adoption of innovative processes and programs requires time to become established. A widespread adoption of stewardship contracting mechanisms is evident by the significant increase in its use across all USFS regions. Although initial considerations of the number and acres of stewardship contracts suggested there may be differences across USFS regions, the analysis determined this was not the case. No statistically significant differences in the number of stewardship contracts or associated acres were identified across regions or the national forests within those regions. These results indicate the adoption of stewardship contracting has occurred relatively evenly across USFS regions and national forests within each region. This suggests the stewardship contracting mechanisms have graduated from the initial acceptance phase across many USFS regions and national forests. Indeed, a review of the 2010 and 2012 Collaborative Forest Landscape Restoration Project (CFLRP) proposals confirms this acceptance with all 20 of the selected CFLRP proposals identifying the use of one or more stewardship contracting mechanisms (e.g. long-term contracts and goods-for-services).

Stewardship end result contracting is a forest policy tool that provides increased flexibility to achieve forest management objectives and local socioeconomic benefits. It institutionalizes the opportunity for community-based collaborative approaches to define end-results and the means to achieve them. With increased need to accelerate the pace of forest

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landscape restoration, clear support from the current administration and agency leadership to continue the use of stewardship end result contracting exists (USDA Forest Service, 2012a; Wilent, 2012). The significant increase in the adoption of stewardship contracting over time with relatively consistent implementation across the USDA National Forest System provides important information for policymakers to consider for the permanent authorization of the stewardship contracting mechanisms. In addition, recognizing the widespread adoption of stewardship end result contracting provides the foundation for future research on the factors influencing its adoption and successful implementation.

The widespread adoption of stewardship contracts reported in this chapter also suggests the factors influencing the use of stewardship contracts (i.e. guidance or incentives) do not vary significantly at the national or regional levels. The relatively even adoption of stewardship contracting across regions provides an improved understanding of its use prior to analyzing the adoption of associated collaborative processes. The analysis therefore provides a foundation for subsequent research in this dissertation.

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CHAPTER THREE: IDENTIFYING THE LEVELS OF COLLABORATION AND

ASSOCIATED FACTORS AND OUTCOMES IN USDA FOREST SERVICE

STEWARDSHIP CONTRACTS

3.1. Introduction

Collaborative forest management is a form of collaborative governance where public

agencies engage diverse interests in a formal shared decision-making process to reach forest

management objectives while addressing local social and economic needs (Ansell & Gash, 2008;

Moote, 2008). The anticipated beneficial outcomes of collaboration have led to a considerable

increase in the number of collaborative forest management policies since the beginning of the

century (Burns & Cheng, 2005; Cheng, 2006; Crawford & Wilson, 2005; Moote, 2008).

Increased pressure to implement collaborative forest management processes through

legislative mandates and agency direction highlight the need to understand the role of

collaboration in meeting policy intentions, as well as the contextual factors influencing the use of

collaboration. While research on collaboration has increased significantly over the past twenty

years, it has focused primarily on individual case studies rather than broader large-N assessments

(Ansell & Gash, 2008; Conley & Moote, 2003; Koontz & Thomas, 2006). Individual qualitative

case studies are used to study a single organization, project, or situation using qualitative

methods such as interviews, focus groups, or document reviews. They therefore provide an in-

depth understanding of the collaborative effort and can identify specific facilitating factors in the

context of the case(s) being studied (Agrawal &Chhatre, 2006; Poteete & Ostrom, 2007).

Methodologically, individual qualitative case studies can increase the internal validity of the

findings by providing an increased opportunity for verifying the findings with the participants

and/ or triangulating the data (Poteete & Ostrom, 2007). On the other hand, the findings of individual qualitative case studies have limited generalizability and external validity (Poteete & Ostrom, 2007). Researchers have a limited ability to measure relative importance of various causal factors in individual or comparative case analysis as the results represent information on just one area and often one snapshot in time, which limits the generalizability of the findings (Agrawal & Chhatre, 2006; Gooch & Warburton, 2009). As a result, comprehensive evaluations of the adoption of collaboration, the factors associated with its use, and its role in achieving policy intentions are lacking. Without comprehensive evaluations of collaboration it may be falsely identified as a panacea for addressing all social-ecological management issues (Burger, 2001; Klyza & Sousa, 2008; Ostrom, 2007; Poteete & Ostrom, 2008).

Stewardship end-result contracting, or stewardship contracting, is a collaborative forest management policy which provides enhanced opportunities for the USDA Forest Service (USFS) to achieve resource management objectives while contributing to local social and economic needs. In the current discussions of forest restoration on U.S. national forests, stewardship contracting is increasingly identified as an ideal policy tool for achieving forest management objectives (U.S. Department of Agriculture Forest Service, 2012; Wilent, 2012). The initial analysis conducted for this dissertation identified a significant increase in the use of stewardship contracts across all USFS regions since its introduction in 1999.

The Pinchot Institute for Conservation (PIC) has conducted the most thorough assessment of collaboration associated with collaborative forest management through its annual programmatic-level monitoring of stewardship contracting. The monitoring reports provide an overview of the levels of collaboration, processes used, and outcomes of stewardship contracting across the National Forest System for each year. Their findings indicate that stewardship

contracting processes engage in varying levels of collaboration and the methods of initiation, the diversity of stakeholders engaged, and the processes of planning and implementation differ across projects (National Forest Foundation & Sustainable Northwest, 2005; Pinchot Institute for Conservation, 2012). Stewardship contracting therefore provides a defined group of projects with varying degrees of collaboration with which to conduct a comprehensive analysis.

This chapter contributes to the empirical analysis of collaborative governance by analyzing the implementation of collaborative decision-making processes in USFS stewardship contracts across regions and over time. This analysis also compares the levels of collaboration with indicators of collaborative processes and associated outcomes. The results provide policymakers, managers, and practitioners with an improved understanding of the collaborative implementation of stewardship contracts as a means to simultaneously reach forest management objectives and support forest-reliant communities. The results of this large-N assessment of collaborative and non-collaborative processes build upon existing research to provide academics with an improved understanding of the relationship between collaborative processes and associated process indicators and outcomes.

3.2. Background

3.2.1. Collaborative Governance

Broadly defined, collaborative governance is a process by which public and private individuals and/or organizations work collectively to address a common issue or interest they would not be able to effectively tackle independently. Over the past twenty years natural resource management has witnessed a shift from command-and-control government regulations toward decentralized collaborative management approaches to better address resource issues across broader social and ecological landscapes (Ansell & Gash, 2008; Burns & Cheng, 2005;

Conley & Moote, 2003; Hardy, 2010; Hardy & Koontz, 2009; Klyza & Sousa, 2008; Koontz & Thomas, 2006; Weber, 2000). This shift toward collaborative governance approaches is due in large part to the inability of traditional government approaches to effectively address gaps caused by macro-level political and economic forces, as well as changing social and environmental conditions at the local level (Armitage et al., 2012; Berkes, 2010; Cheng & Fernandez-Gimenez, 2006; Wondolleck & Yaffee, 2000).

The increased use of collaborative governance mechanisms is attributed to the beneficial outcomes of these processes when compared to the challenges and costs associated with more traditional regulatory mechanisms. Existing research suggests collaborative processes are anticipated to achieve improved social, economic, and ecological outcomes (Ansell & Gash, 2008; Conley & Moote, 2003; Koontz & Thomas, 2006; Leach, 2006b; Moote, 2008; Wilson & Crawford, 2008). The primary social benefits of collaboration identified include reduced conflict, social learning, and increased social capital (Burns & Cheng, 2005; Conley & Moote, 2003; Gray, 1985; Koontz & Thomas, 2006; Mandarano, 2008). These social benefits are attributed to improved dialogue across diverse stakeholders and managing agencies, resulting in increased learning and information exchange (Bentrup, 2001; Carr et al., 1998; Conley & Moote, 2003; Daniels & Walker, 2001; Innes & Booher, 1999; Mandarano, 2008; Wondolleck & Yaffee, 2000). Improved dialogue provides an opportunity to form new working relationships and increase levels of trust across multiple interests (Bryan, 2004; Carr et al., 1998; Sturtevant & Lange, 1995; Thomson & Perry, 2006; Wondolleck & Yaffee, 2000). These improved working relationships in turn increase the levels of cooperation across organizational, administrative, and jurisdictional boundaries, which result in increased trust and legitimacy of the institutions managing the natural resources (Ansell & Gash, 2008; Koontz & Thomas, 2006; Linden, 2002;

Rolle, 2002; Wager & Fernandez-Gimenez 2008). Shared learning is achieved during collaborative processes through increased information exchange and opportunities for communication, ideally resulting in a shared vision for how the resources ought to be managed (Davenport et al., 2007; Schusler et al., 2003; Selin & Chavez, 1995). Collaborative processes are thereby intended to lead to increased social capital, where both the agency and community have improved capacity for leadership, facilitation, and communication, providing a greater opportunity for public values and knowledge to be incorporated into management decisions (Flora, 1998; Leach & Sabatier, 2005; Sturtevant et al., 2005; Wagner & Fernandez-Gimenez, 2008; Wondolleck & Yaffee, 2000).

Several economic outcomes of collaborative processes have also been identified. The primary focus is on increased levels of employment and personal income (Conley & Moote, 2003; Koontz & Thomas, 2006; Mandarano, 2008). Increased efficiency through the pooling of resources (e.g. information, staff, funding) has also been recognized as an economic benefit of collaboration (Gray, 1985; Pagdee et al., 2006; Sturtevant et al., 2005). Additionally, collaboration has been found to increase the opportunity to leverage funds and potentially results in increased government revenue (Koontz & Thomas, 2006; Thomson & Perry, 2006).

Finally, collaborative processes are intended to achieve improved environmental outcomes through better management of the resource and the implementation of collaboratively identified project goals, resulting in an overall improvement of resource conditions (Bentrup, 2001; Mandarano, 2008; Munoz-Erickson et al., 2007; Sturtevant et al., 2005; Thomas & Koontz, 2011).

3.2.2. An Overview of Stewardship Contracting

Community-based forestry practitioners played a leading role in the development of

stewardship contracting policy by lobbying Congress to enact legislation that met both forest

management objectives and local community socio-economic needs (Cromley, 2005). These

practitioners promoted collaborative decision-making as a way to define and achieve land

management goals, while sustaining livelihood opportunities for forest-reliant communities

(Cromley, 2005; Pinchot Institute for Conservation, 2012). Their efforts were in response to a

sharp decline in the USFS timber program in the late 1980's and early 1990's (Mitsos &

Ringgold, 2001). Receipts from USFS timber sales had been a primary funding mechanism for

forest restoration and land stewardship activities (e.g. habitat improvement, road

decommissioning, and seedling planting). The decline in the timber program and corresponding

decline in congressionally appropriated funds for non-timber management objectives resulted in

decreased resources for forest restoration activities and negatively impacted forest-reliant

communities (Charnley et al., 2008; Mitsos & Ringgold, 2001; Moseley & Reyes, 2008).

Community-based forestry practitioners identified the need for a new policy instrument

that could generate financial resources to compensate in some part for the funding gap (Pinchot

Institute for Conservation, 2012). They argued there would be a simultaneous benefit to the

ecosystem, forest-reliant communities, and society-at-large if local communities could take part

in defining desired land management outcomes and receive benefits from implementing projects.

Congress began to formalize new approaches to forest management in 1998 by

authorizing a pilot program for the USFS to test whether stewardship contracting could meet

forest management objectives and local community needs. The initial success of the pilot

projects resulted in the authorization of stewardship contracting mechanisms through the Interior

Appropriation Act of 2003 (Sec. 323 of P.L. 108-7). This legislation ended the pilot program, allowed an unlimited number of projects nationwide, and extended the authority to both the USFS and the U.S. Department of the Interior's Bureau of Land Management (BLM) through September 30, 2013. According to the U.S. Forest Service Handbook (2008), the purpose of stewardship contracts is to "achieve land management goals for National Forest System lands while meeting local and rural community needs."

Initial research for this dissertation focused on the distribution of stewardship contracts across USFS regions over time, as outlined in Chapter 2. This analysis found the use of USFS stewardship contracts increased significantly over a 13-year period, from 48 contracts in 1999 to a total of 1,064 contracts in 2011. This statistical analysis also found that the distribution of contracts did not vary across USFS regions. These results indicate the stewardship contracting mechanisms have been widely adopted across the National Forest System and the factors influencing the use of stewardship contracts (i.e. guidance or incentives) do not vary significantly at the national or regional levels.

A key component of the stewardship contracting mechanism is the use of collaborative decision-making processes as a means to achieve local rural development needs. While the enabling legislation does not directly address collaboration in stewardship contracting, the Secretary of Agriculture directs the USFS, through the Forest Service Handbook, to involve a variety of local interests and engage key stakeholders using collaboration throughout the life of the project, from project design through implementation and monitoring (USDA Forest Service, 2008). The Forest Service Handbook codifies the USFS' policies and procedures, providing detailed administrative direction for USFS employees. Therefore, according to the Forest Service Handbook, not only is the USFS required to incorporate local community objectives, but it must

use collaboration throughout the entire process of development, implementation, and monitoring of the stewardship contract.

3.2.3. Current Understanding of Collaboration in Stewardship Contracting

Collaboration in stewardship contracting has been reviewed in a handful of published case studies and monitoring reports. The case studies identify the development of trust, project ownership, increased legitimacy of the agency, and innovative strategies to reach management objectives as a result of collaborative processes involving a diversity of interests through interactive roles in the planning and implementation of stewardship contracts (Abrams & Burns, 2007; Fitzpatrick, 2003; Hausbeck, 2007; Moseley, 2010; Sitko & Hurteau, 2010). The case studies identified the following challenges to implementing collaborative decision-making processes: 1) the agency's organizational culture often prevents change, 2) a lack of clear agency guidance or incentives for the use of collaborative processes, and 3) difficulties engaging all stakeholders (Hausbeck, 2007; Moseley, 2010).

Two broad-scale non-academic assessments of collaboration in stewardship contracting have been undertaken. The U.S. Government Accounting Office (GAO) reviewed all existing stewardship contracting projects in a 2004 report. They concluded the levels of public involvement varied considerably across the stewardship contracts, with some projects actively involving stakeholders while others did very little (U.S. General Accounting Office, 2004). The GAO recommended the national levels of the agency must provide additional guidance for local-level managers to develop collaborative processes as they may be foregoing beneficial opportunities provided by collaboration (U.S. General Accounting Office, 2004).

As outlined above, The Pinchot Institute for Conservation (PIC) reviews the levels of collaboration across a sample of stewardship contracting on an annual basis. The PIC has found

broad support for stewardship contracting with reported benefits of increased workforce capacity, trust in the agency, and improved project implementation and efficiency (Pinchot Institute for Conservation, 2013). They also identify several challenges, including resource limitations (i.e. time, expertise, and motivation), local government opposition, and the difficulty of identifying the full array of benefits provided by stewardship contracts (Pinchot Institute for Conservation, 2013).

These assessments point to the need for a detailed, rigorous analysis of the collaborative implementation of stewardship contracting across regions and over time. In addition, there are no broad-scale analyses identifying the association between collaboration, indicators of collaborative processes, and achieving the intended outcomes of stewardship contracting. This chapter addresses this gap by analyzing how collaboration is being implemented across USFS stewardship contracting processes and how the use of collaboration relates to the reported benefits of stewardship contracting and the benefits of community involvement.

3.3. Methods

3.3.1. Research Questions

Specifically, this chapter addresses the following research questions and associated objectives:

1. Are the policy intentions of stewardship contracting legislation being met?

    The congressional and administrative policies intend for stewardship contracts to achieve forest and community objectives through a collaborative process. Therefore:

      - To what extent is collaboration being used in stewardship contracting?

      - Are forest and community objectives being achieved through stewardship contracting?

2. What is the role of collaboration in meeting the policy objectives of stewardship contracting?

Current collaborative governance literature and collaborative forest management policies anticipate collaborative processes will produce beneficial outcomes. Therefore:

- What is the relation between levels of collaboration and the outcomes associated with stewardship contracting?

3. What factors influence the level of collaboration used in stewardship contracting?

The current collaborative governance literature has identified key attributes of collaborative processes; but it is based primarily upon small-N empirical research. Therefore, using the stewardship contract as a defined large-N population of efforts with varying degrees of collaboration:

- What process indicators are associated with the levels of collaboration used in stewardship contracting?

3.3.2. Data Collection

The Pinchot Institute for Conservation (PIC) has conducted annual programmatic-level monitoring of stewardship contracting for the USFS since 2005. PIC uses annual random sample telephone surveys and regional meetings of stewardship contract stakeholders to determine the state of community and interest group involvement in stewardship contracts.[3] PIC monitoring data for years 2007 to 2010 was obtained and compiled to conduct this analysis. Using these records, a dataset of variables pertaining to levels of collaboration in USFS stewardship contracts was developed.

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[3] See www.pinchot.org to access the Pinchot Institute's annual monitoring reports.

3.3.3. Variables and Analysis

Two independent variables for this analysis, the eight USFS regions[4] and four years of survey data (2007 to 2010), were used to measure the distribution of the degree of collaboration across regions and over time. To measure the perceived degree of collaboration the PIC survey asked respondents, "To what degree would you consider community involvement in the stewardship contracting project to be collaborative?" Responses were measured on a five-point scale, with 1 being "Very Collaborative," 2 being "Collaborative," 3 being "Somewhat Collaborative," 4 being "Not Collaborative," and 5 being "Not Collaborative at All." For the first analysis a two-way analysis of variance, using a significance level of 5%, was used to measure if the means and variances of the levels of collaboration varied over time and across different regions.

The perceived degree of collaboration responses were then converted to dichotomous responses, with responses 1 to 3 being "Collaborative" and responses 4 and 5 being "Not Collaborative." The "Degree of Collaboration" variable was converted from a continuous to a dichotomous variable in order to conduct Pearson chi-square tests. This cross-tabulation test was used because as a continuous variable the "Degree of Collaboration" did not have a normal distribution and thereby prevented the use of multiple regression which requires normal distribution. The dichotomous degree of collaboration was used as a dependent variable to analyze its relation to collaborative process indicators using Pearson's chi-square statistical tests.

For this analysis four independent variables were used as indicators of collaboration in the stewardship contract processes: 1) "Who Initiated the Project," 2) "The Sum of Interests

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[4] Region 10 includes just two national forests therefore data for this region was not included for confidentiality purposes; The USFS eliminated Region 7 in 1965 by combining it with Region 9, the Eastern Region.

Represented," 3) "The Number of Community Roles," and 4) "The Number of Outreach

Mechanisms. For the first indicator, the PIC survey asked respondents if the project was initiated

by the USFS, a non-agency organization, or jointly between an agency and non-agency

organization. The second indicator of collaboration was the number of interest groups involved

in the process. The survey asked respondents a series of questions to determine the types of

interests involved in the stewardship contract with a total of 80 potential interests at different

scales (i.e. tribal interests, federal agencies, state agencies, local interests). These responses were

aggregated to determine the total number of different interests associated with each contract,

with a total of 12 interests being the maximum for any contract. Based on this distribution and

statistical testing to avoid bias, these responses were evenly categorized into "1 to 3 Interests,"

"4 to 6 Interests," "7 to 9 Interests" and "10 to 12 Interests." The third indicator of collaboration

was the number of roles the community had in the stewardship contract process. Respondents

were asked by the PIC survey, "What is/was the role of the local community in the stewardship

contracting project?" and were given 12 options to choose from, including "Becoming

Informed," "NEPA Analyses," and "Monitoring." These responses were aggregated to determine

the total number of community roles identified by each respondent, and then grouped into one of

four categories to avoid bias: "1 to 3," "4 to 6," "7 to 9," or "10 to 12" community roles. The

fourth indicator of collaboration used in this analysis was the number of outreach methods used

in the stewardship contract process. PIC survey respondents were asked, "What outreach efforts

are being/have been used specifically to get people involved in the project?" and were provided

with nine options. The number of different types of outreach mechanisms was summed for each

respondent. To avoid bias these were evenly grouped into one of three categories: "1 to 3," "4 to

6," or "7 to 9" outreach mechanisms.

These collaborative process indicator variables (who initiated, number of community roles, number of interests, and number of outreach mechanisms) were kept as or converted to categorical variables in order to conduct Pearson chi-square tests. This statistical test was used to examine the relationship between the degree of collaboration and the collaborative process indicators. A logistic regression statistical test was not employed as the original variables did not meet the multivariate normality assumptions required for its use. Each of these collaborative process variables were also tested as dependent variables through Pearson's chi-square statistical tests, using a significance level of 5%, to determine differences across regions and over time. The effect size measured the strength of the association across variables.

The final stage of statistical analysis used the degree of collaboration as an independent variable to test the benefits of the process according to the level of collaboration using two additional dependent variables: "The Benefits of Stewardship Contracting" and "The Benefits of Community Involvement." PIC survey respondents were asked to identify the benefits they thought the stewardship contract process provided, including economic benefits, increased collaboration, improved efficiency, and/or specific project outcomes. They were also asked to identify the benefits of community involvement, including the broader consideration of diverse interests, improved trust, an improved sense of project ownership, and increased support for the agency. Responses for both questions were measured on a five-point scale, with 1 being "Very High" and 5 being "Very Low." The five-point responses for each of these variables were modified into dichotomous responses of "Yes" or "No," with middle responses of 3 being removed. This modification was made because as continuous variables the multivariate normality assumptions required for the use of regression statistical tests were not met. This modification to dichotomous responses allowed a Pearson's chi-square analysis of the benefits of

stewardship contracting and community involvement across regions, years, and perceived degree

of collaboration variables. This statistical test was used to evaluate significant differences in the

benefits of stewardship contracting and community involvement between collaborative and non-

collaborative cases while the effect size measured the strength of the association across variables.

3.3.3. Research Caveats

A few caveats are necessitated for the research analysis presented in this chapter. First,

this analysis used an existing dataset in which the primary investigator for this analysis was not

involved in the data collection and did not have control over how this information was collected.

Therefore missing data or systematic errors could potentially reduce the measurement validity. In

addition, this existing data was collected for the programmatic-level monitoring of levels of

collaboration associated with stewardship contracting. The data was not collected for the specific

research purposes associated with the analysis reported in this chapter and may not fully capture

the levels of collaboration and/or the diversity of factors associated with the levels of

collaboration in stewardship contracting. The PIC survey did not provide respondents with a

definition of collaboration but instead asked respondents to define collaboration[5]. As a result,

there may be variations across responses that do not accurately reflect the true levels of

collaboration across regions. Defining collaboration has been identified as one of the key

challenges to its measurement, as well as the ability to compare its use across multiple cases

(Ansell & Gash 2008; Conley & Moote 2003; Leach 2000). Subsequent national data collection

may be improved by first providing respondents with the official definition of 'collaboration'

from the USFS Handbook[6] and then asking the degree to which the process reflected this

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[5] Respondents identified over a dozen definitions of 'collaboration.'

[6] According to the USFS Handbook collaboration is defined as "a process through which parties who see different aspects of a problem constructively explore their differences and search for

definition, continuing to use a five-point scale. Additional sub-questions could clarify how the

process did (not) meet those requirements and thereby provide more detailed information to

determine the degree of collaboration. This methodology would provide greater measurement

reliability and validity than the current data collection approach.

Another caveat regards the use of survey data in which respondents were asked to self-

report on the stewardship contracting processes. This has been identified as a methodological

issue for observing and measuring collaborative performance, as well as other research topics.

This becomes a limitation because respondents may interpret questions differently than what was

intended, may conflate their responses to what they think the researchers want to hear, and/ or

may be reluctant to respond to all of the questions (Vaske, 2008).

3.4. Results

3.4.1. Perceived Degree of Collaboration

The overall levels of collaboration in stewardship contracting varied across USFS regions

but not over time. The majority of respondents across all regions considered the stewardship

contract process they were involved in as "Collaborative," ranging from 71% to 98% (Figure

3.1). The perceived degree of collaboration varied significantly across USFS regions between

2007 and 2010, with the effect size indicating the magnitude of the relationships are between the

levels of collaboration and the regions are minimal to typical across all cases (two way analysis

of variance, $p < .001$, Table 3.1). The Southern Region (Region 8) was found to have the highest

perceived degree of collaboration ($\mu = 1.59$) while the Eastern Region (Region 9) was found to

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solutions that go beyond what any one group could envision alone" (USDA Forest Service 2008,
p16).   The Forest Service is further directed to "…involve States, counties, local communities,
and interested stakeholders in a public process to provide input on (the) implementation of
stewardship contracting projects," as well as to "make an effort to involve a variety of local
interests and engage key stakeholders in collaboration throughout the life of the project, from
project design through implementation and monitoring" (USFS 2008, p 24).
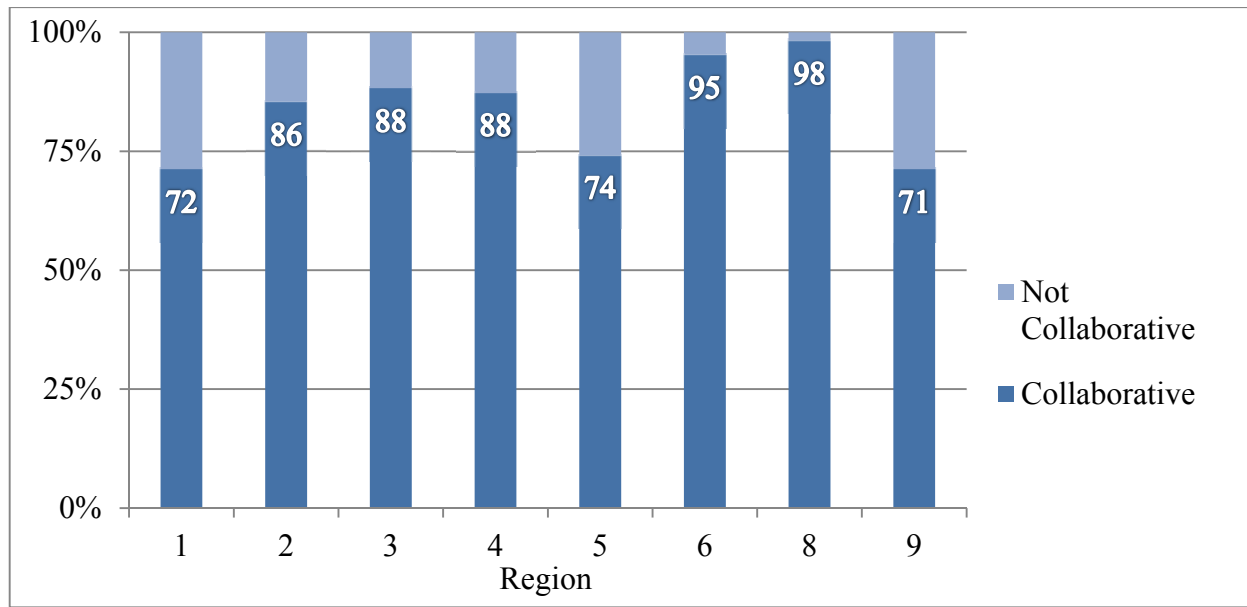
Figure 3.1. Perceived Degree of Collaboration by Region (n = 875 respondents)

Table 3.1. Two-way ANOVA on Degree of Collaboration for Region and Time, 2007-2010

	df	MS	F – value	p - value	Effect Size (η)
Time Period[7]	3	1.23	0.89	.448	.005
Region[8]	7	18.49	13.34	< .001	.138
Time Period x Region	21	1.32	0.95	.521	.033

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[7] Time Period was measured in three categories: "1999-2003," "2004-2006," and "2007-2010."

[8] Region was measured as USFS Regions 1, 2, 3, 4, 5, 6, 8, and 9; Region 10 data was not included.

have the lowest perceived levels of collaboration ($\mu = 2.93$) during this time period, where 1 is "Very Collaborative" and 5 is "Not Collaborative." The responses for the degree of collaboration by year averaged from 2.11 to 2.27. There were no significant changes in the perceived degree of collaboration between 2007 and 2010 (two way analysis of variance, $p = .448$, Table 3.1). The effect size indicates less than minimal relationships between the years ($\eta = .005$, Table 3.1).

3.4.2. Collaborative Process Indicators

The degree of collaboration was strongly associated with the four collaborative process indicators. First, when there were a greater number of roles for the community in the stewardship contracting process it was more likely to be considered collaborative ($\chi^2 = 55.0$, $p < .001$, Table 3.2). The effect size is highest for this variable indicating this process indicator has the strongest association with the degree of collaboration ($\Phi = .30$). The number of community roles in stewardship contracting processes varied significantly across regions, with the Eastern Region (Region 9) generally having the least number of roles for the community to be involved and the Southern and Southwest Regions (Regions 8 and 3, respectively) having the highest number of community roles during this time period ($\chi^2 = 62.7$, $p < .001$, $\Phi = .18$, Table 3.3). Overall, the number of roles for the community in the stewardship contract process did not vary significantly between 2007 and 2010 ($\chi^2 = 16.6$, $p = .056$). Ten of the twelve community roles respondents were asked about were positively correlated to a higher perceived level of collaboration ($p < .001$). Respondents did not consider the process to be more collaborative when the community was involved in NEPA analysis ($p = .514$).

Second, the stewardship contract process was more likely to be considered collaborative when four or more interests were involved ($\chi^2 = 22.0$, $p < .001$, Table 3.2). This process indicator

Table 3.2. Degree of Collaboration by Four Collaborative Process Indicators

Evaluation items and response levels	Perceived Degree of Collaboration (%)		χ^2	p-value	Effect Size (Φ)
	Not Collaborative	Collaborative			
Who Initiated (n = 609)			17.4	<.001	.17
USFS Initiated	20	80			
Jointly Initiated	7	93			
Non - Agency Initiated	12	88			
Number of Interests Involved (n = 691)			22.0	<.001	.19
1 to 3	24	76			
4 to 6	12	88			
7 to 9	7	93			
10 to 12	15	85			
Number of Community Roles (n = 629)			55.0	<.001	.30
1 to 3	28	72			
4 to 6	8	92			
7 to 9	4	96			
10 to 12	7	93			
Number of Outreach Methods (n = 653)			17.6	<.001	.17
1 to 3	20	80			
4 to 6	13	87			
7 to 9	5	95			

Table 3.3. Collaborative Process Indicators by USFS Region, 2007-2010

Evaluation Items and Response Levels	Level of Collaboration by Region (%)[1]								χ^2	p-value	Effect Size (Φ)
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 8	Region 9			
Contract Initiated by (n = 650):									113.1	< .001	.30
US Forest Service	68	46	38	55	78	70	27	80			
Agency & non-US Forest Service	22	45	62	38	18	21	66	16			
Non-US Forest Service	10	9	0	7	5	9	7	5			
Number of Interests (n = 677):									110.7	< .001	.23
1-3	23	32	33	42	23	14	47	48			
4-6	30	34	12	34	48	50	41	31			
7-9	36	22	31	21	26	32	11	20			
10-12	11	12	24	4	3	4	1	1			

Table 3.3. Collaborative Process Indicators by USFS Region, 2007-2010 (Continued)

Evaluation Items and Response Levels	Level of Collaboration by Region (%)[1]								χ^2	p-value	Effect Size (Φ)
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 8	Region 9			
Number of Community Roles (n = 616):									62.7	< .001	.18
1-3	36	36	33	37	36	15	22	41			
4-6	27	26	14	37	28	39	24	44			
7-9	28	28	25	17	22	33	34	13			
10-12	9	10	29	10	14	14	21	3			
Number of Outreach Mechanisms (n = 639):									48.3	<.001	.20
1-3	26	33	50	42	30	18	43	44			
4-6	36	48	19	37	38	50	41	45			
7-9	38	19	31	21	32	33	16	12			

had the second strongest effect size indicating a typical relationship between the number of interests involved and the degree of collaboration in the stewardship contract process ($\Phi = .19$). The number of interests involved varied significantly across USFS regions with the Southern and Eastern Regions (Regions 8 and 9, respectively) having the most contracts with only one to three interests involved and the Pacific Northwest and Southwest Regions (Regions 6 and 3, respectively) having the highest number of interests (four or more) involved during this time period ($\chi^2 = 110.7, p < .001, \Phi = .23$, Table 3.3). The number of interests involved in stewardship contracting processes did not vary between 2007 and 2010 ($\chi^2 = 5.8, p = .764$).

Third, the stewardship contract processes that were initiated jointly between the USFS and non-USFS entities were more likely to be considered collaborative than the processes initiated solely by the agency or a non-agency entity ($\chi^2 = 17.4, p < .001, \Phi = .17$, Table 3.2). Who initiated the contract varied significantly across regions ($\chi^2 = 113.1, p < .001$, Table 3.2). The Eastern Region (Region 9) had the highest percentage of agency-initiated stewardship contracts (80%), the Southwestern Region (Region 3) engaged in the most jointly-initiated projects (62%), and the Northern Region (Region 1) had the highest percentage of non-agency-initiated stewardship projects (10%). The effect size indicates this process variable had the strongest influence on the differences across regions ($\Phi = .30$). Who initiated the contract changed significantly between 2007 and 2010, with the number of USFS-initiated contracts increasing from 55% to 61%, jointly-initiated contracts decreasing from 40% to 28%, and non-agency-initiated contracts increasing from 5% to 12% ($\chi^2 = 19.9, p = .003$, Table 3.2).

Fourth, the stewardship contract process was more likely to be considered collaborative if a greater number of outreach methods were used ($\chi^2 = 17.6, p < .001, \Phi = .17$, Table 3.2). The number of outreach methods used in stewardship contracting processes did vary significantly

across regions between 2007 and 2010 (χ^2 = 48.3, p < .001, Φ = .20, Table 3.3). The Southwest

Region (Region 3) used the least number of outreach methods; the Pacific Northwest Region

(Region 6) was the most likely to use 4 to 6 outreach methods; and the Northern Region (Region

1) was the most likely to use 7 to 9 outreach methods. The number of outreach methods did not

vary significantly during this time period (χ^2 = 11.8, p = .068). The type of outreach mechanisms

used did influence whether the stewardship contract process was perceived as collaborative. The

process was considered more collaborative when email, personal contacts, field tours, and/or

presentations to existing community groups were used for outreach (p < .001), while the use of

direct mailings and general media outreach did not seem to make a difference (p = .927 and .820,

respectively).

3.4.3. Reported Benefits of Stewardship Contracting

All of the reported benefits of stewardship contracting were significantly higher when the

process was collaborative (Table 3.4). "Improved Public Trust" had the greatest difference, with

89% of the collaborative processes indicating this as a benefit versus 41% of the non-

collaborative processes. The second greatest difference was found in the "Improved Efficiency

and Effectiveness" where 74% of the collaborative processes and only 45% of the non-

collaborative processes realized this benefit. The effect sizes (Φ) verify these findings by

indicating typical to substantial differences across levels of collaboration for the majority of the

benefits of stewardship contracting, with "Increased Collaboration," "Improved Public Trust,"

and "Improved Efficiency and Effectiveness" showing the strongest differences (Φ ranged from

.12 to .66, Table 3.4).

Table 3.4. Benefits Associated with Stewardship Contracting by Degree of Collaboration

Evaluation Items and Response Levels	High Levels of Benefits Reported by Degree of Collaboration (%)		χ^2	p-value	Effect Size (Φ)
	Not Collaborative	Collaborative			
More Local Jobs (n = 404)	54	77	12.9	<.001	.18
More On-the-ground Work Accomplished (n = 426)	73	86	6.0	.015	.12
Greater opportunity to use local contractors (n = 442)	70	87	11.4	.001	.16
Increased Collaboration (n = 463)	18	92	202.3	<.001	.66
Improved Efficiency and Effectiveness (n = 401)	45	74	20.1	<.001	.22
Improved Public Trust (n = 444)	41	89	76.5	<.001	.42
Specific Project Outcomes (n = 500)	89	99	20.1	<.001	.20

All but one of the reported benefits of stewardship contracts did not vary across regions, (*p*-values ranged from .088 to .331). The reported benefit of "Increased Collaboration" did vary across regions, ranging from 62% in the Northern Region (Region 1) to 94% in the Southern Region (Region 8) of respondents who believe this outcome was high ($\chi^2 = 37.8$, $p < .001$). The reported benefit of "More Local Jobs" related to stewardship contracts increased significantly between 2007 and 2010, increasing from 60% to 83% ($\chi^2 = 21.7$, $p < .001$). During this time period other reported benefits from stewardship contracting increased to a lesser degree, with "Achieving More Work on the Ground" increasing from 79% to 86% ($\chi^2 = 2.2$, $p = .524$); "Greater Opportunity to use Local Contractors" ranging from 81% to 86% ($\chi^2 = 1.0$, $p = .792$); "Increased Collaboration" increasing from 78% to 84% ($\chi^2 = 1.8$, $p = .607$); "Increased Efficiency and Effectiveness" increasing from 62% to 78% ($\chi^2 = 6.7$, $p = .083$); "Improved Public Trust" increasing from 77% to 86% ($\chi^2 = 4.2$, $p = .236$); and "Specific Project Outcomes" increasing from 94% to 99% ($\chi^2 = 7.0$, $p = .072$). The most often cited "Specific Project Outcomes" included habitat improvement, fuels reduction, and thinning.

3.4.4. Reported Benefits of Community Involvement

All of the reported benefits of community involvement in stewardship contracting projects were significantly higher when the process was collaborative (Table 3.5). Five benefits of community involvement were measured: "Broader Consideration of Diverse Interests," "Improved Trust," "Increased Levels of Public Input," "Improved Sense of Project Ownership," and "Support for the Agency." The effect sizes indicate typical-to-substantial differences across levels of collaboration for each of these benefits, where the strongest association was between the "Degree of Collaboration" and the "Improved Sense of Project Ownership" and "Improved Trust" variables (Φ ranged from .42 to .50, Table 3.5).

Table 3.5. Benefits of Community Involvement in Stewardship Contracting by Degree of Collaboration

Evaluation Items and Response Levels	High Levels of Benefits Reported by Degree of Collaboration (%)		χ^2	p-value	Effect Size (Φ)
	Not Collaborative	Collaborative			
Broader Consideration of Diverse Interests (n = 464)	41	91	86.9	<.001	.43
Improved Trust (n = 457)	34	90	95.6	<.001	.46
Increased Opportunity for Public Input (n = 448)	42	91	81.0	<.001	.43
Improved Sense of Project Ownership (n = 439)	29	90	109.5	<.001	.50
Increased Support for the Agency (n = 571)	40	89	80.0	<.001	.42

Most of the perceived benefits of community involvement did not vary across regions (p-values ranged from .068 to .273). The perception of a "Broader Consideration of Diverse Interests" was statistically significant, ranging from 71% in the Pacific Southwest Region (Region 5) to 96% in the Southwest Region (Region 3) (χ^2 =15.1, p = .035). The community involvement benefit of an "Improved Sense of Project Ownership" was also significant (χ^2 =

23.1, $p = .002$), ranging from 68% in the Eastern Region (Region 9) to 96% in the Southwest Region (Region 3).

The majority of the reported benefits of community involvement associated with stewardship contracting increased significantly between 2007 and 2010. The benefit of a "Broader Consideration of Diverse Interests" increased from 77% to 88% ($\chi^2 = 13.2$, $p = .004$), "Improved Trust" increased from 76% to 90% ($\chi^2 = 8.3$, $p = .039$), and "Increased Opportunity for Public Input" increased from 77% to 94% ($\chi^2 = 17.9$, $p < .001$). Though not statistically significant, the "Improved Sense of Project Ownership" increased from 78% to 87% ($\chi^2 = 6.1$, $p = .106$), while "Increased Support for the Agency" increased from 77% to 88% ($\chi^2 = 5.3$, $p = .152$).

3.5. Discussion

3.5.1. Implications and Key Findings

Large population assessments of collaborative efforts have been identified as a critical research need as much of the theoretical and empirical collaborative governance literature has been based on case study analyses (Ansell & Gash, 2008; Conley & Moote, 2003). While case study analyses provides in-depth understanding of the process being studied, this approach is limited by variability in the definitions of collaboration and measurement standards, as well as the context-specific variables utilized (Conley & Moote 2003; Leach 2000; McKinney & Field 2008; Wondolleck & Yaffee 2001). Without broader analyses across comparable efforts collaborative governance theory is limited by variations in the data collected and/or the collaborative context of case study research (Agrawal & Chhatre, 2011; Ansell & Gash, 2008; Conley & Moote, 2003; McKinney & Field, 2008; Poteete & Ostrom 2008). These limitations thereby affect the reliability and generalizability of collaborative governance theory.

This chapter contributes to collaborative governance research through an empirical analysis of a large-N population of collaboration associated with USFS stewardship contracts. Stewardship contracting is a collaborative forest management policy which provides opportunities to simultaneously meet forest management and community objectives using collaborative decision-making processes. Stewardship contracts therefore provide a defined population of collaborative forest management efforts, allowing for a large-N analysis of collaboration. This chapter reports an analysis of the collaborative implementation of USFS stewardship contracts, the process indicators associated with the use of collaboration, and its role in achieving the intended policy outcomes. The use of USFS stewardship contracts are governed by broader institutional rules (i.e. National Forest Management Act of 1976, USFS Planning Rule Directives, and the Forest Service Handbook) and although regional and site-specific institutional rules and other contextual factors will influence the use of collaborative stewardship contract implementation, USFS stewardship contracts provides a defined population of collaborative forest management efforts.

The analysis reported in this chapter has three significant findings. First, in analyzing the extent the policy intentions of stewardship contracting legislation are being met, the collaborative implementation of USFS stewardship contracts and the benefits of stewardship contracting were found to be relatively high across all USFS regions. This finding indicates the adoption of collaboration is occurring across the National Forest System. Nonetheless, the levels of collaboration do vary across USFS regions. The variation in the degree of collaboration across regions is not necessarily 'good' or 'bad' but indicates different public involvement approaches have been used across Regions. Three process indicators – the number of community roles, the number of interests involved, and who initiated the process – provide insight into differing

regional approaches as they associate with the varying levels of collaboration across regions. This variation could be a result of differing levels of guidance across regions, as well as other context-specific factors influencing the decision-making processes at the national forest level. This variation could also be a result of differing definitions of 'collaboration' across regions. The PIC survey did not provide a definition of 'collaboration' but instead asked respondents to define collaboration. Further analysis of variation in the definitions identified is warranted.

The second significant finding of this analysis is the substantial relationship between the four indicators of collaborative processes and the overall perceived degree of collaboration. These collaborative process indicators include: the number of community roles, the number of interests involved, who initiated the process, and the number of outreach methods. These findings confirm the importance of these variables, as identified in the existing collaborative governance literature. The overall degree of collaboration was higher when a greater number of community roles were incorporated in the stewardship contracting process. Increased opportunities for stakeholder input and shared learning are widely recognized as an important component of collaborative processes. These opportunities include engaging stakeholders in discussion forums, field trips, citizen monitoring, and other activities encouraging face-to-face dialogue (Bentrup, 2001; Daniels & Walker, 2001; Davenport, Leahy, et al., 2007; Innes & Booher, 1999; Koontz et al., 2004; Leach, 2006; Wondolleck & Yaffee, 2000). These increased opportunities for stakeholder engagement improve the likelihood of shared learning, the integration of scientific and local knowledge, and the development of project ownership across stakeholders (Davenport, Leahy, et al., 2007; Koontz et al., 2004; Rolle, 2002; Wondolleck & Yaffee, 2000).

The stewardship contract processes involving a greater number of interests were considered to be more collaborative overall. The involvement of a diversity of stakeholders is at the forefront of important collaborative process components (Ansell & Gash, 2008; Bentrup, 2001; Davenport et al., 2007; Gray, 1985; Leach, 2006; Mandarano, 2008; Rolle, 2002; Wondolleck & Yaffee, 2000). Processes initiated through a joint effort between USFS and non-USFS organizations were considered to be more collaborative while the USFS-initiated processes were considered the least collaborative. The jointly-initiated processes indicate the development of long-term collaborative relationships between the agency and community organizations over time. The importance of taking the time to develop long-standing relations, and the associated agency and community social capital, has been identified as a key component to the success of collaborative processes and national forest management activities overall (Abrams & Burns, 2007; Baker & Kusel, 2003; Moseley, 2010; Smith, 2012).

The overall degree of collaboration was higher in processes using a greater number of outreach methods. Previous studies identify how well sought out the stakeholders are to participate has been correlated with the degree of collaboration, indicating the number of outreach mechanisms is important (Ansell & Gash, 2008; Carr et al., 1998). The findings also identify a strong relationship between collaborative processes and interactive outreach methods, such as personal contact or field tours, and again support previous research studies (Ansell & Gash, 2008; Bentrup, 2001; Innes & Booher, 1999; Leach, 2006; Wondolleck & Yaffee, 2000).

The substantial relationship between these process indicators and the levels of collaboration across the population of USFS stewardship contracts thereby confirms four of the key attributes of collaborative processes identified in existing theoretical and case study-based empirical research. The findings also indicate the number of roles for the community and the

number of interests involved had the greatest influence on the levels of collaboration associated with USFS stewardship contracts. The four process indicators therefore provide a strong basis for future research using large-N populations of collaborative efforts to further verify the correlation with levels of collaboration. Subsequent monitoring of USFS stewardship contracts could include additional questions asking respondents to identify the key process components associated with the level of collaboration (i.e. "What characteristics of the process had the greatest influence on the level of collaboration you identified?"). In addition to collecting information on the four existing process indicators this would provide an opportunity to identify additional process indicators and/or confirm the importance of the existing indicators.

The third significant finding of this research is that the collaborative decision-making processes play an important role in meeting the policy intentions of stewardship contracting. This finding is identified by the positive association between collaboration and the reported benefits of stewardship contracting and community involvement associated with forest management and community objectives. In regard to meeting forest management objectives, the benefit of stewardship contracting with the greatest difference between collaborative and non-collaborative processes was the "more on-the-ground work accomplished" indicating the forest management benefits were high in 86% of the collaborative stewardship contract processes. Another indicator of the role of collaboration in meeting forest management objectives was "the achievement of specific project outcomes" in collaborative stewardship contract processes. This supports previous research findings where collaborative processes resulted in the achievement of restoration goals, and the completion of on-the-ground projects (Koontz & Thomas, 2006; Mandarano, 2008; Pagdee et al., 2006; Rolle, 2002; Thomson & Perry, 2006). This analysis was unable to determine the role of collaboration in overall perceived improvements in forest

conditions as identified in previous research (e.g. Koontz & Thomas, 2006; Mandarano 2008; Pagdee et al 2006). Measurements of perceived improvements in forest conditions are an important factor to consider in future research across large populations of collaborative forest management.

The reported benefits of stewardship contracting indicate community economic and social objectives are more likely to be met through collaborative processes. Collaborative processes were much more likely to provide a "greater opportunity to use local contractors" and "more local jobs." These results build on previous research where stewardship contracting was found to increase the use of local contractors and meet local economic objectives (Abrams & Burns, 2007; Fitzpatrick, 2003; Hausbeck, 2007). Collaborative processes were also more likely to result in "improved efficiency and effectiveness" of the stewardship contract than non-collaborative processes. These findings indicate two of the primary economic intentions of stewardship contracting were better met through collaborative decision-making processes. "Improved public trust" was found to be the leading benefit of the stewardship contracting process, replicating existing findings where trust and relationship-building across the community and with the agency are commonly found to be the greatest advantage of collaborative processes (Conley & Moote, 2003; Daniels & Walker, 2001; Koontz & Thomas, 2006; Mandarano, 2008; Sturtevant et al., 2005; Thomson & Perry, 2006).

The reported benefits of community involvement in stewardship contracting projects also confirm a significant connection between the degree of collaboration and the achievement of community objectives. The benefits of community involvement in stewardship contracting with the strongest correlation to collaborative processes were "an improved sense of project ownership," "improved trust," and a "broader consideration of diverse interests." This supports

previous research findings where collaborative processes create greater stakeholder ownership and increases the accountability of the process (Ansell & Gash, 2008; Bentrup, 2001). It also supports research findings where the consideration of a diversity of interests is a key result of collaborative processes (Bentrup, 2001; Blahna & Yonts-Shepard, 1989; Gray, 1985; Leach, 2006; Mandarano, 2009; Reed, 2008; Rolle, 2002).

3.5.2. Summary

This chapter reports an analysis of the implementation of collaborative decision-making processes in USFS stewardship contracts across regions and over time. This analysis provides an improved understanding of the role of collaboration in meeting the policy intentions, as well as the process indicators associated with the use of collaboration in stewardship contracts. The findings indicate the policy intentions of stewardship contracting legislation are being met. Although the levels of collaboration vary across USFS regions, collaborative processes are being used across the majority of the stewardship contracts analyzed in this research. In addition, the benefits of the stewardship contracts and community involvement indicate both forest and community objectives are being achieved. The findings also reveal collaboration plays a significant role in meeting the policy objectives of stewardship contracting. Stewardship contracting processes with higher levels of collaboration were consistently found to have a greater amount of forest management and community social and economic benefits than non-collaborative processes. Lastly, the findings identify four process indicators associated with collaborative processes. These indicators include the number of roles for the community, the number of interests involved, the number of outreach mechanisms used, and who initiated the project. These indicators were found to have a strong association with the collaborative stewardship contracting processes. This analysis of collaborative governance process indicators,

using a large population of collaborative and non-collaborative efforts, therefore builds upon the existing collaborative governance literature which has primarily been based upon empirical case-study analyses.

Four additional research procedures are recommended to build upon these results. First, additional research is necessary to identify the role of collaboration in achieving stewardship contract policy intentions. The findings indicate the achievement of benefits associated with stewardship contracts occurred across all USFS regions, yet the levels of collaboration were statistically significant across regions. This finding indicates the achievement of stewardship contracting goals may not be solely dependent upon collaborative processes. Other factors, such as existing levels of trust or the objectives of the project, will also play a role in achieving the benefits of stewardship contracting processes (Moseley, 2010; U.S. General Accounting Office, 2004). Second, this research was constrained by use of existing data and the number of years of data obtained. The programmatic monitoring and/or replication of the PIC survey could be refined by defining the term 'collaboration,' using the definition provided in the USFS Handbook, rather than asking respondents to define the term. The PIC survey could also be improved by asking respondents to describe how the process was (not) collaborative to identify additional collaborative process indicators. Further research with additional years of PIC survey data is recommended to identify whether a broader time period affects any of the findings reported here. Third, further analysis of the levels of collaboration within USFS regions would provide an opportunity to identify differences in collaboration levels, indicators, or outcomes within regions (i.e. across national forests). Research identifying variation within regions would provide greater insight to the role of collaboration in stewardship contracting. Lastly, the current understanding of contextual factors affecting the decision to use collaboration is limited

(Emerson et al., 2012; Hardy, 2010; Imperial, 1999). Research on factors influencing the use of collaboration would inform managers and policymakers of ways to support the use of collaborative forest management approaches and to better engage a diversity of interests to achieve forest and community objectives.

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CHAPTER FOUR:

FACTORS INFLUENCING THE USE OF COLLABORATION:

A CASE STUDY ANALYSIS OF USDA FOREST SERVICE STEWARDSHIP CONTRACTS

IN THE ROCKY MOUNTAIN REGION

4.1. Introduction

During the past twenty years natural resource management in the U.S. has witnessed a

shift from command-and control government regulations toward collaborative governance

approaches to better address resource issues across social-ecological systems (Cortner & Moote,

1999; Hardy & Koontz, 2009; Wondolleck & Yaffee, 2000). The increased call for collaboration

is attributed to the benefits it purportedly results in, including improved management decisions,

increased social capital, reduced conflict, and the pooling of resources across parties (Ansell &

Gash, 2008; Cortner & Moote, 1999; Leach, 2006; Moote, 2008; Moseley, 2010; Wilson &

Crawford, 2008).

Collaborative forest management is a form of collaborative governance where public

agencies engage diverse stakeholders in a formal shared decision-making process to

simultaneously achieve forest management objectives and meet community socioeconomic

needs (Ansell & Gash, 2008; Conley & Moote, 2003; Moote, 2008). The anticipated beneficial

outcomes of collaboration have led to a considerable increase in the number of policies

promoting collaborative processes in national forest management activities since the beginning

of the century (Cheng, 2006; Moote, 2008; Moseley, 2010; Wilson & Crawford, 2008). These

policies include the National Fire Plan Implementation Strategy, the Healthy Forest Restoration

Act of 2003, Stewardship Contracting Legislation of 2003, the Collaborative Forest Landscape

Restoration Program of 2009, and the 2012 National Forest System Land Management Planning Rule.

In conjunction with this increase in collaborative forest management policies the collaborative governance literature has increased substantially over the past twenty years. This literature focuses primarily on the process characteristics and organizational structure of collaborative efforts (Ansell & Gash, 2008; Conley & Moote, 2003; Hardy, 2010). The collaborative governance literature recognizes the effectiveness of collaborative governance mechanisms relies on associated contextual factors (Armitage et al., 2012; Berkes, 2010; Steelman, 2010). Nevertheless, a thorough analysis of the factors affecting the implementation of collaborative processes is limited, though this has been identified as a need (Emerson et al., 2012; Hardy, 2010; Imperial, 1999). With an increased use of collaboration it is necessary to identify the factors with the greatest influence on the implementation of collaborative processes so that resources and support can be directed appropriately.

This chapter focuses on a relatively new policy mechanism promoting collaborative management of national forests, stewardship end result contracting mechanisms (stewardship contracting), and presents an analysis of factors influencing the implementation of associated collaborative processes. The enabling legislation directs the USDA Forest Service (USFS) to achieve forest restoration goals while simultaneously meeting local socioeconomic objectives using collaborative processes (USDA Forest Service, 2008). The initial phases of this dissertation found the use of stewardship contracting has increased considerably since it was introduced but the levels of collaboration associated with stewardship contracting vary significantly across USFS regions. Stewardship contracts are therefore a defined population of

collaborative forest management efforts that present an opportunity to systematically analyze factors affecting the use and levels of collaboration.

4.2. Background

Stewardship contracting arose in response to two primary circumstances. First, a significant decline in the USFS timber program occurred during the late1980's and early 1990's, resulting in a sharp decrease in the amount of resources available for restoration activities. Timber sale receipts from national forests served as a primary source of funding for restoration activities, including habitat improvement, seedling planting, and road decommissioning (Mitsos & Ringgold, 2001; Ringgold, 1998; Ringgold & Mitsos, 1996). In conjunction with declining congressionally appropriated funds for non-timber management objectives, there was a need for a new policy instrument that could generate financial resources to compensate for the funding gap (Mitsos & Ringgold, 2001; Pinchot Institute for Conservation, 2012).

Second, in conjunction with this decline in restoration resources, community-based forestry groups (based primarily in the northwestern U.S.) sought collaborative approaches to define land management objectives and to sustain livelihood opportunities for forest-reliant communities (Cromley, 2005). These groups sought to overcome the low-cost bid emphasis of USFS timber contracting and advocated for other criteria in the selection of winning bids. The argument was that local contractors familiar with the forest and strong ties to the community would provide better public value than larger non-local operators.

These circumstances led to the authorization of 28 pilot stewardship contracts through the Omnibus Consolidated and Emergency Supplemental Appropriations Act of 1999. This was followed with 84 additional stewardship contract pilot projects authorized through annual appropriations bills from 2000 to 2002 (U.S. Government Accountability Office 2004). These

initial pilot projects led to the authorization of stewardship contracting mechanisms through the Interior Appropriation Act of 2003 (Sec. 323 of P.L. 108-7). This legislation ended the pilot program, allowed an unlimited number of stewardship contracts and agreements nationwide, and extended the authority to both the USFS and the US Department of the Interior's Bureau of Land Management through September 30, 2013.

The policy intent of stewardship contracting is to "achieve land management goals on national forests and public lands that meet local and rural community needs" (Title 16, United States Code, Section 323). According to the Forest Service Handbook the agency is directed to collaborate with key stakeholders and local interests throughout project planning and implementation of stewardship contracts (USDA Forest Service 2008). The USFS provides information and support for collaboration to the national forests through its National Partnership Office (USDA Forest Service 2013). Regardless of the administrative directives and resources, the levels of collaboration in stewardship contracting processes vary across USFS regions. The intent of this chapter is to identify the contextual factors influencing the decision to use collaboration in USFS stewardship contracts and whether the outcomes differ across collaboration levels.

4.3. Methods

4.3.1. Research Questions

Specifically, this chapter addresses the following research questions:

1. What factors influence the level of collaboration used in stewardship contracting?

    - How do institutional, community, and individual attributes affect the decision to use collaboration?

2. Are the policy intentions of stewardship contracting legislation being met?

- To what extent are forest and community objectives being achieved through USFS stewardship contracting?

3. What is the role of collaboration in meeting the policy objectives of stewardship contracting?

   - What is the relation between levels of collaboration and the outcomes associated with stewardship contracting?

4.3.2. Qualitative Research

The research reported in this chapter uses qualitative case study methods to build on the quantitative analysis of stewardship contracts reported in Chapters Two and Three. Qualitative research uses methods other than statistical or quantitative methods to generate results (Strauss & Corbin, 1998). It is an approach where the researcher "collects open-ended, emerging data with the primary intent of developing themes from the data" (Creswell, 2003, p. 18). The case study is "an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 2009, p. 18). This approach is used to improve the understanding of causal factors in specified situations and to better comprehend situations in which there is not a clear single set of outcomes. The multiple-case study approach uses replication design where specific variables of interest are selected using a theoretical framework and cases are selected purposively. This design therefore allows inferences to be made to theory rather than to populations (Yin, 2009).

4.3.3. Propositions: Collaborative governance and the Institutional Analysis and Development (IAD) Framework

This research incorporates concepts from the collaborative governance literature with the Institutional Analysis and Development (IAD) Framework developed by Ostrom and others to

develop eight propositions (Kiser & Ostrom, 1982; Ostrom, 2005). The IAD framework allows

for a concise analysis of institutional design and performance, while providing a set of universal

elements to consider. As such it provides a flexible analytical lens through which collective

actions and decisions can be uncovered, organized, and analyzed via diverse theoretical

perspectives rather than imposing a single theory (Imperial, 1999; Kiser & Ostrom, 1982). In

particular the IAD framework focuses attention on both formal and informal structures and rules

that shape actors' interactions, decisions, and actions in an issue domain (Imperial, 1999; Kiser

& Ostrom, 1982; Ostrom, 1990; Ostrom, 2011).

The basic conceptual framework of the IAD consists of potential contextual factors, the

actions influenced by these factors, and the resulting outcomes (See Figure 4.1). The IAD

framework incorporates institutional, community, and biophysical attributes as contextual

factors, which combine with individual attributes of the decision-maker to create the 'action

arena' and resulting outcomes (Ostrom, 2005). The IAD framework identifies these interactions

at three hierarchal governance scales – the operational, collective-choice, and constitutional

levels (Kiser & Ostrom, 1982; Ostrom, 2005). The operational level consists of actions taken to

directly manage and allocate resources and associated information on-the-ground. Directly above

the operational level is the collective-choice governance level where rules are developed to shape

decisions at the operational level while the constitutional governance level assigns rights, rules,

and authorizes governing appropriate interactions among actors at lower governance levels. For

the purposes of this research the focus was on the decisions made at the operation level. This

research analyzed the attributes of institutional arrangements, the attributes of the community

and the attributes of the individual (i.e. the decision-maker) as potential contextual factors

influencing the levels of collaboration in stewardship contracting processes. The influences of
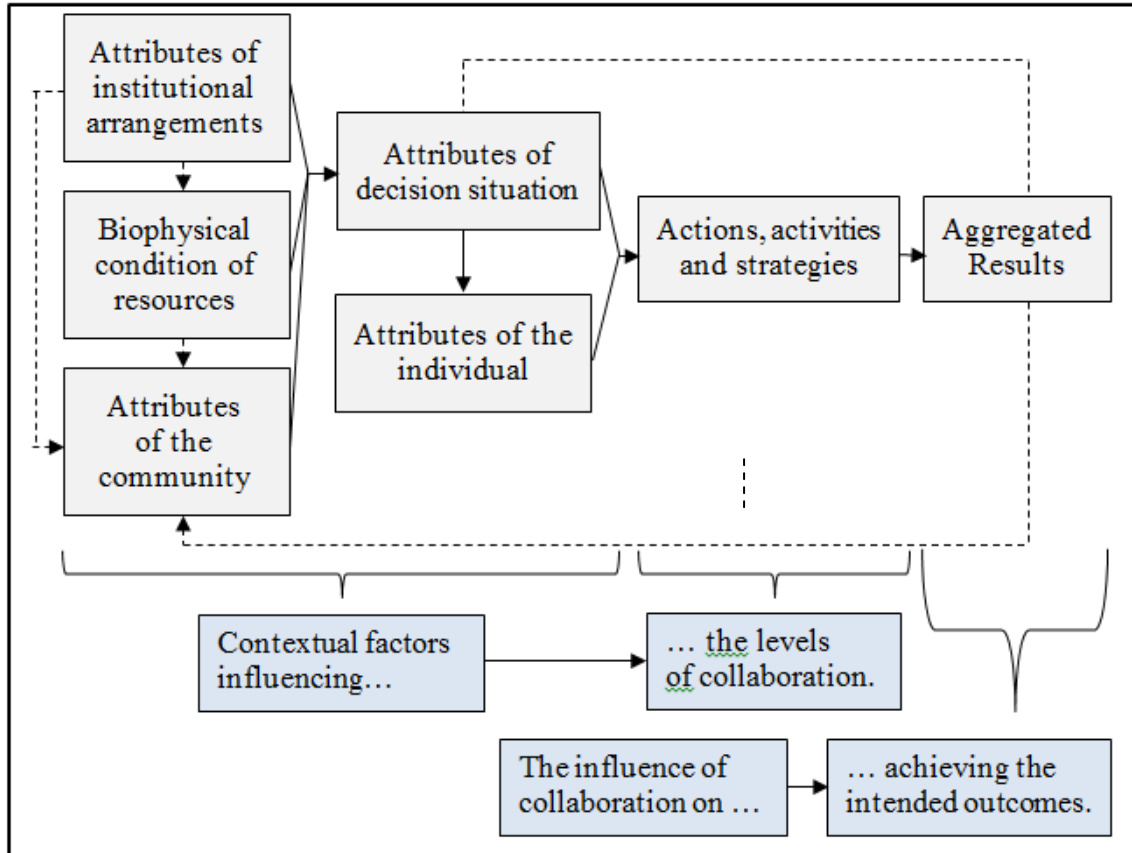
Figure 4.1. Research Framework Incorporating Collaborative Governance in the Institutional Analysis and Development (IAD) Framework (Adapted from Kiser and Ostrom 1982)

differing levels of collaboration in achieving the intended outcomes of the stewardship contracts were then examined. The remainder of this section defines each of these IAD framework components and outlines relevant theoretical propositions incorporated in the research design.

Institutional Attributes

The institutional attributes are the first contextual factor examined in this research. Institutions are defined as the formal and/or informal rules which affect social, economic, and political actions, and are frequently intended to advance socially beneficial outcomes (Imperial, 1999; North, 1991; Ostrom, 2005). Characterized as rules-in-use, the institutional attributes

relevant to national forest management include myriad federal laws, policies, and regulations that direct and constrain management decision-making.

Proposition 1: Collaboration will occur when there is clear support from the agency.

Support from the agency can be in the form of administrative policy where agency rules provide flexibility to lower level offices to determine how best to achieve management objectives (Davenport et al., 2007; Sabatier et al., 2005; Wondolleck & Yaffee, 2000). Agency rules can be formal directives from the USFS Washington, D.C. Office or Regional Offices or less formal rules and incentives from the Supervisor or Ranger District Offices. Support can occur in the form of agency leadership where there are evident levels of commitment and direction, concrete achievable goals, and delegation of roles and responsibilities for collaborative processes (Ansell & Gash, 2008; Blahna & Yonts-Shepard, 1989; Thomson & Perry, 2006). Agency support also occurs with the provision of resources such as personnel, funding, and training (Baker & Kusel, 2003; Sabatier et al., 2005; Wondolleck & Yaffee, 2000).

Proposition 2: The willingness of the USFS to work with communities will influence the level of collaboration.

When interdependence between the agency and stakeholders is recognized there is often a greater opportunity for collaboration (Gray, 1985). The recognition of such interdependence is identified by the levels of USFS outreach and engagement with the public. There is an increased opportunity for collaboration and relationship-building if the USFS is innovative and flexible in its public engagement (Carr et al., 1998; Davenport et al., 2007). The previous analysis of the Pinchot Institute for Conservation's data in Chapter Three identified a positive relationship between levels of collaboration and the amount of outreach used during the stewardship contracting process.

Proposition 3: The USFS will use collaboration when the anticipated benefits outweigh the expected costs.

There will be an increased use of collaboration when the USFS sees a greater value in partnerships, when transaction costs for conducting the process decrease, and when there are sufficient resources to cover those transaction costs (Baker & Kusel, 2003; North, 1990; Sabatier et al., 2005; Williamson, 1999; Wondolleck & Yaffee, 2000). The USFS is therefore more likely to implement a collaborative process when it is recognized the costs of acting unilaterally without collaboration exceed the costs of engaging collaborative processes (Bentrup, 2001; Selin & Chavez, 1995).

<u>Biophysical Attributes</u>

Biophysical attributes are referred to as "the goods and services being produced, consumed, and allocated in a situation as well as the technology available for these processes" (Ostrom, 2005, p. 22). These attributes include the forest types and conditions, the forest resources being used (i.e. biomass, non-timber forest products, and recreation activities), as well as the availability of local contractors and wood processing infrastructure. For this study the biophysical attributes were considered constant. At a broader scale, the forests identified for this analysis have similar associated goods and services (i.e. forest types and conditions, associated community infrastructure).

<u>Community Attributes</u>

Community is defined in multiple ways within the social sciences. For this study, community is defined as a group of people with a common interest in the management of the national forest being studied. This may include non-local residents or organizations, local

municipalities, or the population of landowners neighboring the national forest studied which may be affected by the forest's management decisions (Donoghue & Sturtevant, 2008).

Proposition 4: Collaboration is more likely when the community is willing to work with the USFS.

A community's willingness to work with the USFS is influenced by the levels of trust the community has in the USFS, whether stakeholders perceive the benefits will outweigh the costs of participating, and whether previous interactions involved collaboration or conflict situations (Ansell & Gash, 2008; Cheng & Mattor, 2006; Daniels & Walker, 2001; Gray, 1985; Ostrom, 2005; Sabatier et al., 2005; Thomson & Perry, 2006; Wondolleck & Yaffee, 2000). Previous research has found collaboration is more likely when the risk of harm to the resource is perceived as high (i.e. increased wildfire risk), where scientific uncertainty of the issue is low, and where there is a relatively high level of agreement across stakeholders on both the resource condition and scientific knowledge related to the resource issue being addressed (Chhatre & Agrawal, 2008; Sabatier et al., 2005).

Proposition 5: Collaboration is more likely when there are higher levels of social capital within the community

Social capital is defined as the social networks across individuals influenced by norms of reciprocity and levels of trust (Sabatier et al., 2005). Such networks serve as reservoirs for collective problem-solving in times of need and have been identified as both a precursor and an outcome of collaborative natural resource management (Mandarano, 2009; Sabatier et al., 2005; Wagner & Fernandez-Gimenez, 2008). In natural resource studies, community social capital has been characterized by a history of collaborative natural resource organizations, strong leadership,

and overall social capacity to build relationships (Pagdee et al., 2006; Sabatier et al., 2005; Thomson & Perry, 2006).

Individual Attributes

The attributes of the individual are defined as the key characteristics of the decision-makers which, when combined with the contextual factors, influence the actions taken.

Proposition 6: Collaborative processes are more likely when decision-makers have prior collaborative experience

Based on collaborative governance literature, the decision-makers with previous experience and/or training with collaboration are more likely to use a collaborative process in stewardship contracting (Pagdee et al., 2006; Wondolleck & Yaffee, 2000). Leadership within the agency which supports and promotes broadening the scope of the public involvement process and the inclusion of diverse interests has been identified as an important component of collaborative processes (Ansell & Gash, 2008; Bentrup, 2001; Wondolleck & Yaffee, 2000).

Proposition 7: Collaborative processes will occur where there is strong leadership.

Individuals with strong leadership capabilities are more likely to develop a collaborative process because they are able to build trust and facilitate dialogue by setting clear ground rules (Ansell & Gash, 2008; Pagdee et al., 2006; Pinchot Institute for Conservation, 2010; Wondolleck & Yaffee, 2000). Strong leaders from within the agency and the community have been found to take advantage of new opportunities and thereby facilitate the development of collaborative approaches (Cheng, 2006; Sturtevant et al., 2005; Wondolleck & Yaffee, 2000)

Associated Actions and Outcomes

Together the individual and contextual attributes influence the actions, activities and strategies used. The action being researched for this dissertation is the level of collaboration

associated with stewardship contracts. The IAD framework then focuses on the outcomes resulting from those actions. This research focused on the outcomes related to the policy intentions of stewardship contracting - to "achieve land management goals … while meeting local and rural community needs, … (where) collaboration must be a part of stewardship contracting project planning and continue throughout the life of the project" (USDA Forest Service 2008, p. 7-8).

Proposition 8: The achievement of stewardship contract outcomes will vary according to the level of collaboration.

The intended outcomes of stewardship contracts are for forest management and community objectives to be met. Collaborative governance literature maintains forest management outcomes will vary across efforts, based on local needs (Pagdee et al., 2006). Associated administrative costs are anticipated to decrease through the use of stewardship contracting mechanisms, as well as collaborative processes. The primary social themes include the development of trust and relationships across diverse interests, increased knowledge, and the increased social capital through collaborative processes (Conley & Moote, 2003; Gray, 1985; Koontz & Thomas, 2006; Mandarano, 2008). Economic outcomes primarily focus on employment and personal income, increased government revenue, and the pooling of resources through collaboration (Conley & Moote, 2003; Gray, 1985; Koontz & Thomas, 2006; Mandarano, 2008).

4.3.4. Case Study Identification

The limited information on the levels of collaboration associated with stewardship contracts within USFS regions invites in-depth inquiry. The USFS Rocky Mountain Region (see

Figure 4.2) and the four case study national forests were identified through document reviews and key informant interviews.

This qualitative research compared two lower level collaboration cases with two higher level collaboration cases within a single region. Analyzing this variation within one region limits the potential variation of institutional attributes influencing the use of collaboration at the regional and national levels, as well as collective-choice and constitutional levels, and allowed this research to focus on the factors influencing decisions at the operational level.
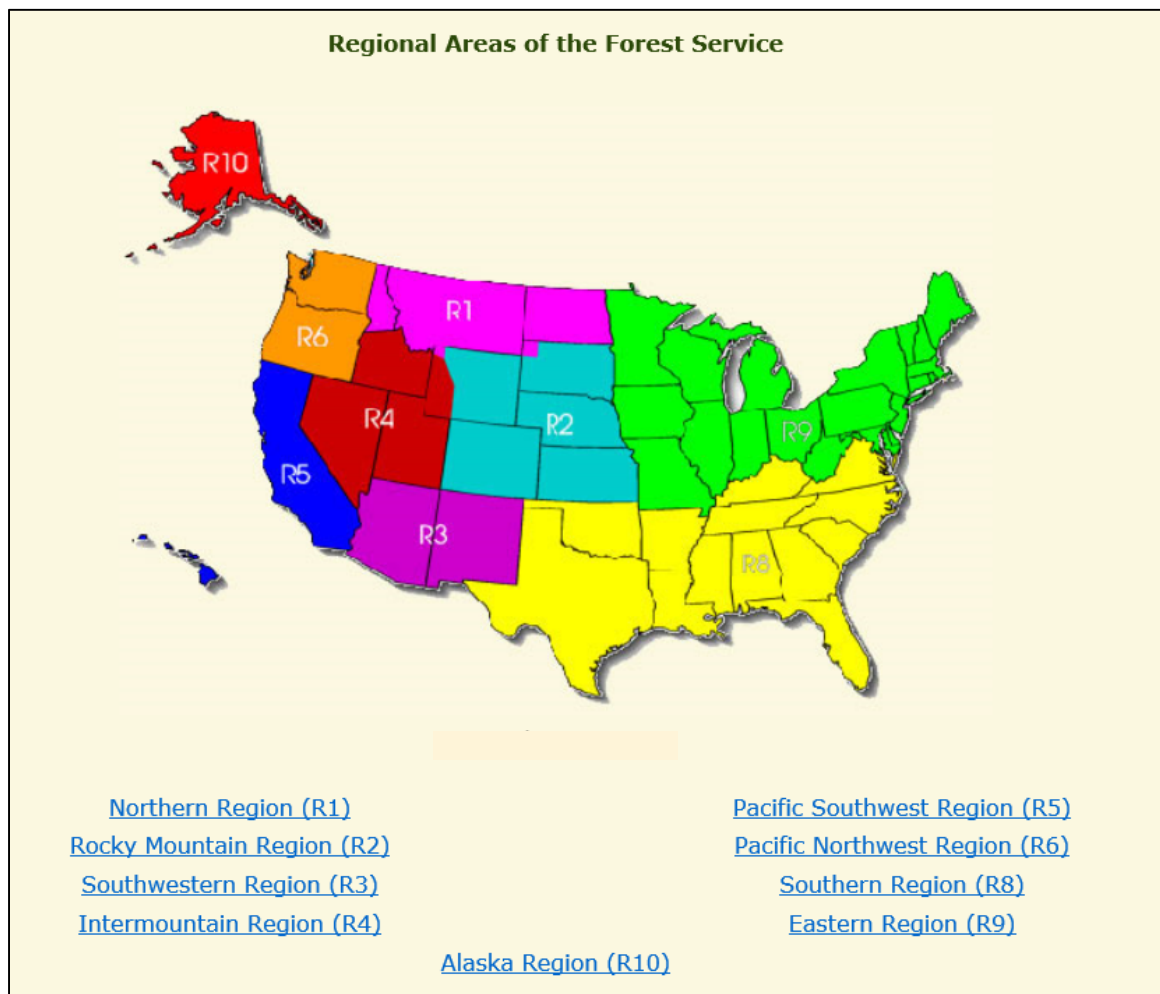

Figure 4.2. Map of the Regional Areas of the USDA Forest Service

The USFS Rocky Mountain Region encompasses over 22 million acres of forest and grasslands in Kansas, Wyoming, South Dakota, Nebraska, and Colorado, and has 11 national forests spread across this area. This region was identified through document review, informal interviews with key informants, participation in three regional Pinchot Institute for Conservation programmatic monitoring meetings, and a review of the results from earlier phases of this research. The document review included USFS documents and websites, as well as case studies on stewardship contracts in four potential regions. This review was supplemented by notes from the 2011 programmatic level stewardship contract monitoring meetings facilitated by the Pinchot Institute for Conservation in Arizona, Idaho, Missouri, and California. These meetings provided a solid overview of how stewardship contracting was being used across different regions, and provided an opportunity to gain insight on case studies from local, regional and national stewardship contract coordinators, and both USFS and non-agency experts. Upon concluding the previous statistical phases of this research the results were reviewed to identify a region with: (1) the level of collaboration closest to the average across all regions; (2) relatively even numbers of USFS initiated and jointly initiated contracts; and (3) a broad distribution across the number of interests involved. The USFS Rocky Mountain Region best met these criteria with: the closest level of collaboration to the overall average (86% compared to 84% overall), 46% USFS- and 45% jointly- initiated processes, and a relatively broad distribution of the number of interests involved.

Eight potential national forests were identified for case studies through a review of the list of stewardship contracts obtained from the USFS and documents associated with these contracts. The forests were identified by the stewardship contracts' objectives, where those contracts with a limited number of objectives (e.g. fuels reduction) indicated lower levels of

collaboration, while those contracts incorporating multiple objectives and/or the term "collaboration" were assumed to have higher levels of collaboration. Four national forests were identified from this list after reviewing the USFS "Success Stories" website, as well as the list of stewardship contracts listed by state on the USDI and USDA "Forests and Rangelands website (USDA Forest Service, 2012b; Wildland Fire Leadership Council, 2013). The final four case study forests were confirmed upon speaking with the USFS Region 2 stewardship contract coordinator. The location and names of the national forests used for this research are being retained to maintain levels of confidentiality and respect for the persons interviewed, while also providing an improved opportunity for readers to apply the findings to their experiences on different forests and regions.

4.3.5. Data Collection

<u>Document Review</u>

The document review provided essential contextual information for each of the forests and the associated stewardship contracts and projects. The documents reviewed included website materials, community newsletters, newspaper articles, and reports from both the USFS and non-USFS organizations. The reviews provided information on the organizations involved with the stewardship contract(s), the history and objectives of the projects, and oftentimes the names of USFS and non-agency people involved. Information about each of the forests was obtained through web searches and journal databases (i.e. Web of Science). The primary uses of the forests were recorded (e.g. recreation, timber, wildlife), as well as the types of communities closely associated with the forests (i.e. urban, ex-urban, rural, or resort) and the details associated with the stewardship contracts on each forest. Additional information (i.e. meeting notes, participant lists, contract papers, and media such as editorials and newsletters) about the

stewardship contracts was obtained from interviewees, through general searches on the online

search engine Google, while additional contract details were obtained through FedBizOps.com.

<u>Interviews</u>

In-depth semi-structured interviews were conducted with USFS personnel, non-USFS

agency members, and community members involved with stewardship contracts on each forest.

Potential interviewees were identified using document review, interviews with the USFS

regional stewardship contract coordinator, and by reviewing the USFS contact directory.

Additional interviewees were identified during the data collection process through network

sampling, where interviewees are asked to recommend additional people associated with the

project (Kvale, 1996). Interviews were continued for each forest until saturation was reached,

where additional information would not be added from subsequent interviews (Strauss & Corbin,

1998). A total of 32 interviews were conducted. Five interviewees were involved with

stewardship contracts on two or more forests or had a regional perspective, resulting in ten

interviews for each forest (Table 4.1). The interviews lasted between 30 and 120 minutes. With

the interviewees' permission the interview was tape-recorded. Handwritten notes were also used

to record the interviewees' physical reactions during the discussion and key points the

interviewees emphasized.

Two interview guides were used, one tailored to USFS personnel and the other tailored to those

outside of the USFS (Appendix A). The IAD framework was used to outline the topics of inquiry

- the institutional, community, and individual attributes, the levels of collaboration, and the

associated outcomes. The propositions outlined above were used to develop the interview

questions.

Table 4.1. Number and Category of Interviews for each National Forest Case Study

	National Forest A	National Forest B	National Forest C	National Forest D
US Forest Service	7	3	4	5
Community Member	1	2	1	1
Local non-USFS agency	1	3	3	3
Environmental	2	2	2	1

The semi-structured interview format provided an opportunity to explore the interviewees' areas of expertise and interest in regards to collaboration and stewardship contracting. A conversation-style approach was used for the interviews while following the interview guide, which improved the ability to develop rapport with each of the interviewees (Kvale, 1996).

Data analysis

All of the interviews were transcribed and the handwritten notes were incorporated with each transcript. NVivo 10 software was used to analyze the interview data and associated documents. While the interview coding was structured according to the IAD framework themes, open and axial coding was also used to uncover themes and sub-themes that had not previously been identified (Creswell, 2003; Denzin & Lincoln, 1998; Strauss & Corbin, 1998).

Using a multiple case-study approach each of the four cases was analyzed individually and summarized. Following the completion of these individual analyses the cases were compared

and analyzed as a whole, using replication logic to tie the findings to existing theory rather than generalizations across the sampled population (Yin, 2009).

The analysis is constrained by its focus on four national forests within a single USFS region. Although a thorough protocol was used to identify this region and the four forests, the generalizability of these results to other regions and forests may be restricted. Nonetheless it is expected the readers will be able to associate these findings with their experiences on different forests and regions.

4.4. Results

Four case studies were conducted in USFS Region 2, the Rocky Mountain Region (Table 4.2). The biophysical attributes of the four forests are relatively consistent at a general scale. All of the forests are dominated by lodgepole and ponderosa pine stands and have been affected by the recent upsurge in mountain pine beetle outbreaks. All forests have limited logging and wood utilization infrastructure. They all include: a mixture of rural, ex-urban and resort communities; are within a two-hour drive of high population centers; and have high levels of non-motorized and motorized recreation uses.

4.4.1. National Forest A: *"It's a wonderful opportunity. It is exceedingly cumbersome."* (USFS interviewee)

The first case study had very limited levels of collaboration associated with its stewardship contracts. According to the USFS interviewees National Forest A (NF-A) does not identify stewardship contracting as the management tool until after the ecological, social and economic objectives have been identified through the National Environmental Policy Act (NEPA) planning process and the forest assessments have been completed. NF-A has implemented eight smaller (less than 2,000 acre) stewardship contracts, four landscape-level

Table 4.2. Characteristics of the Case Study National Forests

Attribute	NF-A	NF-B	NF-C	NF-D
Average number of stewardship contracts[9]	8 smaller-size; 1 long-term; 4 landscape level	3 smaller-size; 1 long-term and landscape level	1 smaller-size; 1 long-term and 2 landscape level	3 smaller-size; 1 long-term and landscape level
Number of interests involved	< 3	< 3	>6	>6
Collaboration level	Low	Low	High	High

(greater than 2,000 acre) stewardship contracts, and a single long-term ten-year contract (Table 4.2). Although the first two stewardship contracts on this forest entailed slightly higher levels of public involvement and interagency collaboration, subsequent stewardship contracts did not.

NF-A Institutional Attributes

The USFS interviewees on NF-A indicated the use of collaboration has been limited by a lack of guidance and resources reaching the operational level. Some district rangers interviewed were uncertain about what collaboration should entail. One district ranger said,

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[9] Smaller-size" stewardship contracts were less than 2,000 acres; contracts over 2,000 acres were considered "landscape-level;" and "long-term contracts" are for a 10-year period.

"I think it made intuitive sense for most folks. They just were worried about how you're really going to make that happen. …They (the Washington Office) said you've got to collaborate, you have to do these things, you figure it out. That's kind of how it came through. Everybody's like well what do they want us to do? Are we doing enough? I don't even know how to do that."

A few district rangers also indicated uncertainty in how to use collaborative stewardship contracting processes consistently with existing policies and procedures (i.e. NEPA, National Forest Management Act, Federal Advisory Committee Act and mandated timber targets). As another district ranger stated,

"Some kind of guidance, just saying well we believe collaboration is at least (this). This is the minimum you can get away with or if we're doing one stewardship project and we know it takes that extra amount of time can we drop a planned timber sale. ...So just knowing which is more important to have, whether it's that timber target or community involvement that we need to be after."

The decision to use the traditional NEPA process rather than collaborative processes in stewardship contracting has also been influenced by the perceived costs associated with collaborative processes. This was evidenced by multiple interviewees at the USFS district level identifying tight timelines, limited personnel and inadequate funding as factors restricting the use of collaborative processes. These interviewees indicated the additional time and complexity associated with collaboration were not worthwhile and the majority of the employees considered the traditional process to be sufficient for identifying community objectives. One timber management officer explained,

"The Forest Service is a pretty traditional outfit agency and so new stuff takes time to be accepted and used and whatnot. And this was a real hard one because it's really complicated and there's different ways to go about it."

As a result, while some district rangers and staff understood and supported the use of collaborative stewardship contracts, its value was not accepted broadly across the forest.

Several line officers described how increased pressure from the regional and supervisor offices to develop the long-term stewardship contract had limited the associated levels of collaboration. This contract was pushed forward under a short timeframe dictated by higher authority levels within the agency in the face of concern from local-level line officers about the ability to supply timber, the impacts on small community timber operators and limited levels of outreach to the public to provide input. One district ranger explained, "Collaboration for them on this contract…consisted of a letter out to (industry) speculators from the regional office. We did nothing additional from what I understand as far as follow up to those letters." Another line officer agreed, "There appear to be outside forces that are pushing for us to these efficient methods without the consideration of the things like the benefits to the local community." The local ranger districts therefore had limited influence and involvement on the development of the long-term stewardship contract and outreach to the public was extremely limited.

All interviewees maintained that NF-A is willing to work with the local communities. The USFS interviewees explained how all of the forest's projects incorporate multiple objectives and seek to represent the interests of the community. They contended that all of the ranger districts work closely with local organizations to provide public outreach on forest conditions and management projects. The district rangers explained how their staff have been involved in the community, ranging from regular interactions with local government officials and community groups to weekly outreach programs with local schoolchildren, indicating some level of social capital between NF-A and the local communities.

Nonetheless, NF-A's involvement with the community did not extend beyond these interactions to include collaborative public involvement in the planning, implementation, or monitoring of stewardship contracts. NF-A interviewees were unable to identify local

community members involved with stewardship contracting outside of the local contractors they had hired. The forest uses the traditional NEPA process to involve the local community and interested stakeholders for all project planning and this process was considered sufficient for identifying the forest and community objectives.

NF-A Community Attributes

The level of trust and relations with the USFS vary across communities neighboring NF-A. This depended on the history of timber or resource use in the community, the levels of recreation, or the history of working relations between the community and the forest. Overall interviewees maintained the communities' level of trust in NF-A has been relatively high and they have supported the stewardship contracts the forest has implemented. In large part this was attributed to the impacts of the mountain pine beetle having increased the awareness and acceptance of forest treatments in the local communities. The forest supervisor explained how the communities associated with NF-A differ from other forests in the region because they are more concerned about NF-A implementing projects to address forest insects and hazards rather than being involved through collaborative processes. The forest supervisor described,

> "You know it's simpler here in many respects in terms of who really wants to be involved. It's a much more let's just go out and get it done kind of place versus let's plan and get together, and do we get along and what about this. There is a lot less talk and a lot more doing. But it's still just as collaborative, there is the same amount of intensity in relationships and whatnot."

There are a variety of natural resource-based groups located in communities neighboring NF-A. These groups work with the forest to develop educational or recreational programs but they have not been involved in collaborative forest planning or project implementation processes. These working relations indicate the presence of social capital between NF-A and

local communities, but not to the extent there have been any locally-based collaborative natural resource groups involved with stewardship contracting processes.

NF-A Individual Attributes

Interviewees recognized the line officers have an important role in developing community relations on NF-A and ensuring the ecological and community objectives are incorporated in all projects, stewardship or not. Yet, the interviews revealed how the district rangers had limited involvement in the development of stewardship contracting processes. The initiation and planning associated with stewardship contracts primarily occurred at the supervisor and/or regional offices which resulted in the district rangers having limited influence on whether the process was collaborative or not. In addition, the majority of the USFS personnel interviewed had little to no training or experience in collaborative forest planning processes. Several interviewees indicated some USFS line officers and personnel were ready to seize the opportunity collaborative stewardship contracting provided, while others were hesitant to use them because of the complexity of the contracting and collaboration processes, the cost for conducting service work in the face of low-value timber, and the uncertainty it would provide benefits over the traditional contracts and processes.

NF- A Outcomes of the Stewardship Contracts

Based on the interviews and document analysis NF- A has achieved the forest, community, and administrative objectives associated with the stewardship contracts it has completed. The forest management objectives, determined through ecological assessments guided by the forest plan have been achieved, including aspen management, forest thinning and hazardous fuel reduction. The primary community objectives the USFS interviewees identified have been to protect values at risk (i.e. homes and property, aesthetic values, and timber) through

wildfire mitigation, road and trail enhancements and closures, as well as to provide local employment. The first two objectives have been met but the ability to hire local contractors has been limited to only two of the initial stewardship contracts. Contractors from outside the local area were brought in for the remaining stewardship contracts because the forest had a difficult time identifying local contractors who were willing and/or able to do service- or restoration-related work, a key component in the majority of their stewardship contracts.

The administrative objectives of decreasing costs while meeting management objectives through collaborative processes have not been met. USFS interviewees agreed NF-A supports the use of stewardship contracts because it provides increased flexibility and provides an opportunity to accomplish more work on the ground. In some areas it reduced costs as it allowed both the timber and service work to be completed simultaneously, while in other areas the cost of administering the contracts and implementing the projects increased significantly. Some USFS interviewees believed a decrease in administrative costs had not occurred on NF-A because the levels of collaboration were low and they were not able to share resources through partnerships with other entities.

4.4.2. National Forest B: *"In terms of what those projects look like and where they are… that hasn't been collaborative. They have done good work. I just think there could be more."* (Local Community Member)

National Forest B (NF-B) also had lower levels of collaboration associated with its stewardship contracts. This forest implements the NEPA planning process to determine its objectives for projects prior to deciding whether to use a timber contract, service agreement or stewardship contract. Although it works with state and local partners on a regular basis and has

relatively strong support from community members it has rarely used collaboration with stewardship contracting.

NF-B Institutional Attributes

The USFS interviewees indicated support from the supervisor's office for the use of collaboration in stewardship contracting on NF-B. However, a majority of the USFS personnel interviewed believed using the traditional NEPA planning process was sufficient for determining the community objectives. They asserted that the implementation tool (i.e. timber contract, service agreement, or stewardship mechanism) should not be decided upon before conducting the mandatory forest assessments and NEPA planning processes. Many interviewees identified the primary benefit of stewardship contracting was to complete work on the ground, rather than to incorporate multiple objectives through a collaborative process, and therefore they did not see a role for using collaboration. As one district ranger explained,

> "You know the contracting processes are different but the public involvement is probably no different. You know just, we as an agency, we have to decide what's the best value for the government. What's in the best interest of the government and I mean if we could sell all these projects as timber sales then stewardship contracting wouldn't even be needed. But until the markets, until that demand for the products are there, stewardship contracting is going to have to kind of supplement or pay the way to get some of the work done."

Both USFS and community interviewees identified a limited amount of guidance from higher levels of the agency (i.e. the supervisor's office or regional office) as another challenge. They identified a lack of understanding on how to integrate stewardship contracts with the existing planning processes to make it more collaborative. One non-USFS partner explained,

> "Having worked with them I understand the organization (NF-B) relatively well. And part of it is just their organization and their legal mandates and all those things really direct them to doing things a certain way. And we would like to see things done more collaboratively and looking at a variety of different values on our forests but I don't think they necessarily do. … the FS has to have this kind of work lined up in order to actually start a stewardship contract, just to make sure they've got it figured it out before they sign

that contract. And they may not have that collaborative piece really lined up. And so those projects might not be exactly what everyone wants to see happen."

Even though the USFS interviewees on NF-B considered stewardship contracting as an innovative tool providing increased flexibility and an improved opportunity to achieve objectives which traditional contracts or agreements could not, they also identified how there are limited resources or incentives for the use of collaborative processes with stewardship contracts. Similar to the previous case, USFS interviewees described how NF-B has experienced increased pressure from the regional office, as well as external forces (i.e. Congressional representatives and lobbyists from metropolitan areas) to implement a long-term stewardship contract. Several line officers and timber management officers explained this pressure significantly decreased the planning timeframe and limited the opportunities to implement a collaborative process. The resources for collaboration were limited as a result. Nonetheless, some district rangers interviewed did emphasize how local contractors were incorporated into the long-term stewardship contract process and the forest was able to retain additional timber sales to continue contracting with those local companies as way to achieve community economic objectives.

Although many community representatives and the USFS personnel who were interviewed agreed NF-B does work well with the local communities, the forest has experienced conflict with neighboring landowners and forest users in association with two stewardship contract projects. Although the NEPA planning process had been used, some community members felt uninformed about the projects and sought improved community outreach from NF-B through project-level planning. When asked about these incidents, the district ranger involved felt the issues had been resolved in a positive manner because the concern raised by the community members provided an opportunity to increase their outreach to the local neighborhood through additional meetings and field trips.

Regardless of these incidents, members of the community and the USFS staff indicated the forest has a strong willingness to work with the community and partners with several organizations, including wildfire mitigation and environmental education organizations on a consistent basis. One district ranger explained,

> "There's a Forest Service presence at a lot of these community organizations. I have staff who regularly attend meetings so there's a forest service presence in the community. But then also just being available for the public, having conversations, having those hard meetings that we really don't want to have because we know people are going to be mad. But they want to be heard so it's important to have those conversations."

NF-B Community Attributes

According to the interviewees, the communities neighboring NF-B have differing perspectives on how to address forest management needs and therefore varying levels of trust in the USFS. Many NF-B and community interviewees indicated how the effects of the mountain pine beetle and increased fire activity in the region had raised community understanding of forest management needs. Still, these community perspectives ranged from a solid understanding and agreement with forest management decisions to strong disagreement with USFS decisions from neighboring landowners and forest users. These varying perspectives were found to be project or even neighborhood dependent. As one district ranger explained,

> "There is a housing area that's up against roadless and wilderness areas. Well, most of the folks in there just wanted us to get in there and clean it up because they're very worried about fire. So for them it was we don't care, I mean they care but just do it. Do more than you can, go ahead and go in the wilderness. I mean it was that kind of attitude. So when we moved over to this other area to work it was a different attitude. It was a different interest level and different kinds of interest. So it was the first time that I as a ranger here had dealt with kind of a push back of 'well, we don't really want you to just come in and clearcut everything. We want to have a say in this.' Which is great!"

Community and USFS interviewees indicated that most community members were willing to work with the USFS. They explained how in areas where the agency and community had previously worked together the USFS was seen as an engaged and trusted organization. The

communities' level of trust and engagement decreased in areas where the levels of USFS outreach to community members had been limited. As one community interviewee exclaimed, "Working with the Forest Service is more like a war. And it's a shame because the people themselves are nice but they seem to be in straightjackets."

Yet, most community interviewees indicated several community organizations worked closely with NF-B regarding coordinated wildfire mitigation and outreach efforts. These partnerships suggest a relatively high degree of social capital between the USFS and the local communities, though outreach to neighboring landowners was lacking. There are at least three locally-based natural resource groups near NF-B that are focused on education and outreach pertaining to wildfire mitigation, forest conditions, and recreation. Similar to NF-A, a locally-based collaborative natural resource group involved in project-level planning efforts on NF-B is not present.

<u>NF-B Individual Attributes</u>

Community leaders have an important role in the development of USFS-community relations on NF-B. One community member provided outreach to neighbors and other community members regarding a stewardship contract project of which they were unaware of. Through this community member's commitment to informing others, the USFS was able to reach more people and was compelled to increase the levels of outreach to the community through additional meetings and field trips. Another community member developed a local non-profit effort to increase education and outreach to community members about forest management needs. The local county extension agent also provides an opportunity for USFS and community relations through a wildfire mitigation group involving the local governments, the US and state forest service, environmental groups, and concerned citizens.

The interviewees explained how the district rangers provide leadership through their involvement in the community and support for their staff to become involved. The district rangers interviewed explained how they are a conduit to the community and are responsible for identifying the best mechanisms for reaching both forest and the community objectives. As one district ranger put it,

> "(What being a district ranger means is) being part of the community, being available, being at the grocery store and having a presence. …Its one of those things that takes the right person there. Most of the time I'm fine shopping at my grocery, stopping in the produce aisle and stopping and talking for 20 minutes on the projects we're working on." These individual leadership traits have established relations between NF-B and the local

communities but have not influenced the development of a collaborative stewardship contracting process. The interviews indicated the district rangers have had a limited role in the development of stewardship contract processes on this forest. Similar to NF-A, the initiation and planning of stewardship contracts has primarily occurred at the supervisor and/or regional offices.

NF-B Outcomes of the Stewardship Contracts

NF-B has reached most of the objectives associated with its completed stewardship contracts. Overall the objectives of improving forest health and managing fuel loads are being met, while also achieving watershed protection and fire mitigation in the wildland urban interface. The objectives of providing local employment have been limited on NF-B. The low value timber and complexity of the stewardship contract work has prevented employment of contractors from within the community, but contractors from neighboring counties or within the state have been used for the majority of the stewardship contracts. NF-B's administrative objectives of decreased contracting costs through stewardship contracting mechanisms have not been met. Nonetheless, several USFS interviewees explained how the forest management

projects they completed could not have been achieved without the stewardship contract mechanism.

4.4.3. National Forest C: *"Collaboration is the key to success for long- term large projects, including stewardship contracts."* (USFS line officer)

National Forest C (NF-C) had higher levels of collaboration than the previous two forests during the planning and implementation of its stewardship contracts. This forest began its initial stewardship contract with high levels of collaboration in the mid-2000s, involving local citizens, organizations, and state-level agencies during its planning and implementation (Table 4.1). The initial stewardship contract project was completed on over 5,000 acres. In subsequent stewardship contracts, which were much smaller in size (less than 500 acres) NF-C utilized forest assessments and NEPA planning processes prior to deciding to utilize stewardship contracts. A larger landscape-level collaborative group was involved prior to the initiation of a long-term ten-year stewardship contract on this forest which is treating more than 2,000 acres per year.

NF-C Institutional Attributes

Interviewees explained NF-C received high levels of support for collaboration from the regional and supervisor offices but the levels of support for collaboration varied across staff in the forest. The interviewees indicated lower levels of support for collaboration resulted from the complexity of collaborative stewardship contracting processes. This included administrative constraints during the initial stewardship project where different agencies involved in the project used different project planning and contracting protocols and timelines. Some interviewees indicated USFS line officers were initially hesitant to use collaboration because they did not have the funding or personnel resources to implement such a time-intensive process. Others explained

how it had been difficult for the USFS to change from its traditional processes. As one

community interviewee described,

> "These are changing skills for the USFS. I mean for decades they were almost a militaristic-type organization with a very hierarchical decider- in-chief down through its various layers. And I see that changing kind of across the board at all levels. But you know it's an evolutionary process. It's not a slam dunk. You are turning an aircraft carrier. …But I see it happening pretty much at all levels of the USFS as I go through my years of working with different people. And then as more of these folks have gotten into leadership who really appreciate the collaborative approach it changes the lower-level folks more."

Several USFS interviewees indicated that the funding prioritization for stewardship

contract projects has sometimes led to decreased collaboration within the USFS. One timber

management officer said,

> "They're (The regional office is) selecting projects and then more money goes out to certain forests that have stewardship contracts. Well that's going to take away from other forests, there's no way around it. And then on the individual forests there are winners and losers for lack of a better way of putting it. And so we're still working through that."

The prioritization of budgets and staff toward ranger districts with stewardship contracts

therefore decreases the levels of support for those projects from ranger districts that do not have

stewardship contracts. The distribution of stewardship contracts in NF-C has thereby limited

internal collaboration within the forest.

NF-C had existing collaborative relations in place with local community organizations

and state agencies before stewardship contracting authority was authorized. A collaboratively

developed watershed project across multiple jurisdictions was being developed when

stewardship contracting passed in 2003. Those involved in the watershed project saw

stewardship contracting as a good fit for achieving their project objectives on USFS lands. The

partners involved in the initial stewardship contract developed a communication plan to conduct

extensive outreach, including field tours for local interests and state and federal officials, door to

door visits, and public meetings. This allowed them to involve a larger number and diversity of community interests.

Interviewees indicated NF-C has a strong willingness to work with local communities overall. The forest has been actively involved in local community events and outreach efforts and has made a concerted effort to understand and address community needs and objectives. After the initial stewardship contract the forest became actively involved with the development of collaborative place-based efforts for mitigating wildfire risks through community wildfire protection plans (CWPP). The forest further developed community relations through these efforts.

Nonetheless, USFS interviewees identified the level of collaboration has been influenced by project goals and objectives on NF-C. The shorter term stewardship contracts have been focused primarily on fuels reduction and hazard tree removals so NF-C did not see the need to use greater levels of collaboration outside its traditional NEPA process. One timber management officer explained that,

> "Where increased outreach and leveraged resources are necessary the forest has increased the level of collaboration with its partners and community interests, as we did with the initial stewardship contract and the long-term stewardship contract."

Referring to the development of collaboration prior to the long-term stewardship contract the forest supervisor recalled,

> "That (collaboration) was kind of in place before we started. We were kind of unconscious competent. We didn't know how valuable it would be but it turns out it really changed me around. I mean the strong collaborative is in my mind is essential to the success of a stewardship contract of that size. If you're going to go multiple years and you're going to treat a large area then you've got to have large consensus and a strong collaborative."

NF-C Community Attributes

As with the previous cases, interviewees indicated the level of support for treatments and trust in the USFS varies across communities near NF-C. They also indicated relations have improved over time resulting in relatively widespread agreement and acceptance of forest conditions and the need for forest management from the local communities and stakeholder interest groups. This was attributed to the severe fire seasons during the early 2000's and the development of both local-level and larger landscape-level collaborative groups which increased local outreach emphasizing the need for treatments to improve forest health and protect values at risk.

The existing local and landscape-level collaborative groups have had an important role in the development of collaborative stewardship contracts on this forest, signifying a high level of social capital exists within these communities. Both USFS and community interviewees indicated the involvement of these local collaborative groups with the initial stewardship contract led to increased collaboration and public outreach across the communities associated with this forest. One community member interviewed said,

> "(NF-C) has been good at taking advantage of those collaborative tools because they had already started moving in that direction, into those kinds of collaborative approaches earlier than other forests. …They had relations built with community nonprofits and all that helped them more quickly than a forest that had no sort of collaborative thing going on yet."

NF-C Individual Attributes

Individuals have had an essential role in the development of partnerships across organizations associated with collaboration on NF-C. The initial watershed project was jointly proposed by a local landowner, the state forest service, and a district ranger from NF-C. As one partner put it,

"I would say initially we were fairly well joined at the hip and I think it had to do a lot with personalities. …we had a group of people right from the get go that were pretty well oriented towards action and not afraid to bend some of the rules and try new things."

The involvement of agency and community leaders who were willing to look at all options and open to trying new approaches, as well as being committed to follow through with implementation were also an essential element.

Staff turnovers in the USFS and partner organizations led to a decrease in the leadership associated with collaborative processes, leading to decreased levels of collaboration after the initial stewardship contract because newer staff had not been involved with the previous collaborative processes. Interviewees recognized some agency line officers were uncomfortable with collaboration and were not willing to test ideas the collaborative group or partners developed, which had influenced the levels of collaboration in the smaller stewardship contracts that occurred prior to the long-term stewardship contract. Other interviewees indicated the support for collaboration and partnerships has been strengthened. One line officer explained,

"That is (support for collaboration is) a direct reflection of leadership. So if employees know that it is important to leadership that we stay engaged with these collaborative efforts they'll do it. If they sense leadership doesn't give a rip whether you're there or not then they're probably not going to do it. So there's quite a bit of leadership associated with the amount of success you have with collaboration. And how you reward people for doing that."

NF-C Outcomes

The case study analysis found NF-C has accomplished the majority of the objectives associated with its stewardship contracts. There has been a relatively high achievement of the forest restoration and wildfire mitigation objectives. Though some non-USFS interviewees felt there could have been increased overlap across jurisdictions during the initial project to achieve a broader landscape scale others were happy with what had been achieved. One non-USFS partner

stated, "You can look at that watershed and actually see we did landscape-scale forest restoration across landowners. It's amazing."

Several USFS and community interviewees identified how the initial stewardship contract marked the development of improved USFS and community relations in the area. It provided an opportunity for more partners to become involved with project planning and the forest was receptive to their involvement. One community member exclaimed,

> "In the beginning if somebody told me (NF-C) would collaborate I would have laughed! Just because they used to just walk in and tell you we're going to do this. …They kind of had an attitude. Now they've learned to embrace it and again because leadership on the (forest) embraced it. Coming right from the supervisor's office on down. It was like you are going to collaborate. You are going to try and work with folks. You are going to try and make this happen. So I think we've seen that on this forest really strong."

Although there are a limited number of local contractors willing or able to do the service component of stewardship contracts NF-C was able to use local contractors on its smaller contracts as a result of working with partner organizations. Though not locally based, the forest was able to hire a contractor from within the state for its long-term stewardship contract.

A majority of the USFS and community interviewees agreed the stewardship contract and associated collaborative processes lowered the overall costs for reaching multiple objectives under the initial stewardship contract. Yet the long-term stewardship contract has raised some concerns about reaching both administrative and local community economic objectives. Even though the overall intent is for the stewardship contract to be conducted in addition to the timber program, not in place of it, some interviewees relayed the challenge of doing so. The USFS interviewees were concerned, not only about their limited ability to support local contractors but also their ability to plan out and identify areas and size of treatments that meet both the forest's objectives and the contractors' supply needs (for both the LTSC and regular timber program). One USFS timber management officer summarized,

"It's not a short time period that we tend to focus on just because of the scale of it. And so I'm sorry but you can't implement that with small mom and pop operators. Not that I want them to go out of business. We're trying to run a timber program that also provides for sales and contracts what have you for those operators and purchasers as well. But it's challenging because it's one of the things that you've probably heard about long-term stewardship contracting is that those programs would be implemented in addition to the normal forest program. In my experience that is not occurring. And quite honestly I'm not sure how it really could."

4.4.4. National Forest D: *"To me, collaboration is to have a more transparent process and to bring people along from the beginning all the way through the project."* (Community Member)

National Forest D (NF-D) has also had higher levels of collaboration during the planning and implementation of its stewardship contracts. The initial stewardship contract on NF-D had high levels of collaboration through increased levels of outreach, field tours, and opportunities for the public to be involved through monitoring. This contract treated approximately 500 acres during the mid-2000s. The collaborative process associated with this initial contract involved local organizations and state agencies and helped to strengthen relations between the USFS and the communities near the project. Similar to NF-C, this forest also had several smaller sized (less than 300 acre) stewardship contracts after the initial contract. For these smaller contracts NF-D completed the NEPA and forest assessment processes prior to deciding to use stewardship contracting. A long-term ten-year stewardship contract, treating approximately 2,000 acres per year, was developed several years later with the involvement of a local landscape-level collaborative group in the project planning and monitoring.

NF-D Institutional attributes

The USFS interviewees affirmed that the higher levels of the USFS, specifically the supervisor, regional and Washington offices, have supported the use of collaboration in stewardship contracts on NF-D. During the initial stewardship contract on NF-D there were high

levels of collaboration with local and state organizations which allowed increased sharing of

resources and staff for public outreach and involvement. Similar to NF-C, the initial stewardship

contract on this forest was initiated after the forest had collaboratively planned a watershed-level

project across multiple jurisdictions with state and local-level partners.

Nevertheless NF-D conducted its forest assessment and NEPA planning processes prior

to deciding to use stewardship contracting as the implementation tool on subsequent projects.

The USFS interviewees indicated a lack of guidance on how to incorporate collaboration into the

stewardship contracting process and how to overlay the processes with existing policies and

protocols as a fundamental challenge. One timber management officer stated,

> "I'm not sure calling something stewardship makes that big of a difference… we just
> kind of go through our normal NEPA process. I think we do NEPA now involving as
> many people that are interested and willing to participate. I don't know what the
> difference is anymore. We just simply call it a stewardship and do it the same way we do
> a non-stewardship project."

Several USFS and community interviewees argued the planning process used for all

projects, stewardship contract or not, should involve high levels of collaboration and the process

should not differ based on the implementation tool. One environmentalist interviewee

proclaimed,

> "They should do collaboration on any project where it's warranted. … if the NEPA
> process is done properly where the public is involved, it's an honest attempt to really say
> what the impacts are, and the public gets a chance to comment on the EA or EIS, then the
> NEPA process is sufficient for stewardship projects. On a bad NEPA process where they
> shortcut steps and just aren't honest in their assessment of the impacts - that's bad no
> matter whether its stewardship or not."

NF-D has developed strong relations across multiple agencies, as well as the

communities it works with. The forest generally uses high levels of outreach to communities,

including local government officials, community organizations, and neighboring property

owners. USFS line officers discussed how they have had high levels of public involvement in all

planning processes but some USFS and community interviewees identified there has been less outreach and public involvement at the local project-level than there was during the initial stewardship contract. Non-USFS interviewees attributed this to decreased levels of coordination across organizations after the initial contract due to modified priorities of both the USFS and the partner organizations. Other non-USFS interviewees indicated staff transitions within the USFS, as well as its partners, also created a challenge to continuing collaborative projects and partnerships.

Most interviewees explained how NF-D has had increased levels of collaboration during a recently initiated long-term stewardship contract through their involvement with a local collaborative group focused on landscape scale forest restoration efforts. Some USFS line officers identified increased pressure at the supervisor and USFS regional levels to conduct the long-term stewardship contract limited the forest's ability to implement local-level collaboration. They tied this to an objection NF-D received from neighboring property owners and concerned environmental groups on a project associated with the long-term stewardship project. Other community and non-USFS partner interviewees believed this long-term contract had similar levels of collaboration to the initial contract because it incorporated a demonstration site, as well as considerable involvement from a local collaborative group.

All USFS interviewees explained how NF-D has used stewardship contracting because it provided greater opportunities and increased flexibility to achieve project objectives. Several USFS interviewees identified how the long-term stewardship contract has increased internal collaboration across ranger districts and leadership from the supervisor's office. One district ranger explained,

> "I tend to think of the long-term stewardship contract as a forest-wide effort, where we do things as a forest. So from that standpoint I don't even look at it as a district project, I look at it as a forest project."

Many within the forest's leadership see collaboration as a necessary component for successfully achieving landscape scale forest restoration.

NF-D Community Attributes

According to the interviewees, communities neighboring NF-D vary in their levels of trust in the USFS. In areas where the USFS has been involved with community CWPP development and forest planning they have developed good relationships. As one line officer explained,

> "You know it's a little different the further north you go. They're more likely to say 'why haven't you done this already, when are you coming?' while (further south) it's like 'why are you doing this?' or 'not in my backyard.' We don't get a lot of that here (up north) and so it's been a pretty good relationship. And a lot of the relationship building we do occurs not as a result of stewardship but as a result of working with them early on in developing their CWPP, working with the community during the planning process. And so we've already got a relationship developed with a lot of these communities ahead of time before we ever start contracting. And that's not to say that everybody likes everything that we do because not everybody is going to."

Several existing community collaborative groups were involved with both the initial stewardship contract and the more recent long-term stewardship contract on NF-D, indicating a strong level of social capital between the forest and the local communities. Through their partnership with multiple organizations the initial project included active involvement with the local community and neighboring property owners, as well as the development of a local watershed group including representatives from the state forest service, local fire chiefs, local environmental groups, and neighborhood organizations. The collaborative organization involving local community organizations has been involved in the development and monitoring of the long-term stewardship contract. According to the people interviewed, community and

stakeholders' understanding of forest management needs have increased as a result of the impacts of recent wildfires and the widespread effects of the mountain pine beetle, as well as the efforts of the multi-partner collaborative groups.

<u>NF-D Individual Attributes</u>

When a local state forester, who was working on the collaboratively-developed watershed project that the initial stewardship contract was based on, saw a request for proposals for stewardship contracts he introduced it to a district ranger on NF-D. He explained, "And so when this call came out I said we're kind of moving in that direction so I called (the district ranger) and said, hey let's do this here!" Similar to NF-C, the existing personal relationships and can-do personalities of the agency and non-agency partners created a greater opportunity for collaboration in the stewardship contracting process. The project coordinators for the initial stewardship contract provided leadership through their daily involvement and management across the multiple organizations involved in the project. Several champions of the project, including the project coordinator, were able to keep the momentum moving forward on the project. Yet, as was heard across all cases, some USFS staff had not been supportive of using collaborative projects and the associated outreach and involvement of the public. One line officer explained,

> "A lot of times personalities will dictate if collaboration can occur. So the USFS can, on high, from the chief to the regional forester, can say we need to collaborate and do the work. But if you have one person at a ranger district (who is against it) they can stymie it. So it's not always just the agency direction, the policy. It so many times comes down to personality. … it can be very frustrating to have a good direction, a good policy, good collaboration. But you can have one person just blow it out of the water. But on the other hand too, you can have someone who's the champion and they'll not break the rules but they'll find in the interpretation of their manual, oh yeah we can do that. Other people look at the same sentence and go well I don't know, I don't feel safe doing this. I might lose my job. So it can definitely work both ways."

<u>NF-D Outcomes</u>

NF-D has met the majority of the objectives associated with the stewardship contracts it has implemented. USFS and non-USFS partners agreed there were mixed results with the initial stewardship contract on NF-D because the proximity of the project to neighboring private lands led to some modifications of the forest management prescriptions. As one community partner explained,

> "I think by being in that community and opening the door to management again, because up until then the USFS wasn't doing any management, there were a lot of really good spinoffs from that (initial project). But we had to compromise so much on the prescriptions …And so if you keep compromising, if your goal is to protect this community from a fire and you don't thin it enough then that goal was not met. It's good for forest health …kept everyone happy, but we didn't meet a lot of hardcore forest management objectives."

USFS interviewees explained the subsequent stewardship contracts, including the long-term stewardship contract, have been better able to meet forest management objectives through collaborative processes and asserted that the long-term stewardship contract has provided NF-D with an opportunity to achieve more objectives across a larger area.

Administratively, USFS interviewees identified that although NF-D has seen increased costs related to the service component of the stewardship contracts it has realized savings in the contract preparation and collaborative outreach and management processes. In addition, timber management personnel and line officers have found this contract has not drastically impacted their existing timber program. The initial stewardship contract increased the subsequent inter-agency partnerships because of the relationships developed during the project.

Interviewees identified several ways community objectives have been met through the use of stewardship contracts. The initial stewardship contract provided an opportunity to introduce forest management back to a community which had not witnessed it in over a decade.

NF-D was able to develop increased support and understanding for forest management through collaboration during the implementation of this stewardship contract. Interviewees explained how one ranger district has received a lot of positive feedback from local community members on the completed long-term stewardship contract treatments. Another district had disputes with local community members and some collaborative partners because of disagreements on the prescriptions being used in the long-term stewardship contract. The district ranger noted the positive side of this dispute was that it led to modified prescriptions and increased outreach on subsequent treatments.

Although social community benefits are being realized many interviewees asserted the local economic benefits are not being fully recognized through stewardship contracting on NF-D. Although the initial and some subsequent stewardship contracts utilized local contractors, the long-term stewardship contract does not. In addition, a timber management officer criticized how much of the timber and biomass being removed was not being sold to local companies.

4.5. Case-study Comparison Results

An analysis across cases was conducted after all individual cases were analyzed to determine the overall findings of this research and whether the eight propositions were supported. The cross-case comparison found each of the four forests met the majority of their stewardship contract objectives. Nonetheless, there was a clear distinction in the overall number of objectives between the lower- and higher-level collaboration forests (Table 4.3). The collaborative forests achieved a greater number of stewardship contract objectives, including community social and economic objectives, than the forests with lower levels of collaboration, supporting Proposition 8.

All three of the institutional attributes propositions were supported by the analysis of the four case studies. The Forest Service Handbook requires collaboration in stewardship contracting processes but provides flexibility for the operational levels (i.e. national forest and ranger district levels) to determine the most appropriate means to collaborate with partners and the public. This flexibility provided the collaborative forests (NF-C and NF-D) an opportunity to identify innovative means for working with multiple partners and community members. These forests also had support from higher levels of the USFS in terms of leadership and resource provision to implement collaborative processes. In contrast this flexibility caused a great amount of uncertainty in how to implement collaborative processes on the non-collaborative forests (NF-A and NF-B). The non-collaborative forests did not have strong commitment and direction from higher levels of the USFS, or the security of resources such as funding and personnel to implement collaborative processes. The collaborative forests therefore identified greater levels of support for collaboration from the supervisor and regional offices than the non-collaborative forests. These findings support Proposition 1, even though all four forests identified the need for additional direction on how to implement collaborative stewardship contract processes.

Second, the willingness of the national forests to work with communities influenced the levels of collaboration in the case studies. Although all four forests revealed a moderate to high degree of involvement with local communities, the willingness of the collaborative forests to partner with other organizations and reach out to the public through collaborative processes indicates a greater willingness to work with communities, supporting Proposition 2. In addition, the collaborative forests recognized the benefits of collaboration outweighed the expected costs of implementing collaborative processes, supporting Proposition 3. These forests realized reduced transaction costs in the collaborative process through partnerships with non-USFS

Table 4.3. Summary of Contextual Factors Influencing Collaboration in Stewardship Contracting across Four Cases

Proposition	National Forest A	National Forest B	National Forest C	National Forest D	Proposition Supported?
1: Clear Support from Agency	-	-	+	+	Yes
2: Agency Outreach to Community	-	-	+	+	Yes
3: Perceived Benefits > Costs	-	-	+	-/+	Yes
4: Community Willingness	-/+	-/+	+	+	No
5: Social Capital	-/+	-/+	+	+	Yes
6: Prior Collaborative Experience	-	-	+	-/+	Yes
7: Strong Leadership	-/+	-	+	+	No
8: Number of Objectives	<5	<5	>9	>9	Yes

organizations to increase the levels of public outreach, identify contractors, as well as to implement and monitor the stewardship contract project. The non-collaborative forests both identified the perceived costs of collaboration as a major barrier. NF-D also identified the perceived costs as a barrier to using collaboration with smaller-sized stewardship contracts, even though it recognized the benefits of collaboration in larger-scale contracts. Interviewees indicated these forests did not perceive the additional time and personnel necessary to implement a collaborative process would result in different outcomes than the traditional NEPA process.

The case study comparison found only one of the community attribute propositions was supported. All four case studies indicated each of the communities associated with the forests had moderate to high levels of willingness to work with the USFS, therefore Proposition 4 was not supported. Nonetheless, only the communities with collaborative natural resource groups involved in the planning and implementation of stewardship contracts and the associated high levels of social capital had high levels of collaboration, supporting Proposition 5.

Both of the individual attribute propositions were supported in the case study comparison. Individuals with previous collaborative experience were only identified in the higher collaborative forests, thereby supporting Proposition 6. Individuals with strong leadership skills were identified in all four cases and therefore did not support proposition 7. Nonetheless, the non-collaborative cases these individuals were unable to initiate collaborative processes without support from the community and/or higher levels of the agency (i.e. the supervisor or regional office). The collaborative cases indicated the involvement of strong leadership from within the communities and the forests was an essential element for the implementation of the collaborative process in conjunction with agency support and community involvement.

4.5. Discussion

4.5.1. Theoretical Implications

Although collaboration is required during the stewardship contracting process, previous research for this dissertation found the levels of collaboration associated with stewardship contracting vary significantly across USFS regions. The existing collaborative governance literature is limited in its analysis of factors influencing the use of collaborative processes by government agencies, as well as the associated outcomes (Agrawal & Chhatre, 2011; Bellamy et al., 2001; Emerson et al., 2012; Hardy, 2010).

This chapter addressed these limitations through an analysis of four case studies – two national forests that had used collaborative stewardship contracting processes and two that did not – to identify the factors affecting the levels of collaboration associated with USFS stewardship contracts and the associated outcomes. The Institutional Analysis and Development (IAD) framework afforded a useful research design to simultaneously identify many nuances of the institutional, community, and individual attributes affecting levels of collaboration in stewardship contracts in the USFS Rocky Mountain Region (Region 2).

Institutional attributes alone cannot guarantee collaborative processes will be utilized in stewardship contracts; certain community and individual attributes are critical (Figure 4.3). The results reveal a combination of institutional, community, and individual attributes are essential for the use of collaboration in USFS stewardship contracting processes. These include institutional attributes of guidance and support, community attributes of high levels of social capital, and individual attributes of leadership, as outlined below.
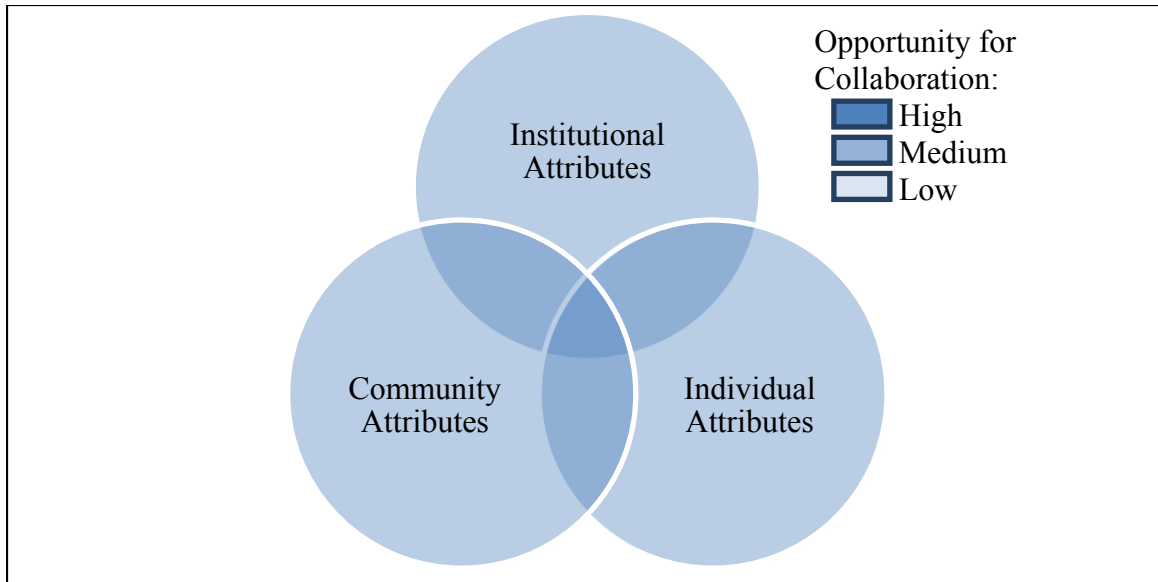
Figure 4.3. A Combination of Attributes Influence Collaborative Stewardship Contracting

First, the levels of collaboration are affected by the amount of support from higher levels of the USFS (i.e. district, supervisor, regional, and Washington offices) in terms of the training and resources necessary for collaborative processes, as identified by Ansell and Gash (2008), Baker and Kusel (2003), Sabatier et al. (2005) and Wondolleck and Yaffee (2000). The lower collaborative forests experienced pressure from higher levels of the USFS (i.e. the Supervisors and the Regional Offices) to implement long-term stewardship contracts which resulted in less collaboration due to shortened timeframes and lack of support for collaboration. The higher collaborative forests were provided the support from higher levels, as well as resources such as staff, time, and funding to implement long-term stewardship contracts. In addition, the collaborative forests had an improved understanding of the interdependence between the forest and communities and therefore a greater willingness to utilize collaborative stewardship contracting processes, as outlined by Gray (1985). By partnering with other entities the

collaborative forests were able to increase the levels and effectiveness of outreach to local

communities. This builds upon previous findings of this dissertation, as well as existing

collaborative governance literature which found an increased opportunity for collaboration

occurs when the USFS uses innovative and flexible outreach mechanisms (Ansell & Gash, 2008;

Carr et al., 1998; Davenport et al., 2007; Wondolleck & Yaffee, 2000).

Communities with higher levels of social capital are best prepared to engage in

collaborative forest management processes. The presence of community collaborative groups

involved with forest project planning and implementation provided a forum to develop stronger

relations and trust through more intensive dialogue and interactions related to forest management

through stewardship contracting. The involvement of community collaborative groups has been

identified as a critical component for collaborative forest management in previous studies

(Abrams & Burns, 2007; Charnley & Poe, 2007; Cheng & Fernandez-Gimenez, 2006; Crawford

& Wilson, 2005; McKinney & Field, 2008; Moote, 2008). Such community-based collaborative

groups increase the likelihood of strong forest-community relations (Cheng et al., 2011; Frentz et

al., 2000). The results presented in this chapter emphasize the importance of existing forest-

community relations, building on existing empirical literature which identifies the role of strong

forest-community relations in the development of successful collaborative processes (see for

example Abrams & Burns (2007) and Frentz et al. (2000)).

When forest-community relations are strong there tends to be greater support from the

agency and community members to work together (Frentz et al., 2000; Ostrom, 1990; Sabatier et

al., 2005; Steelman, 2010). These results show the decision to use collaboration was strongly

affected by its congruence with informal rules within the national forest and community.

Therefore when collaboration was commonly identified as a beneficial process, across the forest

and the community, rather than a costly and time-consuming endeavor, it was more likely to be implemented.

The results indicate the forest-community relations in the collaborative cases are also attributed to the leadership skills of individuals within both the agency and community, as identified in previous studies (Ansell & Gash, 2008; Emerson et al., 2012; O'Leary & Vij, 2012; Pagdee et al., 2006; Sturtevant et al., 2005; Wondolleck & Yaffee, 2000). This study found when institutional and community rules are consistent with the use of collaborative processes, individuals with strong leadership skills are equipped to take advantage of opportunities for collaboration, whether or not they have prior experience with collaboration. Community leaders also took advantage of the opportunity for collaboration by initiating dialogue with the USFS concerning collaborative forest management and vice versa, with leadership from within the agency facilitating dialogue with community stakeholders.

In this study the collaborative forests were able to identify multiple community and forest objectives that would not have been identified without these collaborative opportunities, as seen by the limited number of objectives identified by the non-collaborative forests. By identifying a greater number of community and forest objectives and leveraging resources with partners the collaborative forests were able to accomplish a greater number of mutually agreed upon project outcomes. The results confirm previous findings of this dissertation in which collaborative stewardship contracting processes achieved more forest management and community social and economic benefits than non-collaborative processes. Collaboration therefore has a critical role in achieving the policy intentions of stewardship contracting.

4.5.2. Further Research

The findings presented in this chapter provide the foundation for additional research on collaboration and stewardship contracting in three respects. First, this chapter focused on the factors influencing levels of collaboration associated with stewardship contracting in the USFS Rocky Mountain Region (Region 2). Additional research on the institutional, community, and individual attributes affecting the use of collaboration in other regions is warranted. Such research would provide an opportunity to discover similarities and/or differences across regions.

Second, the analysis reported in this chapter identified a lack of local contractors and infrastructure as a challenge to meeting the community objectives of stewardship contracting. A comparison across regions would provide greater insight to such challenges and the potential opportunities for collaborative processes to better meet community social and economic objectives.

Third, this study builds upon existing collaborative governance literature by identifying a combination of key attributes affecting levels of collaboration across a defined population of efforts. The qualitative grounded-theory approach used in this study provided an opportunity to identify these factors through a detailed exploration of the contexts influencing the use of collaboration on these forests. Such a detailed exploration is less attainable through quantitative deterministic approaches. Nonetheless, the use of a mixed methods, or portfolio approach as identified by Young et. al. (2006) provides the greatest opportunity for further understanding of the factors influencing the use of collaborative processes and collective action. The combination of key attributes identified in this research provides an opportunity for additional case studies, as well as large-N statistical research across similarly defined populations of collaborative forest management.

4.5.3. Significance for Policy and Practice

Based on these findings collaborative stewardship contracting provides an increased opportunity for the USFS to achieve multiple forest and community objectives where traditional timber contracts or service agreements may not. This chapter provides three important conclusions for policymakers and USFS managers to consider when determining where additional resources and support can be directed to improve the collaborative implementation of stewardship contracts.

First, although additional guidance from the USFS on the use of collaboration in stewardship contracts was identified as a critical need in a 2004 GAO report, this guidance is still lacking (U.S. General Accounting Office, 2004). Uncertainty on the levels of collaboration required, who should be involved, and how to incorporate collaborative processes with existing policies and forest requirements were identified as major challenges to collaborative stewardship contracts. Additional guidance and clarification are necessary if increased levels of collaboration associated with stewardship contracting is desired. This guidance could be a designation of minimal requirements for collaboration in stewardship contract proposals submitted to the USFS regional offices for approval. Additional guidance could also be provided through increased outreach to regions and forests on collaboration training opportunities available through the USFS National Partnership Office and the National Forest Foundation (USDA Forest Service, 2013; National Forest Foundation, 2013).

Second, the perception of costs outweighing the benefits of collaborative stewardship contracting was a prominent concern in the non-collaborative case studies. This concern can be addressed by Congress and the USFS through additional direction on how to balance stewardship contracting and collaboration with existing policies and mandates, as well as increased levels of

appropriations and resources for collaborative planning and implementation. Peer learning programs across forests and regions would also provide opportunities for forests to share information on the implementation, challenges, and benefits achieved through collaborative stewardship contracts.

Third, this research identifies a strong connection between the levels of collaboration and the attainment of forest and community objectives. The forests using collaborative approaches identified a greater number of objectives and were able to leverage resources with partners to attain project objectives when compared to the non-collaborative forests. An improved understanding of ecological, social and economic benefits of stewardship contracting projects and associated collaborative processes would provide an opportunity to develop more efficient and effective approaches to obtain these objectives. A project-based monitoring template and resources provided for monitoring would provide information necessary to understand the benefits and challenges of the stewardship contracting approach across efforts. This monitoring template would provide an opportunity to develop collaboratively-defined project objectives and coordinate an adaptive management approach, as outlined by Moote's recent guide "Closing the feedback loop: Evaluation and adaptation in collaborative resource management" (Moote, 2013). Alternatively, the programmatic-level monitoring of stewardship contracting conducted by the Pinchot Institute for Conservation could incorporate additional questions and analysis regarding both the objectives and outcomes of stewardship contracting processes with regard to the levels of collaboration.

Regardless if stewardship contracting legislation is re-authorized, increased requirements for collaboration in USFS policies, including the 2009 Collaborative Forest Landscape Restoration Act and the 2012 National Forest Planning Rule, require additional guidance and

resources for collaborative implementation. The recommendations outlined above provide an

opportunity for the USFS to improve its collaborative capacity and thereby improve the

efficiency and effectiveness of its collaborative forest management policies.

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CHAPTER FIVE: DISCUSSION

Over the past twenty years natural resource management in the U.S. has witnessed a shift from command-and-control government regulations toward collaborative management approaches to address resource issues across broader social and ecological landscapes (Ansell & Gash, 2008; Burns & Cheng, 2005; Conley & Moote, 2003; Hardy & Koontz, 2009; Klyza & Sousa, 2008). This shift has manifested in national forest management through the passage of several policies incorporating collaborative processes in USDA Forest Service (USFS) forest management activities since the early 2000's.

While these collaborative forest management policies have been approved through the passage of legislation, their adoption requires changes at the resource management level where the application of new procedures can be exceedingly challenging (Armitage et al., 2012; Butler & Koontz, 2005). The collaborative governance literature provides limited insight on which factors are most influential for the implementation of these collaborative forest management policies or whether the intended social and ecological outcomes are being achieved through collaboration (Bellamy et al., 2001; Cheng, 2006; Emerson et al., 2012; Hardy, 2010; van der Heijden, 2012). Increased pressure to implement collaborative forest management processes through legislative mandates and agency direction emphasize the need to understand the extent existing collaborative forest management policies are being implemented, the factors influencing their implementation, and the extent these efforts are meeting the policy intentions.

The research presented in this dissertation provides practical and theoretical insight to the adoption of collaborative forest management approaches by focusing on USFS implementation of stewardship-end-result contracting (stewardship contracting). The initial research phase

focused on the distribution of stewardship contracts across USFS regions over time, as outlined in Chapter Two. The use of USFS stewardship contracts increased significantly over a 13-year period, from 48 contracts in 1999 to a total of 1,064 contracts in 2011. This analysis found the distribution of contracts did not vary significantly across USFS regions indicating the stewardship contracting mechanisms have been widely adopted across the National Forest System. This finding suggests the factors influencing the use of stewardship contracts (i.e. guidance or incentives) do not vary significantly at the national or regional levels and provides an opportunity to investigate the adoption of collaboration across the population of stewardship contract efforts.

The second phase of this dissertation reported in Chapter Three analyzed the levels of collaboration and associated process indicators and outcomes of stewardship contracts across USFS regions and over time. Collaborative processes were used across the majority of the stewardship contracts analyzed in this research. The findings confirm four collaborative process indicators - the number of community roles, the number of interests involved, the number of outreach mechanisms, and who initiated the project – are strongly associated with collaborative processes. This analysis of collaborative process indicators, using a large population of collaborative and non-collaborative efforts, therefore builds upon the existing collaborative governance literature which has primarily been based upon empirical case-study analyses. The findings also reveal the stewardship contracting processes with higher levels of collaboration consistently had a greater number of forest management and community social and economic benefits than non-collaborative processes. Nonetheless, significant variation in the levels of collaboration across regions was identified.

The current collaborative governance literature is limited in its analysis of factors affecting the implementation of collaborative processes (Ansell & Gash, 2008; Bellamy et al., 2001; Emerson et al., 2012; Hardy, 2010). The third phase of this dissertation, outlined in Chapter Four, incorporated a detailed case study analysis of four forests - two with collaborative processes and two without - within one USFS region to identify factors influencing the levels of collaboration in stewardship contracts and the related outcomes. The Institutional Analysis and Development (IAD) framework provided a valuable research design to simultaneously analyze the institutional, community, and individual attributes affecting levels of collaboration in stewardship contracts in the USFS Rocky Mountain Region (Region 2). The results reveal institutional attributes (e.g. the passage of legislation) alone cannot guarantee collaborative processes will be utilized in stewardship contracts. A combination of institutional, community, and individual attributes are fundamental to the use of collaboration in USFS stewardship contracting processes. These attributes include high levels of social capital within the community and between the community and forest, strong leadership within the community and agency, as well as guidance and support from higher levels of the agency. The case study analysis confirmed the collaborative stewardship contracting processes achieved more forest management and community social and economic benefits than non-collaborative processes. Collaboration therefore has a critical role in achieving the policy intentions of stewardship contracting.

The USFS must provide additional guidance on the use of collaboration in stewardship contracting and similar collaborative forest management policies for the intentions of these policies to be effectively achieved. Uncertainty on the levels of collaboration required, who should be involved, and how to incorporate collaborative processes with existing policies and forest requirements were identified as major challenges to collaborative stewardship contracts.

Without this guidance forests are likely to determine the costs of collaborative processes will outweigh the resulting benefits. The collaborative forests in this phase of the research realized greater benefits through the collaborative implementation of stewardship contracts.

This dissertation advances the existing collaborative governance literature by quantitatively analyzing collaborative process components and outcomes across a large population of similar efforts, while providing a detailed qualitative analysis of the factors influencing the adoption of collaborative processes and the associated outcomes. Additional comprehensive evaluations of the adoption of collaboration, the factors associated with its use, and its role in achieving the policy intentions are necessary to determine the first- and second-tier influences and outcomes of collaborative processes (Armitage et al., 2007; Klyza & Sousa, 2008; Ostrom, 2007; Poteete & Ostrom, 2008). Such comprehensive evaluations of collaboration can improve its application in policy and management and prevent it from being falsely identified as a panacea to address all social-ecological management issues.

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APPENDIX A: CASE STUDY INTERVIEW GUIDES

<u>Non USFS Interviews</u>

Stewardship contracting was introduced as a new way to meet both forest management and community objectives (through several authorities). Collaboration between the Forest Service and community stakeholders is encouraged in the development and implementation of stewardship contracts.

We are doing this research to

1. See how stewardship contracting is being used and implemented across national forests in this region;

2. identify the factors influencing the decision to use or not use collaboration in stewardship contracting;

3. and identifying the outcomes of these contracts.

1. Please provide general information on this stewardship contract

The initial intent was to focus on a single stewardship contract for each NF. After initial discussions we have changed the focus to look at the overall use of stewardship contracts/ public involvement in each NF. Please indicate if there are differences across stewardship contracts, if any.

   a. Describe your involvement with stewardship contracting on the _____ NF? (What was your role? When did you become involved?)

   b. Describe the stewardship contracts for me.

      i. What have been the main objectives of using the stewardship contract/ agreement? (forest management, community, and/or administrative objectives) Differences across contracts?

     ii. Can you describe the process used to prioritize the objectives of this contract/ agreement? (Is the process different than timber/ service contracts?) Differences across stewardship contracts?

2. Resource conditions (biophysical attributes)

   a. What has the level of agreement been on the condition of the forest resources across agency and stakeholder interests? (high/ low agreement?) (high/ low level of information available?)

3. Identify the history of relations between the forest service and the local community. (community attributes)

   a. What has the history of relations between the National Forest and local community been? (Has it generally been positive or negative?)

   b. To what degree is the forest service trusted in the community? (Does the USFS meet community expectations? -- for resource management, economic stability, professionalism, expertise, obtaining community input)

   c. Was there an established collaborative natural resources group involved with the USFS prior to the development of the stewardship contract? Did they have a role in the development of the contract? Please explain.

4. Identify characteristics of person(s) leading this stewardship contract (Individual attributes)

   a. Who has led the initiation and implementation of stewardship contracts? (a specific person/ a few people)

b. Did the person/ people overseeing this stewardship contract process see stewardship contracting and collaboration // Is it seen // as a new opportunity to achieve objectives?

c. Was the stewardship contract / collaborative process led effectively?

d. Did the person/ people overseeing this stewardship contract process have previous experience and/or training in collaboration?

5. What was the degree of Collaboration?

a. In your view and experience, what are the primary purposes of collaboration?

b. What level of collaboration has been used in …

i. the initiation and development of stewardship contracts on this forest? (none, low – very high)

ii. In the implementation and/or monitoring? (none, low – very high)

c. Have all the interests been involved who should have been involved? What interests were involved? Were any missing?

d. What type of public outreach has been used for stewardship contracts? When did this outreach occur?

e. Did the community and/or stakeholders have a role in developing or implementing any of the stewardship contracting processes? (planning, Nepa comments, development of alternatives, implementation, monitoring, technical information, etc.)

f. Who facilitated this process? (USFS, non-USFS, jointly facilitated, third party neutral, none)

6. Identify the level of collaboration

    a. Have any collaborative processes have been used on this forest to involve stakeholders in management over the past five years? How many? (None, 1, <5, >5, >10)

    (Collaborative processes are defined in this study as the inclusion of three or more diverse interests in two or more meetings to pool resources and/or share knowledge to achieve common objectives and reduce levels of conflict.)

    b. How active is the forest service in the community (i.e. involvement in community fairs, school events, etc.)? (no engagement to active engagement …) Please explain.

7. What were the outcomes of this stewardship contract? (Outcomes)

    a. Were /Are the forest management objectives being met? To what extent? What forest management objectives have been achieved?

    b. Have community needs/ objectives been met? To what extent?

        i. What have the social outcomes been? (increased/ decreased trust, development of long-term partnerships, increased knowledge, addressed/ incorporated issues important to the community, increased sense of project ownership within community)

        ii. Has the stewardship contract met community economic objectives? (increased local employment, built local capacity to partner w/ agency, contract matched local capacity (i.e. infrastructure, local workforce, etc.), pooling of resources (i.e. information, funding, manpower, etc.))

    c. Has the stewardship contract reduce or increase overall financial costs of restoration? Did it increase the pooling of resources from non-USFS sources?

Stewardship contracting was introduced as a new way to meet both forest management and community objectives (through several authorities). Collaboration between the Forest Service and community stakeholders is encouraged in the development and implementation of stewardship contracts.

We are doing this research to

1. See how stewardship contracting is being used and implemented across national forests in this region;

2. identify the factors influencing the decision to use or not use collaboration in stewardship contracting;

3. and identifying the outcomes of these contracts.

1. General information on stewardship contracting on _____ NF

   The initial intent was to focus on a single stewardship contract for each NF. After initial discussions we have changed the focus to look at the overall use of stewardship contracts in each NF. Please indicate if there are differences across stewardship contracts, if any.

   a. Describe your involvement with stewardship contracting on the ____ NF? (What was your role? When did you become involved?)

   b. Describe the stewardship contracts for me.

      i. About how many stewardship contracts have been used on this forest?

      ii. What have been the main objectives of using the stewardship contract/ agreement? (forest management, community, and/or administrative objectives) Differences across contracts?

      iii. Can you describe the process used to prioritize the objectives of this contract/ agreement? (Is the process different than timber/ service contracts?) Differences across stewardship contracts?

2. Resource conditions (biophysical / community attributes)

    a. What has the level of agreement been on the condition of the forest resources across agency and stakeholder interests? (high/ low agreement?) (high/ low level of information available?)

3. Identify the history of relations between the forest service and the local community. (community attributes)

    a. What has the history of relations between the National Forest and local community been? (Has it generally been positive or negative?)

    b. To what degree is the forest service trusted in the community?

    c. Was there an established collaborative natural resources group involved with the USFS prior to the development of any of the stewardship contracts? Did they have a role in the development of the contract? Please explain.

4. Identify characteristics of person(s) leading this stewardship contract (Individual attributes)

    a. Who has led the initiation and implementation of stewardship contracts? (a specific person/ a few people)

    b. Did the person/ people overseeing this stewardship contract process see stewardship contracting and collaboration // Is it seen // as a new opportunity to achieve objectives?

    c. Was the stewardship contract / collaborative process led effectively?

d. Did the person/ people overseeing this stewardship contract process have previous experience and/or training in collaboration?

5. What was the degree of Collaboration?

   a. In your view and experience, what are the primary purposes of collaboration/ collaborative natural resource management?

   b. What level of collaboration has been used in …

      i. the initiation and development of stewardship contracts on this forest? (none, low – very high)

      ii. In the implementation and/or monitoring? (none, low – very high)

   c. Have all the interests been involved who should have been involved? What interests were involved? Were any missing?

   d. What type of public outreach has been used for stewardship contracts? When did this outreach occur?

   e. Did the community and/or stakeholders have a role in developing or implementing any of the stewardship contracting processes? (planning, Nepa comments, development of alternatives, implementation, monitoring, technical information, etc.)

   f. Who facilitated this process? (USFS, non-USFS, jointly facilitated, third party neutral, none)

6. Identify the level of support to use collaboration and/or stewardship contracting from the National Forest and higher levels of the USFS (institutional characteristics)

   a. What level of support does the NF and/or Ranger District have from higher levels of the Forest Service to use collaboration and/or stewardship contracting to

achieve forest management objectives (sufficient resources, incentives, clear

direction)? At what level(s) do you have or not have support?

b. To what extent was the decision to use stewardship contracting mechanisms,

instead of other contracts or agreements, based on the expectation it would

provide more benefits? (getting work done on ground, greater public acceptance,

lower costs, etc.)

c. To what extent was the decision to use / not use a collaborative process based on

the expectation it would provide more (or less) benefits than other processes?

(getting work done on ground, greater public acceptance, lower costs, etc.)

d. Have any collaborative processes have been used on this forest to involve

stakeholders in management over the past five years? How many? (None, 1, <5,

>5, >10)

e. How active is the forest service in the community (i.e. involvement in community

fairs, school events, etc.)? (no engagement to active engagement …) Please

explain.

7. What were the outcomes of this stewardship contract? (Outcomes)

a. Were /Are the forest management objectives being met? To what extent? What

forest management objectives have been achieved?

b. Have community needs/ objectives been met? To what extent?

i. What have the social outcomes been? (increased/ decreased trust,

development of long-term partnerships, increased knowledge, addressed/

incorporated issues important to the community, increased sense of project

ownership within community)

ii. Has the stewardship contract met community economic objectives? (increased local employment, built local capacity to partner w/ agency, contract matched local capacity (i.e. infrastructure, local workforce, etc.), pooling of resources (i.e. information, funding, manpower, etc.))

c. Has the stewardship contract reduce or increase overall financial costs of restoration? Did it increase the pooling of resources from non-USFS sources?