



The emergence of network governance in U.S. National Forest Administration: Causal factors and propositions for future research

Jesse Abrams*

Warnell School of Forestry and Natural Resources, Savannah River Ecology Laboratory, University of Georgia, 180 E Green St., Athens, GA 30602, USA



ABSTRACT

Since its establishment in the early twentieth century, the U.S. Forest Service has periodically evolved its approach to decision-making and management for the millions of hectares of national forest under its authority. Starting in the 1990s, a complex governance regime emerged in which non-Forest Service entities—such as state and other federal agencies, non-governmental organizations, public utilities, rural communities, and others—contribute resources and legitimacy to processes that include decision-making, project funding and implementation, monitoring, and changes to management rules and procedures. This review analyzes the origins of an emergent governance regime and provides a framework for analyzing contemporary patterns of national forest administration, structured around three key elements. Legitimacy is a necessary component of any continued public resource management regime, and in the current period this resource is (re)constructed through networks of governmental and non-governmental actors, with collaborative processes playing a central role. Capacity is needed to implement and evaluate resource management decisions, and the capacity of the Forest Service is frequently augmented through partnerships with non-federal entities. Institutional innovation is often needed to align Forest Service constitutional and operational rules with socially legitimate management actions, and this process may occur most often in situations characterized by the involvement of network actors. Five propositions are presented as contributions to a research agenda on national forest governance. This framework contributes to a better understanding of the causes and consequences of environmental governance changes affecting federal forest landscapes, key ecosystem processes, and the livelihoods of human communities throughout the U.S.

1. Introduction

The U.S. Forest Service (USFS), a federal agency within the Department of Agriculture, manages 78 M hectares (193 M acres) of land across 43 states and the territory of Puerto Rico. In addition to its National Forest System unit (the focus of this review), the agency includes research, state and private forestry, international programs, and administrative units. The managerial legacy of the present-day National Forest System and of the USFS can be traced back to a Progressive Era belief in the need for government intervention to counteract the destructive tendencies of timber companies on private lands and of livestock grazers unable to avoid “tragedy of the commons”-type scenarios in the fragile landscapes of the arid West (Clary, 1986; Dana and Fairfax, 1980). That this extensive system of federal ownership and management continues to persist more than a century after its founding can be seen as a reflection of its ability to adapt to changing social and political pressures (Salka, 2004). Changes to USFS governance have included both moments of paradigmatic policy shifts as well as sustained periods of slower incremental evolution (Cashore and Howlett, 2006, 2007).

The period following the last paradigmatic shift within the USFS—the shift to ecosystem management in the early to mid 1990s—has included extensive experimentation with new approaches

to collaborative, community-based, and network governance (Wondolleck and Yaffee, 2000) and these approaches have been increasingly enshrined in congressional, regulatory, and programmatic policies (Butler et al., 2015; Predmore et al., 2008). Although individual elements of emerging national forest governance have been studied in great detail, there have been few attempts to theorize the relationship between these trends and the broader institutional evolution of the USFS as an agency (see Winkel, 2014 for an exception). This is an important lacuna for both practical and theoretical reasons. From a practical standpoint, changes in national forest governance potentially affect environmental outcomes across tens of millions of hectares as well as economic outcomes for thousands of communities that rely on national forests for job opportunities, access to timber and non-timber forest products, drinking water, recreation, and other environmental goods and services. Theoretically, it is important to understand shifts in the relative authority and influence of the USFS and of non-USFS actors as representative of broader processes of institutional change and to develop a common framework for understanding the diverse dynamics affecting U.S. national forest governance. The purpose of this manuscript is to propose a framework that reconciles diverse literatures analyzing issues of policy and institutional changes on national forestlands. This framework emphasizes the functions of hybrid networks of USFS managers with non-USFS actors in contributing

* Corresponding author.

E-mail address: jesse.abrams@uga.edu.

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Table 1
Comparative timeline of the major policy paradigms in U.S. Forest Service history, with Social Forestry presented as a contemporary manifestation of Ecosystem Management.

	Custodial	Sustained yield	Rational planning	Ecosystem management	Social forestry
Prevailing political regime	Progressive Era	Interest Group Liberalism	Pluralist	Neoliberal	Neoliberal
Paradigmatic policy	Organic Act of 1897	Multiple Use Sustained Yield Act of 1960	National Forest Management Act of 1976	Northwest Forest Plan (1994)	Stewardship End-Results Contracting Authority (limited national authority granted 2003; permanent authority granted 2014)
Management emphasis	Fire prevention, watershed improvement, limited timber harvesting	Aggressive timber production	Planning to reconcile pressures to produce various commodity and non-commodity values	Conservation of sensitive species and habitats while continuing to produce resource outputs	Ecosystem restoration, fire hazard reduction
Basis for legitimacy	National conservation mission, fire protection, expert status of rangers	Timber production to meet national demand, rural economic development	Public involvement, planning and analysis of alternatives	Science-based conservation of important ecological values	Collaborative decision-making
Relative administrative capacity	Limited relative to the extent of national forest area	Increased due to "iron triangle" and timber receipts	Increased due to additional planning and analysis needs	Reduced due to lack of political constituency and falling timber receipts	Reduced due to wildfire suppression expenditures

key governance resources that allow the agency to address increasingly complex managerial scenarios with decreasing stocks of capacity and autonomy.

A voluminous amount of prior research has theorized and documented the shift toward network governance models across a range of public sectors (e.g., Alexander et al., 2016; Butler and Goldstein, 2010; Fischer and Jasny, 2017; Moore and Westley, 2011; Nowell and Steelman, 2013; O'Toole, 1997; Paudel et al., 2010; Provan and Kenis, 2008; Schoon et al., 2016; Weber and Khademanian, 2008). Network governance refers to an approach in which authority and capacity for decision-making and implementation are situated in interdependent relational networks among heterogeneous actors, rather than wholly dominated by particular agencies or sectors (Keast, 2016). This model is generally associated with neoliberal reforms based in narratives of the ineffectiveness of wholly state-centered public administration (Eikenberry and Pautz, 2008; Jessop, 2013; Milward and Provan, 2000). Government collaborations and partnerships with nonprofit and private sector entities are central to this model of new public governance, as these augment limited state resources, contribute expertise, and allow for creative problem-solving and legitimation outside of traditional state channels (Gazley and Brudney, 2007). Although a great deal of prior research has investigated the rise of public lands collaboration and partnerships, there has been scant attention to the specific institutional drivers of change and consequent governance outcomes within the contemporary USFS. The failure (to date) of campaigns to divest federal lands and deed them to states, counties, and private owners (see, e.g., Schmitt, 2018) may signal divergence from the most sharply neoliberal visions of federal land management, but this should not imply that the USFS has been unaffected by macro-institutional forces. McCarthy (2005), for example, traces a direct line between processes of neoliberalization and the rise of community forestry approaches on U.S. public lands. Given the USFS' legacy as an expert-driven agency initially designed to be insulated from local and political pressure (Sabatier et al., 1995), there is a need to closely interrogate the drivers, specific contours, and potential outcomes of its shift from federally dominated to hybrid network governance.

2. Background

The history of the USFS as an agency is inseparable from the legacy of Gifford Pinchot, the charismatic Progressive Era visionary who was responsible for wresting federal forest reserves from a corrupt General Land Office within the Interior Department and transferring them to U.S. Department of Agriculture (USDA) control (Carpenter, 2001; Clarke and McCool, 1996; Dana and Fairfax, 1980). The reserves themselves were carved out of federal public domain land and designated by presidential decree under the authority provided by the 1891 Forest Reserve Act (Hays, 1959). The 1897 Organic Act established that the purpose of these reserves would be to improve the forest, furnish stable flows of timber, and protect watersheds. Under Pinchot's leadership, these and other USDA forestlands (such as those established under the auspices of the Weeks Act of 1911) would become known as national forests, and Pinchot himself became the first chief of the nascent U.S. Forest Service (Steen, 2004). Pinchot's vision was of an agency staffed by trained professionals, beholden to neither outside political interests nor local economic interests, who would make rational forest management decisions for the public good based on scientific forestry principles (Clary, 1986; Sabatier et al., 1995). The young USFS was known for its single-minded dedication and focus on rationalizing forest management and thereby rescuing forests from the destruction and degradation associated with prevailing timbering and grazing practices (Clary, 1986). Organizational and cultural influences created an agency that was at the same time decentralized (with local-level rangers afforded wide decision-making latitude) and conformist (Kaufman, 1960; Steen, 2004).

Several prior works have documented the seemingly epochal

changes that the USFS has undergone since its inception. Many treatments (Johnson, 2007; Kennedy and Quigley, 1998; Moseley and Winkel, 2014; Winkel, 2014) recognize at least four broad periods in the agency's history (Table 1): 1) the “custodial period” from roughly the founding of the USFS in 1905 until World War II, during which relatively little timber management occurred and the agency was primarily dedicated to setting up primitive systems of wildfire surveillance and suppression; 2) the “sustained yield” period between World War II and roughly 1970, in which the USFS greatly increased its timber harvest and instituted ever more intensive methods for maximizing the production of timber; 3) the “rational planning” period that began with the passage of the National Environmental Policy Act (NEPA), signed into law on January 1, 1970, and continued with the Resources Planning Act of 1974 and National Forest Management Act (NFMA) of 1976, all of which posited bureaucratic planning, analysis, and public involvement procedures as a solution to social controversy regarding the management of federal resources; and 4) the “ecosystem management” period that began in the early 1990s, emphasizing a more integrated management approach in which science-based management for water, wildlife, and sensitive species at an ecosystem scale took on greater prominence.

The transitions between these periods were driven by numerous internal and external influences. For example, the exhaustion of private timber supplies during World War II led to the national forests becoming a critical source of wood fiber for the forest industry; public demands for greater transparency and environmental sensitivity during the environmental era of the 1970s and a lawsuit that successfully challenged the practice of clearcutting on federal forests, complemented by the influence of prior governmentwide legislation such as the Administrative Procedures Act and Freedom of Information Act, ushered in the rational planning period; and ecosystem management emerged with the internal diversification of USFS staff and leadership and after activists successfully used 1970s-era environmental laws to challenge the USFS' timber production program in court. As Winkel (2014) details, these latter shifts were associated with substantial changes in the relative power of the USFS and of outside interests, particularly environmental advocacy organizations.

Changes to national forest governance since the shift to ecosystem management have been somewhat more subtle, incremental, and spatially and temporally uneven (Moseley and Charnley, 2014). Although contemporary national forest management continues to reflect many of the core ideals of ecosystem management (Predmore et al., 2008), some authors (Abrams et al., 2019; Johnson, 2007; Maier and Abrams, 2018; Winkel, 2014) identify “social forestry” as a policy paradigm that represents the contemporary manifestation of ecosystem management. Social forestry in the U.S. context is characterized by governance through decentralized “participatory networks” (Winkel, 2014, p. 90), in contrast to the model of expert-driven governance that was typical of prior periods (Cortner and Moote, 1999) and by the central role of social consent (sometimes called social license to operate (Edwards et al., 2016)) to the successful implementation of federal forest management. The importance of participatory networks is seen in the emergence of place-based collaboration as an increasingly institutionalized approach to conflict resolution and decision-making for national forest issues and in the widespread use of partnerships within which non-USFS entities take on tasks that were traditionally performed by the agency itself (Moseley and Winkel, 2014; Seekamp et al., 2018; Seekamp and Cerveny, 2010). From a governance perspective, the expanded influence of such network actors—most of whom possess no formal authority over federal lands—represents the crux of the concept of social forestry. The importance of these networks, it is argued here, lies in their functional roles compensating for the USFS' declines in organizational legitimacy and capacity and in participating in institutional adaptation of the agency. This argument is further developed here through a synthesis of research on the three key elements of legitimacy, capacity, and institutional innovation and their

contributions to contemporary forest administration on individual units (e.g., national forests, ranger districts) of the national forest system. The framework presented is intended both to provide insights into the drivers and dynamics of contemporary national forest governance and to further advance theorization of social forestry as a concept.

2.1. The rise of collaboration as a response to declines in organizational legitimacy

Legitimacy is an indispensable element of any forest governance regime, whether state-led, grassroots, or networked (Cashore et al., 2010). Organizational legitimacy is defined as “the perceived appropriateness of an organization to a social system in terms of rules, values, norms, and definitions” (Deephouse et al., 2017). Issues of legitimacy are central to the USFS given its control of vast expanses of land containing large quantities of economic and ecological resources, its influence over the economic and environmental wellbeing of hundreds of nearby communities, and its role in preventing and responding to natural disasters such as wildfire. Legitimacy concerns were prominent even in the earliest days of federal forestry; many western interests objected to the reservation of public domain land under federal control, and a young USFS, largely composed largely of Yale-educated foresters, was challenged on its authority to control grazing and fire on federal lands (Dana and Fairfax, 1980). The early USFS found justification for its continued stewardship partly through its application of scientific forestry and partly through its fire protection role—the latter particularly following the “big burn” of 1910 (Pyne, 1982).

Carpenter (2001) observes that a young USFS was able to establish bureaucratic autonomy as a result of its high levels of legitimacy and its support among a diverse network of political and civil interests. Although few studies directly attempted to measure the agency's legitimacy for most of its history, it is believed that the USFS enjoyed public support during the sustained yield period, a product of the visibility of the Smokey Bear campaign, the agency's scientific authority, and the public perception of the USFS as a professional, efficient, “can-do” agency (Clarke and McCool, 1996; Hays, 2009; MacCleery, 2008). However, the intensive timber production model of the sustained yield era came at the price of other valued attributes of national forests, including outdoor recreation opportunities, the conservation of unspoiled landscapes, and wildlife habitat (Hirt, 1994). Indeed, the loss of prized hunting opportunities motivated the 1973 *Monongahela* lawsuit that successfully challenged clearcutting practices on national forests and led to the passage of NFMA (Dana and Fairfax, 1980; Newfont, 2012). As an agency accustomed to high levels of both autonomy and organizational legitimacy, the USFS was slow to adapt in the face of increasing social demands for the conservation of ecological values, scenery, and recreational opportunities (Hays, 2009; Hirt, 1994; Jones et al., 1995).

Across the U.S. as a whole, the 1970s ushered in an era of pluralism¹ in which federal agencies lost a substantial measure of autonomy from the public and interest groups, even as they expanded their formal authority in many cases (Hoberg, 1992, 2001). By the 1980s, interest groups and individuals learned to take advantage of the public involvement and potential points of veto power provided by environmental-era legislation to slow and even stop USFS projects they found objectionable. The use of administrative appeals (a formal objection to a project decision that triggers a higher-level administrative review, later replaced by pre-decisional objection processes) increased steadily between the 1970s and 1990s, as did lawsuits challenging various aspects of USFS decision-making (Broussard and Whitaker, 2009; Jones

¹ Hoberg (1992) describes the pluralist regime as characterized by a restriction on agency discretion and an expansion of the ability of diverse external interests to insert themselves into the policymaking process, including through an expanded access to judicial review.

and Taylor, 1995; Miner et al., 2010; Mortimer et al., 2004). Appeals, as well as associated citizen lawsuits and challenges from other regulatory agencies, ultimately frustrated the USFS' ability to efficiently carry out a program of largely timber-oriented work² (Manning, 2005). The high level of “project risk” (Stern et al., 2014) faced by the USFS reflects the broad discretion afforded the agency under national forest legislation (Mortimer, 2002), the multiple, often-conflicting, requirements and mandates contained within the diverse mix of national forest policies, and the abundance of opportunities for non-USFS stakeholders to contest agency decisions.

A proliferation of veto points that impedes the efficient execution of a program of bureaucratic work, termed “vetocracy” by Fukuyama (2014), is characteristic of many federal agencies in the pluralist era but perhaps none more so than the USFS. In the early 1990s, these veto points were successfully used by environmental advocates to challenge national forest management in the Pacific Northwest within the range of the Northern Spotted Owl, eventually contributing to fundamental changes across the national forest system as a whole. Combined with a diversifying view of proper forestry practices within the agency and the environmental orientation of the Clinton administration, these pressures served to usher in the period of ecosystem management (Hoberg, 2001). The frequent exercise of veto power by environmental advocates and by various other interests represents the opposite of the kind of unquestioned exercise of authority associated with high organizational legitimacy (Carpenter, 2001; Deephouse et al., 2017). Recent studies of USFS staff show that avoiding appeals and litigation—especially but not exclusively from environmental advocates—is often a prime concern when developing environmental analyses under NEPA (Mortimer et al., 2011; Stern et al., 2014), suggesting that national forest management decisions are strongly influenced by the level of consent among interested publics.

The USFS faced a difficult environment for securing legitimacy under the ecosystem management period, as its traditional allies (rural resource-dependent communities and their elected representatives) opposed the movement away from a timber emphasis, even as environmental advocates continued to view the agency with distrust (Cortner and Moote, 1999). The USFS thus faced both what Hirsch and Andrews (1984) call “performance challenges” (failure to deliver on a stated mission) and “value challenges” (questioning of the mission itself): while traditional commodity communities expected the agency to produce high levels of wood products (and to resist adopting a more environmentally-oriented management model), the environmental community saw the agency's commodity production role as fundamentally flawed. At the same time, diverse communities of place, interest, and identity at various scales became more effective in advocating for their own interests on federal forestlands (Wondolleck and Yaffee, 2000). By the dawn of the ecosystem management period (see Table 1), an agency that was formerly characterized by high levels of autonomy, authority, and internal cohesion in service to a relatively clear mandate was instead characterized by conflict, confusion regarding its mission given the layering of multiple policies and mandates, and pressure from diverse publics and agency professionals (Jones et al., 1995). Tipple and Wellman (1991) describe the agency as caught between its longstanding imperatives of efficiency-economy and emerging needs to ensure responsiveness-representativeness to a broader set of publics.

² The expansion of formal veto points during the rational planning period came in addition to the various formal and informal means by which the beneficiaries of previous USFS managerial models (primarily resource industries and resource-based rural communities) intervened in defense of their own interests. Examples of the latter include pressuring elected representatives to insert favorable policy language in must-pass legislation, applying pressure on members of the upper echelons of the USFS hierarchy, and direct intervention with local USFS decision-makers (Bolduan, 1990; Jones and Callaway, 1995).

The rise in public lands-focused place-based collaborative processes and organizations since the 1990s suggests that USFS organizational legitimacy, originally based in the professional authority of agency managers and in a network of supporters that helped ensure agency autonomy (Carpenter, 2001), came to be rebuilt on a place-by-place basis through a different kind of network: one in which various governmental and non-governmental entities utilize voluntary deliberative processes to establish areas of consensus within which the USFS is granted the conditional social license to operate. Indeed, it has been argued that the continued threat of a reversion to vetocratic stalemate is a prime motivating factor behind continued support for collaborative processes on the part of both the USFS and network partners (Maier and Abrams, 2018; Nie, 2008). The exercise of veto power is therefore considered to result from cases in which trust, consent, or legitimacy have not been established. Research on collaborative processes in Oregon shows that improving trust and relationships with stakeholders was the most common motivation for USFS staff to engage in collaborative processes, and that the most important desired outcome of collaboration among agency staff was the ability to implement projects (Davis et al., 2017). Collaboration is regularly emphasized in policy and programmatic documents, including the 2012 NFMA administrative regulations and the 2015–2020 Strategic Plan (USDA Forest Service, 2015a), as well as in laws such as the Collaborative Forest Landscape Restoration Act (Butler and Schultz, 2019).

An important characteristic of grassroots collaborative organizations is their largely informal nature. In spite of the existence of a small number of cases that received congressional authorization or that operate under the auspices of the Federal Advisory Committee Act (FACA), the vast majority of collaborative processes have functioned with little to no formal decision-making authority³ (Moseley and Winkel, 2014). The USFS retains formal decision-making authority in nearly all cases and continues to be subject to laws such as FACA that may limit its ability to engage in some collaborative efforts (Butler, 2013; Schultz et al., 2012; Selin et al., 1997). The persistence and continued influence of collaboration in national forest administration in spite of this lack of formal authority, as well as the discursive recognition of collaboration in nearly every recent forest policy change, suggests that collaboration performs an important functional role in contemporary national forest management. While recognizing the multiple benefits of collaborative processes (such as conflict resolution, social learning, creative problem-solving, and the building and strengthening of social capital (Wondolleck and Yaffee, 2000)), their value to the USFS in rebuilding legitimacy from the ground up—and the implied promise of a constructive escape from the perils of vetocracy—may help to explain the outsized level of USFS political, discursive, and financial support that has been invested in collaboration since the 1990s. Importantly, the policy content of many social forestry-oriented policies has been to codify modest limitations on veto opportunities in cases where collaborative processes are used (see, e.g., Healthy Forests Restoration Act of 2003).

In spite of this level of discursive and policy support, the institutionalization of collaborative processes remains uneven across the national landscape (Butler, 2013). An important complicating factor is

³ Collaborative groups normally have no formal authority regarding most managerial decisions on national forestlands, and the Federal Advisory Committee Act prevents federal decision-makers from officially using committees for advice unless they comply with various procedures outlined in the Act. However, multi-stakeholder Resource Advisory Committees possess authority make recommendations to spend part of the funding allocated under the Secure Rural Schools and Community Self-Determination Act, and collaborative processes are recognized as providing legitimate planning input via other policies such as the Healthy Forests Restoration Act, Stewardship Contracting authorities, Collaborative Forest Restoration Act, and Collaborative Forest Landscape Restoration Act. See, e.g., Butler and Schultz (2019), Butler et al. (2015), Monroe and Butler (2016), and Van de Wetering (2006).

the tension between the agency's "upward" accountability to the U.S. Congress via output-oriented performance metrics (e.g., board feet of timber produced and acres of land treated for wildfire fuels) and its "outward" accountability to various publics, agencies, and organizations (Charnley et al., 2008; Maier and Abrams, 2018; Stern et al., 2010a). Additionally, the USFS culture of independence and expertise may stand in conflict with the expectations of collaborative governance approaches (Selin et al., 1997; Wondolleck and Yaffee, 2000). Yet place-based collaborative processes continue to be widely viewed as one of the only viable means of managing the kinds of "wicked problems" that characterize federal forest management decision-making (Christoffersen, 2011; Innes and Booher, 2010; Weber and Khademian, 2008).

2.2. The rise of partnerships as a response to declines in administrative capacity

A key dimension of bureaucratic effectiveness is reflected in the concept of public sector or administrative capacity, defined as "the state's ability to manage and implement its policy choices" (Bevir, 2009, p. 41). Polidano's (2000) conceptualization includes three elements of public sector capacity: policy capacity, the ability to make informed decisions using an appropriate process; implementation authority, the ability to ensure that laws are enforced and projects are implemented; and organizational efficiency, which has to do with cost effectiveness and the quality of administration.⁴ In addition to the challenges to implementation authority posed by the vetocratic setting described above, at least three major factors have contributed to a decline in USFS capacity to effectively implement forest management decisions since the 1990s. The first is the USFS' loss of a strong political constituency in the transition to ecosystem management (Cortner and Moote, 1999; MacCleery, 2008). Under the sustained yield paradigm, the agency was part of a classic "iron triangle" in which it served the interests of a powerful client (the timber industry), thereby securing support from allied elected officials that provided the funding and policy framework to continue a program of timber-oriented work on federal forestlands (Hoberg, 2001, 2004). This political support continued in the rational planning period as the USFS continued to emphasize timber production over other objectives, but under ecosystem management the agency could rely on political support from neither a much-transformed timber industry (Bliss et al., 2010) nor the long-adversarial environmental community (Cortner and Moote, 1999).

The second contributing factor is the steep rise in the proportion of available funding that has been dedicated to wildfire suppression since the 1990s. The USFS reports that it suffered a 39% reduction in non-fire staffing between 1995 and 2015 as wildfire spending increased from 16% to over 50% of total expenditures (USDA Forest Service, 2015b). The so-called "Wildfire Funding Fix," which became law via the 2018 Farm Bill and goes into effect in 2020, is designed in part to alleviate the USFS budget pressure created by increasingly expensive wildfire obligations, but it remains to be seen how USFS non-fire budgets will be adjusted in response (for example, the same 2018 Farm Bill reduced USFS hazardous fuels appropriations by \$100 million). Third, the USFS has long utilized a system in which a portion of timber receipts are used to fund project staff and associated work (O'Toole, 1988); as timber harvests have declined (Fig. 1), so has this source of funding (Shannon,

⁴ Polidano also identifies a fourth dimension, despotic power, "the ability to take decisions unconstrained by special interests" (p. 809), which is associated with state capacity rather than public sector (i.e., administrative) capacity. While Polidano dismisses the notion that despotic power constitutes part of public sector capacity, in the case of organizations like the USFS that are given wide decision-making latitude, this form of capacity may in fact be relevant. For the purposes of this analysis, we treat issues of independent decision-making under the category of legitimacy rather than under that of capacity.

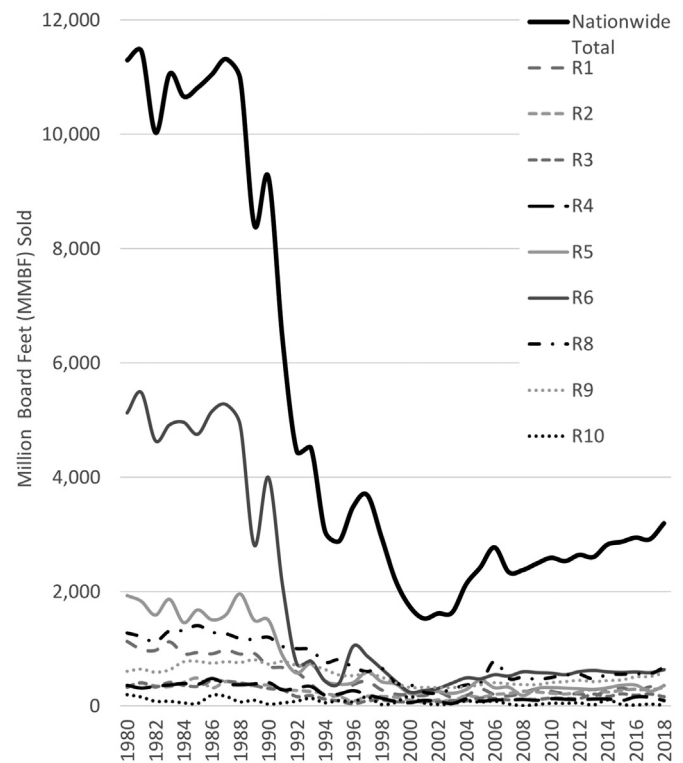


Fig. 1. Annual timber sales by U.S. Forest Service region, 1980–2018. Data from U.S. Forest Service "Cut and Sold" reports as provided by Headwaters Economics (<https://headwaterseconomics.org/dataviz/national-forests-timber-cut-sold/>). Regions: 1 (Northern); 2 (Rocky Mountain); 3 (Southwestern); 4 (Intermountain); 5 (Pacific Southwest); 6 (Pacific Northwest); 8 (Southern); 9 (Eastern); 10 (Alaska). Region 7 was dissolved in 1965.

2004). The loss of timber receipt-funded positions was most acute in the traditional timber stronghold of the Pacific Northwest (USFS Region 6), where the number of full-time equivalent positions in 2012 represented a 53.9% reduction from the peak in 1980 (Ellison et al., 2014). Importantly, these declines in agency capacity occurred even as environmental planning, analysis, and compliance obligations increased under ecosystem management (Larsen, 2014).

In response, the USFS has greatly accelerated its use of partnerships as a means of leveraging the capacity of other organizations and actors to accomplish otherwise un- or underfunded activities on federal forestlands. In 2018, the USFS released a report outlining a vision for "shared stewardship" for wildfire protection that would serve as a model for other resource issues (USDA Forest Service, 2018). The concept of shared stewardship emphasizes partnerships that bring non-USFS resources and capacities to bear on cross-boundary issues. These same ideas are central to the Good Neighbor Authority, a recent policy innovation that allows state governments to participate in management of national forestlands. This partnership model was reinforced in the Trump Administration's Executive Order 13855 of December 21, 2018, which begins, "It is the policy of the United States to protect people, communities, and watersheds, and to promote healthy and resilient forests, rangelands, and other Federal lands by actively managing them through partnerships with States, tribes, communities, non-profit organizations, and the private sector."

Across the national forest system, partnerships can take multiple forms: the simplest cases involve the use of recreation-oriented organizations, "friends" groups, or other non-governmental organizations to accomplish objectives of mutual interest (Seekamp et al., 2018; Seekamp and Cerveny, 2010). Forest-adjacent communities themselves have, in some instances, contributed funding to accomplish fuel

reduction or other projects on neighboring national forestland (Abrams et al., 2017). In other cases, agency partners such as academic institutions, Native American tribes, and NGOs such as The Nature Conservancy may contribute vital scientific or technical information (Christoffersen, 2011). On some forests where federal capacity is low and local NGO capacity is high, community-based organizations may take on core governmental functions such as contract administration and participation in interdisciplinary planning teams (Abrams et al., 2015; Rogers and Weber, 2010). States are increasingly acting as partners by contributing funding to accomplish critical needs on federal lands (as the State of Oregon has done through its Federal Forest Restoration Program) and conducting restoration work on those lands under the Good Neighbor Authority (Portner, 2018). The USFS has also tapped into the potential of water providers to fund restoration and maintenance work within municipal watersheds located on national forestlands, effectively monetizing the ecosystem services provided by national forests and creating a new source of nonfederal funding for forest management work (Huber-Stearns and Cheng, 2017).

In addition to these paradigm cases of engagement in formal partnerships, USFS units have developed various other means of compensating for missing capacity. For example, the Colville National Forest in Washington State has piloted a new approach to project planning in which a private contractor pays for required NEPA analysis conducted through a third-party consultant (Pinchot Institute for Conservation, 2015). Stewardship contracting, a policy tool developed in the 1990s and institutionalized in the 2000s, allows forest units to retain funds generated through integrated restoration and timber sale projects to fund other restoration-related activities (Moseley and Charnley, 2014; Sundstrom and Sundstrom, 2018). USFS engagements in collaborative processes can also yield payoffs by extending “the effectiveness of existing government agencies by providing additional resources—financial, human, political, information—that are then used to achieve agency missions and goals set by duly elected officials and agency leaders” (Rogers and Weber, 2010, p. 551). Policies such as the Collaborative Forest Landscape Restoration Act and the Joint Chiefs' Restoration Partnership present new opportunities for forests to compete for funding for restoration projects (Cyphers and Schultz, 2019; Schultz et al., 2012, 2019), underlining the policy overlap between neoliberal funding models (emphasizing competition rather than baseline funding) and a generalized restoration and forest health orientation.

2.3. The role of networks in processes of institutional innovation

The third category, institutional innovation, is arguably less obvious than the categories of legitimacy and capacity needs, but scholarship has documented its presence and influence in multiple cases. It is operationalized here under the broad categories of experimentation, diffusion, and application, as detailed below. Clarke and McCool (1996) describe the early USFS as an agency that was highly innovative and adaptive; recent studies are more equivocal in their assessments of the degree of adaptive potential within the agency (Brown and Squirrell, 2010; Jones and Mohai, 1995). The need for continual institutional innovation in national forest management is partly a function of the broad range of complex management challenges the USFS faces given its diversity of landscapes, social/political interests, and management objectives and the net impact of the agency's accumulation of multiple layers of statutory, administrative, legal (case law), and operational policies. The layers of policies that have accreted since the beginning of the rational planning period are often described as being mutually contradictory and providing numerous opportunities for aggrieved parties to exercise veto power (GAO, 1997; USDA Forest Service, 2002). Additionally, the institutional legacies of past management regimes continue to influence contemporary forest management (Cortner and Moote, 1999), with the clearest example being the persistence of timber targets (expectations of annual timber production) as a key

performance metric even as management emphases have turned to forest restoration and fuel reduction (Charnley et al., 2015; Maier and Abrams, 2018).

It has also been observed that the twenty-first century USFS operates under de facto policy direction that is not entirely consistent with its *de jure* policy direction (Hoberg, 2001). Indeed, the role of Congress in directing national forest policy has arguably been diminished, and that of the executive branch and the courts increased, since the beginning of the ecosystem management period, when a forest policy crisis born in the courtroom was resolved through executive action rather than via Congress (Cubbage and Newman, 2006; Hoberg, 2004, 2001; Mortimer, 2002). Since that time, Congress has passed several substantial pieces of national forest legislation, including policies pertaining to wildfire risk reduction, contracting, and funding, but none has fundamentally reoriented the agency's institutional framework to align with contemporary emphases on restoration, fuel reduction, and collaborative forest management⁵ (Hoberg, 2001). As a result, the USFS is often confronted with the challenge of implementing integrated and often landscape-scale restoration and fuel-reduction projects using new authorities in concert with tools, administrative procedures, and performance metrics derived from earlier periods where timber production was the presumed objective and where action was generally planned and implemented at the stand level.

Studies on institutional innovation within the USFS again point to the importance of multi-stakeholder networks in driving the agency's institutional evolution in the contemporary period. Rogers and Weber (2010) describe this as going “beyond compliance,” using the innovativeness, flexibility, and legitimacy of network associates to experiment with new approaches to planning, implementation, and monitoring. Cheng et al. (2011) document the policy innovations pioneered by early community-based forestry organizations funded under a Ford Foundation demonstration program; these included operational as well as collective and constitutional levels of change, with most innovations focused on the operational level. Other research on innovation within the national forest system has also noted the predominance of experimental, operational-level changes rather than the kinds of broader systemic changes that normally require congressional action (Abrams et al., 2017). However, since the dawn of the ecosystem management period, multi-stakeholder networks have emerged as important innovators of higher-level institutional change as well (Cromley, 2005; Enzer and Goebel, 2014). Indeed, many of the formal public policy innovations since the 1990s represent national authorization of innovations piloted at local scales through networks of USFS and non-USFS actors (Moseley and Winkel, 2014)—this is the case for stewardship contracting, the community wildfire protection planning provisions of the Healthy Forests Restoration Act, and the Good Neighbor Authority, for example. The National Cohesive Wildland Fire Management Strategy that guides federal wildfire planning and response resulted from the efforts of the Wildland Fire Leadership Council, itself composed of representatives from federal, tribal, state, county, and municipal governments. Collaborative processes themselves began as “ad hoc boundary-spanning mechanisms” (Wondolleck and Yaffee, 2000, p. 7) meant to resolve complex social and ecological dilemmas in specific places, and have since become institutionalized throughout much of the national forest system.

In the interests of analytic clarity, the institutional innovations that arise from national forest network governance are divided here into the three broad categories of experimentation, diffusion, and application. Experimentation refers to the pragmatic problem-solving at local to regional scales that represents the creative heart of network governance. Examples abound within the literature; in many cases, these

⁵ Mortimer (2002) argues that Congress has abdicated its duty to provide clear policy direction for the USFS since at least the passage of the Multiple Use-Sustained Yield Act of 1960.

involve the joint development within networks of new planning or management techniques, new uses of funding, new contracting mechanisms, or revisions of existing tools and processes (Abrams et al., 2015, 2017; Cheng et al., 2011, 2015; Steelman, 2010; Steelman and Tucker, 2005; Weber, 2003). Many of these represent examples of institutional bricolage, wherein the various institutional resources available at a given time and place are reconfigured and revised to address prevailing practical needs (Clever, 2012; De Koning and Cleaver, 2012). Previous research shows that processes of local collaboration and capacity-building often lead to this kind of pragmatic institutional innovation as networks allow for the building of social capital and the exchange of ideas and can help move vetocratic stalemates toward experimental problem-solving (Cheng et al., 2015; Christoffersen, 2011).

Local-level experimentation with the integration of service and timber contracts (as a means of addressing the misalignment between restoration needs and the contracting tools and funding available) eventually gained formal sanction and authorization at a national level when Congress authorized stewardship contracting, first under limited pilot authorities and later under permanent authorization (Ringgold and Mitsos, 1996). This is an example of diffusion, which occurs when successful local- to regional-scale innovations are diffused throughout much or all of the national forest system, thereby making them available for application more broadly. This diffusion can happen through formal policy authorization, as in the case of stewardship contracting, or through regional- to national-scale communication and information-sharing networks. For example, community forestry organizations in the US have utilized diverse formal networks to share best practices, solve problems, and develop policy recommendations (Cheng et al., 2011).

The third category, application, refers to cases where a policy or practice innovation has gained formal authorization and is then applied voluntarily in a particular socio-ecological context. Again, networks are often critical in creating the opportunity—as well as the expectation, in many cases—to apply new techniques at the local scale. Moseley and Charnley (2014), for example, examine the diverse ways in which the implementation of stewardship contracting may be negotiated at the local scale as USFS decision-makers contend with complex socio-political contexts, veto players, and network partners. Research also details the variable implementation of the Collaborative Forest Landscape Restoration Program, which explicitly requires collaborative networks at the planning and monitoring stages and often utilizes networks in implementation as well (Butler and Schultz, 2019). It is important to emphasize, however, that the innovativeness of national forest governance networks is not limitless; indeed, the ecosystem management-era USFS is frequently described as “risk averse” and not all agency managers are willing to accept the risks associated with deviation from standard operating practices in light of the threat of appeals, objections, and litigation (Stankey et al., 2003; Stern et al., 2014).

3. Synthesis and propositions

The essential argument forwarded here is that, for the contemporary USFS, the critical resources of legitimacy and capacity and the critical function of institutional innovation are increasingly (although not exclusively) provided through networks; this is a defining feature of social forestry as a policy paradigm. The network approach stands in tension with the continued potency of a traditional federally dominant model of forest administration, with the continued relevance of federal legislation such as the Endangered Species Act, and with the continued centrality of the federal courts in setting the bounds of national forest administration. Organizational legitimacy, once in abundant supply and later eroded through a mix of performance and value challenges, is increasingly rebuilt on conditional, place-specific bases, in which the USFS is one of many interests working to define what is appropriate at a given place and time. Rather than deriving legitimacy from its

delegation of authority from a legitimate state, as in classic notions of organizational legitimacy, the USFS has come to rely on a form of place-based legitimacy constructed through participatory means within both formal and informal networks of key social actors. Although collaboration has been institutionalized to some extent across much of the national forest system, support for its use remains uneven both across space (contingent upon place-specific factors) and within the USFS administrative hierarchy (Cheng, 2006; Selin et al., 1997; Stern et al., 2010b).

Likewise, the agency's capacity for action within a legitimated program of work is also increasingly reliant upon networks. Despite the fact that the vast majority of its funding still comes through traditional channels (i.e., congressional appropriations), the reach of these funds has been limited by neoliberal rollbacks, the diversion of funds to fire suppression, and the loss of supplemental funding sources such as timber receipts. In response, the USFS has increasingly turned to networks composed of diverse entities and pursued competitive funding opportunities in order to implement a program of work on federal lands. These networks may be involved in every phase of national forest administration, from planning and environmental analysis (including the provisioning of scientific information) through to project funding, project implementation, contract administration, and monitoring. The use of these kinds of arrangements is uneven; they may be much more prevalent in some landscapes than in others, and may be more prevalent at particular times (e.g., times of crisis where resources need to be mobilized quickly) than in others (Abrams et al., 2015, 2017; Seekamp et al., 2018; Seekamp and Cervený, 2010).

The category of institutional innovation reflects the fact that organizational adaptation is impossible without adaptation of the system of both formal and informal institutions guiding the organization. Although traditional processes of institutional change (e.g., via congressional legislation, administrative regulations, and agency directives) are still of overriding importance in steering the USFS as an organization, the contradictions inherent in the agency's layered system of formal policy direction, as well as the enduring legacy of outdated institutions and an increasingly unresponsive Congress, mean that some degree of institutional change is occurring through local- to regional-scale networks of deliberation and practice. Many of the most important formal policy changes since the start of the ecosystem management period were originally innovated at local and state levels and later brought to a national level through congressional action, and smaller-scale innovations that do not require formal policy change appear to be a common—though underappreciated—component of national forest governance networks (Abrams et al., 2017; Steelman, 2010).

This framework for national forest governance in the social forestry period gives rise to the following propositions, which flow logically from the analysis provided above and are intended to serve as hypotheses for continued research:

Proposition 1. The network governance approach stands in tension with conventional, federal dominant approaches to forest administration, and the importance and influence of networks will vary across space and time. Even forests in relative proximity to one another may demonstrate divergent patterns of engagement with network governance (see, e.g., Maier and Abrams, 2018), reflecting—among other things—the strategies and interests of local-level forest managers and their local social, political, and economic context (Cheng et al., 2015; Moseley and Charnley, 2014). We should therefore not expect consistent patterns of change across the landscape, particularly in light of the substantial discretion still afforded to local-level forest rangers and the diversity of local contexts. Indeed, the tension between top-down forest administration (driven by legal accountability and imperatives to meet quantitative targets) and bottom-up forest governance based in collaborative and partnership networks may be the most substantial challenge to the success of contemporary national forest governance. Fig. 2 illustrates an ideal-

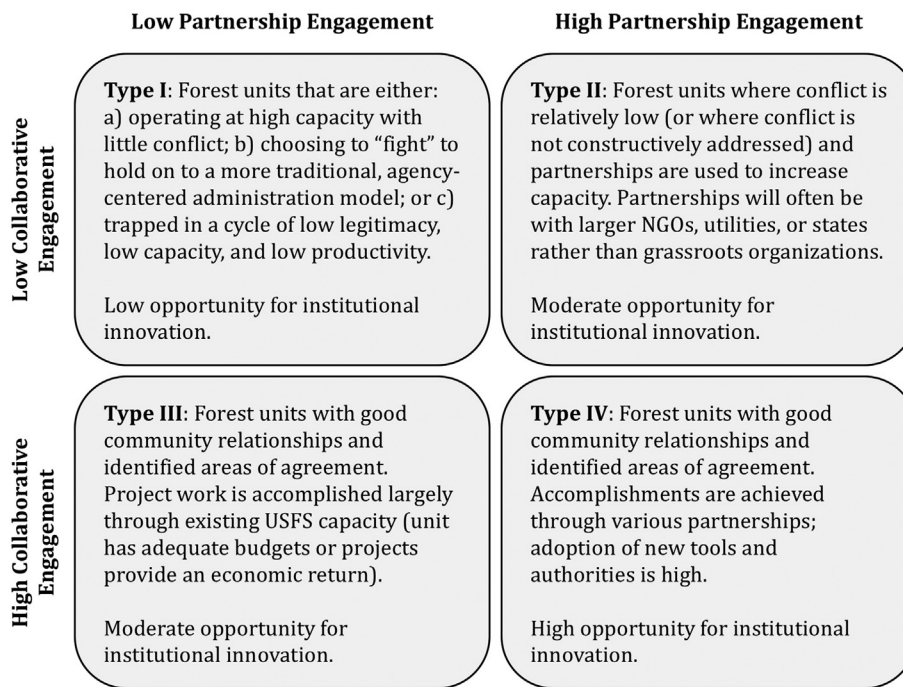


Fig. 2. Schematic illustrating four ideal-type models of local-scale national forest governance under the social forestry paradigm.

type model of different trajectories of national forest unit governance in light of these tensions. For example, at the time of [Maier and Abrams' \(2018\)](#) data collection, the Siuslaw National Forest could be considered to be a Type III forest and the Willamette National Forest could be considered a Type I. However, subsequent research by [Abrams et al. \(2019\)](#) suggests movement of the Willamette National Forest toward Type II.

Proposition 2. There is a hypothesized positive association between legitimacy, capacity, and institutional innovation: building legitimacy may lead to greater opportunities to build capacity (e.g., through access to competitive funds) and innovation (through growth and strengthening of networks); building capacity can increase legitimacy (through demonstrating an ability to follow through on commitments) and innovation (again, through the growth and strengthening of networks); and innovations may lead to new ways of increasing legitimacy and capacity. If this hypothesized relationship is correct, then those geographies with relatively robust practices of collaboration and partnerships should also show the greatest rates of innovation (.). Given the availability of various metrics of legitimacy, capacity, and institutional innovation ([Abrams et al., 2019](#)), this is potentially a testable hypothesis.

Proposition 3. Network governance will continue to stand in tension with top-down pressures for increased efficiency and with some national efforts to progressively limit the presence and influence of veto opportunities. If collaborative processes do indeed represent a brokered alternative for traditional veto players, this implies that the weakening of veto points (e.g., via revisions to objections/appeals processes or limits on standing to sue) may, ironically, undermine the willingness of both federal and nonfederal players to engage in collaborative processes.

Proposition 4. Small-scale, operational-level innovations are important for accomplishing shared objectives on individual forest units. However, collective- and constitutional-level USFS policies may continue to pose barriers to achievement of these objectives. The tensions between the agency's de facto and de jure policy directions can only partially and incompletely be resolved through processes of local, operational-level institutional innovation. We should therefore

expect that even the most innovative forest governance networks will face daunting obstacles in transforming to more adaptive and responsive models of forest governance absent additional policy change at higher levels.

Proposition 5. The identity and mission of network partners will carry implications for the ecological and economic outcomes of network governance. For example, rural development outcomes will differ greatly between a scenario in which a community-based organization leads the network and one in which a national recreation- or conservation-oriented NGO is the lead entity. Likewise, state governments and utility providers may bring both different (usually greater) quantities of resources and qualitatively different management priorities than grassroots place-based organizational partners. Although communities with high levels of social capital and modest levels of financial capital have been the central actors in social forestry to date, a combination of reforms to veto processes and increased partnerships with better-capitalized actors could portend substantial shifts in governance approaches and associated management priorities.

4. Conclusions

[Carpenter \(2001\)](#) observed that the early USFS was able to enjoy high levels of bureaucratic autonomy because of the embedded legitimacy it established in a network of diverse civic and political organizations that supported the agency's clear and relatively simple vision of forest management. That autonomy was slowly eroded throughout the twentieth century as the agency's institutional design and cultural orientation proved maladaptive in the face of diversifying social demands and increasing levels of ecological complexity. Agency autonomy reached a nadir with the series of judicial and executive decisions that reshaped forest management priorities and processes at the advent of the ecosystem management period. Since that time, the USFS has slowly adapted alternative approaches to forest governance that depart from prior legacies of agency independence, even as it has struggled to reconcile the competing pressures of reduced legitimacy and capacity and a formal institutional framework out of step with emerging priorities and socio-ecological challenges.

Trends toward network governance in the USFS are broadly consistent with larger shifts in public administration under a neoliberal political regime, yet the precise drivers and outcomes of these trends in the case of the USFS deserve specific attention. The essential argument laid out here is that much of the evolution of USFS governance can be seen as a series of adaptive responses to declines in agency legitimacy and capacity and to the need for continual institutional reforms in light of intersecting sources of ecological, social, and political-administrative complexity. The evolution of ecosystem management into social forestry has positioned the agency between the countervailing pressures of performance measures and cultural expectations centered on efficiency on the one hand and the multiple practical benefits of participation in governance networks on the other. It remains to be seen whether social forestry endures over time or whether the overall trajectory of forest policy continues to evolve—for example by reverting to the adversarial politics that precipitated the shift to ecosystem management or through further decentralization and vesting of formal authority in states, counties, firms, or local unit managers. How successive presidential administrations, Congress, the courts, and the USFS itself reconcile the multiple tensions that define contemporary national forest management will define the governance trajectory in the years to come.

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