



Community-based forestry on federal lands in the western United States: A synthesis and call for renewed research

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ABSTRACT

An approach to *community-based* forestry (CBF) on federal forestlands in the western United States consists of a number of informal civil society institutions for communities to better organize internally and interact with government. We review the body of research on this topic, which has an explicit focus on the three interlinked aspects of democratic governance practiced to provide community benefits and ecological sustainability. We situate its prominent concepts and themes relative to the global literature on CBF, and initiate new conversation about what CBF may mean within the context of contemporary federal forest governance in the US. Drawing on our collective research and practice experience, we then propose premises and questions for a vision of a contemporary research agenda around CBF in the western US that is influenced by salient questions from the global community forestry literature, and current social and policy trends in federal lands governance.

1. Introduction

The practice of community-based natural resource management (CBNRM) has increased worldwide in past decades. CBNRM is a multifaceted phenomenon with origins in the growing rejection of top-down, command-and-control approaches to conservation and resource management that historically excluded local people from the use and benefits of these resources. Although definitions abound and vary, CBNRM focuses on the engagement of local communities of place in natural resource decision-making and use, which may include forms of ownership and community tenure (Dressler et al. 2010; Shackleton et al., 2002). One of its basic premises is that local communities may more sustainably manage natural resources than centralized governments or large corporations, while improving their livelihoods. From forests to fisheries to rangelands, there are numerous examples. There is in turn a large scientific and practitioner literature about CBNRM, centering on questions such as the impacts and outcomes of CBNRM (e.g., on ecological conditions, sustainable livelihoods - Arts and de Koning, 2017; Bowler et al., 2012; Gilmour, 2016), degree of devolution of responsibility and authority for resource management to community actors (Hajjar et al., 2012; Larson and Soto, 2008; Ribot et al., 2006), effective institutions for CBNRM (Baynes et al., 2015; Chhatre

and Agrawal, 2009; Ostrom, 2002), and the meaning of community (Agrawal and Gibson, 1999; Selfa and Endter-Wada, 2008).

Within CBNRM, there has been a distinct subset of research concerned with community forestry. Previous scholarship has suggested that community forestry includes three necessary characteristics: "(a) some degree of responsibility and authority for forest management is formally vested by the government in local communities; (b) a central objective of forest management is to provide local communities with social and economic benefits from forests; and (c) ecologically sustainable forest use is a central management goal, with forest communities taking some responsibility for maintaining and restoring forest health" (Charnley and Poe, 2007, 303). This definition interlinks governance, community benefits, and ecological sustainability. As recent research has noted, community forestry has numerous manifestations, with varying relationships between communities and centralized government authorities (Hajjar and Molnar, 2016). This variability can stem from numerous exogenous and endogenous causes such as failure of government capacity and legitimacy, deliberate government withdrawal, the grassroots movements of local and indigenous peoples, and donor or market pressures. This diversity in origins and forms of community forestry has in turn spawned extensive research, much of it on the outcomes of community forestry and factors in those outcomes.

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A recent meta-analysis (focused on low- and middle-income countries (LMICs) in Africa, Asia-Pacific and Latin America) found that this research largely has focused on institutional factors as drivers of community forestry initiatives, with less consideration of the roles of markets and population dynamics, and has primarily resulted in evidence about ecological rather than livelihood outcomes (Hajjar et al., 2016). Although livelihood outcomes are recognized as an important goal of community forestry and are the focus of many studies, examination through primarily qualitative and case study methods has limited more generalizable knowledge.

As in the larger global literature, research on community forestry in high-income countries that focuses on governance institutions has relied heavily on case studies. Syntheses suggest that “the concept of community forestry is not well defined in the Global North [high-income countries], nor has it been implemented to the same extent [as in low-and middle-income countries]” (Teitelbaum, 2016, 4). Research on community forestry in high-income countries has emphasized the interlinked components of democratic governance, community benefit, and ecological sustainability, but the lack of common definition beyond this point is evident in the diversity of forms community forestry has taken (e.g., Canadian community forests, Teitelbaum, 2016) and inconsistency in analytical concepts, which include indigenous community forestry (e.g., Lawler and Bullock, 2017), town/community forests in the eastern United States (Farnham, 2015) and community-based forestry initiatives on publicly-owned (typically federal government) lands, common in the western United States (e.g., Gray et al. 2001; Kusel et al., 2001).

The latter, an approach often called *community-based* forestry (CBF) in the western United States, occurs on public forestlands where the federal government maintains jurisdictional control (the primary manager of public forestland in the west is the U.S. Forest Service). Although no tenure changes to this arrangement have occurred, a number of informal civil society institutions have emerged for communities to better organize internally and interact with government around federal forestland management following policy and programmatic changes that were seen as disenfranchising to local communities (Baker and Kusel, 2003; Brendler and Carey, 1998). These included, for example, legal decisions about reducing timber harvest levels to protect endangered species, and the Northwest Forest Plan, a new approach to ecosystem-based management in the Pacific Northwest that replaced sustained yield, timber-focused management. In a sense, these federal forestlands can be seen as analogous to protected areas elsewhere in the world; they are areas where public access and use is controlled and limited by centralized governments, such as national parks and wildlife preserves, which have been prime ground for many community forestry initiatives. As some have suggested, “the combined effects of ecological insularization and chronic conflict with local peoples jeopardized the long-term sustainability of protected areas” (Kellert et al., 2000, 706) and some conservation efforts moved toward incorporating rather than excluding people from forest resource use in these areas. These have included, for example, provision of logging rights for locals (in Honduras, Castro and Nielsen, 2003), or community forest licenses created within an existing forest tenure system (in Canada, Teitelbaum, 2016). Despite these similarities in issues affecting public forestlands in the US West and protected forestlands elsewhere in the world, comparative analysis to bridge common themes in different settings has been lacking, perhaps in part due to larger lacunae in applying “First World political ecology” lenses (McCarthy 2002).

The small body of research on CBF on federal forestlands in the western United States, as defined above and conceptualized in this paper, was predominately published between 2000–2010, and has an explicit focus on the three interlinked aspects of (1) democratic governance that can provide (2) community benefits and (3) ecological sustainability. We distinguish this literature on CBF in the United States from other, related bodies of work and concepts in several ways. First, there is a long history of research on forest-community relationships,

which may concern the community impacts of various government policies from sustained yield to the Northwest Forest Plan to new service contracting mechanisms (e.g., Charnley et al., 2006; Daniels et al., 1991; Moseley and Toth, 2004), but this does not necessarily focus on or consistently examine governance approaches for community engagement in decisionmaking. Second, the discourse around US CBF exhibits many principles also found in the extensive research on collaborative governance and planning around natural resources in the United States (e.g., Conley and Mooto, 2003; Leach and Pelkey, 2001; Margerum, 2002, 2008; Schuett et al., 2001; Weber and Khademan, 2008). Yet this research is more typically built on theories about public administration and collaboration and does not consistently focus on the community scale, while the US CBF literature appears to be based in syncretism of numerous academic theories about not only collaboration but also community development, sustainable development, and equity; as well as applied research, and practitioner and advocate experiences. Finally, since US CBF is on public lands in which the federal government retains ownership, it is not analogous to community-owned forests (e.g., Andre, 2014; Belsky, 2008).

Our purpose in this paper is to review and synthesize the literature on the phenomenon of “US CBF” as it has manifested in scientific and practitioner discourse from its inception to today, in order to 1) situate its prominent concepts and themes relative to the global literature on CBF, and 2) initiate new conversation about what CBF may mean within the context of contemporary federal forest governance in the US. Such an exercise is timely, as there are growing calls for transfer of federal forest management to state or county-level governments across the western United States, under the premise found also in global CBF literature that decentralization of governance responsibilities to more localized actors could manage forests in better alignment with local priorities and needs. There is also an increase in organized collaboration with federal land managers through groups and venues that have garnered political support, yet often lack the participation and trust of local community members (Davis et al., 2018). Although community participation in forest management through collaboration is becoming institutionalized, there remains noted “resistance to, and lack of political support for, giving communities tenure rights to public forests on the part of government and environmental groups. Constraints include legal barriers, fear that community control will cause forest degradation, and concern that community management will favor local over national interests in public lands; this resistance, coupled with insufficient grassroots pressure from below, has resulted in little meaningful devolution of forest management to communities to date” (Charnley and Poe, 2007, 309)—a theme also seen in the global research. Therefore, we seek to better characterize the literature about CBF in the western US, explore common themes and changes in its discourse, and suggest if these themes have faded or evolved to manifest in other terms and concepts. Drawing on our collective research and practice experience, we then propose premises and questions for a vision of a contemporary research agenda around CBF in the western US that is influenced by salient questions from the global community forestry literature, and current social and policy trends in federal lands governance.

2. Context: federal forest lands and community-based forestry in the western United States

A brief description of the context of US federal forest lands, the legal/regulatory space or potential that exists for communities to take on responsibility or decision-making authority for their management, and of US CBF itself, is warranted. In the United States, forest lands comprise 36 percent of the landscape (822.5 million acres), and 31 percent of those forestlands are managed by the federal government, with federal ownership more dominant in the US West (Oswalt et al., 2019). These lands are managed by various federal agencies, and subject to laws and regulations specific to those agencies and their

departments. One hundred and ninety-three million of these federal acres are managed by the US Forest Service, an agency within the US Department of Agriculture. A system of “forest reserves” was created in the late 1880s/early 1900s to safeguard against overharvesting and speculation by the private sector, and the Forest Service was established in 1905 to manage these forests.

Over the course of its existence, this agency’s management focus has shifted several times from sustained-yield timber production toward multiple uses, and more recently since the 1990s toward ecosystem-based management. The net effect at a gross scale has been a reduction in volume of timber harvested, and an increase in expenditures on recreation infrastructure and forest and watershed restoration activities (Charnley et al., 2008; Cook, 1995). For many rural western communities that had historically depended on timber harvest for economic activity and employment, this reduced timber volume and other changes in the forest industry itself (such as technological restructuring and global competition) caused significant crises in community well-being and identity (Donoghue and Sturtevant, 2008).

Some communities responded by forming new processes, groups, or organizations to attempt re-orientation (Danks, 2009). Their leaders had a vision to address the economic development needs of their communities by creating jobs and businesses that could help the Forest Service implement its ecosystem-based management approach (Abrams et al., 2015). These visions also involved new relationships with the Forest Service wherein communities could have more input into management activities in their area, namely to ensure that local values and needs were being met. In several cases, leaders formed nonprofit community-based organizations (CBOs) through which they worked toward these goals. At the same time, reductions in timber harvesting triggered declines in Forest Service budgets and staffing, reducing agency capacity to engage in forest management activities (Charnley et al., 2008). Community-based organizations and partners have stepped forward to help fill these capacity gaps, increasing community engagement in forest management (Abrams, 2019). In addition to community-scale responses of this nature, which depended greatly on local context (Wilson, 2006), several regional and higher-scale organizations formed to help connect these communities to work on common issues and amplify the voice of community-based forestry (Danks, 2008).

More specifically, the activities that these CBOs and other efforts undertook were wide-ranging and included (Abrams et al., 2016):

- Fostering and facilitating community dialogue about priorities and needs, and organizing dialogue with the Forest Service
- Local worker training and development to build a skilled workforce able to implement new kinds of restoration projects
- Running work crews on federal land to implement projects
- Attempting to establish new types of businesses or business incubators, such as small-diameter biomass utilization enterprises
- Monitoring of projects to gauge ecological outcomes.

To accomplish this work, CBOs and others confronted limitations. They did not own or manage the land, or set the larger laws and regulations that governed it (Abrams et al., 2015). Unlike in other CBF initiatives elsewhere in the world, there have been few if any opportunities to actually make decisions about management issues such as annual harvest rates, awarding of concessions and permits for various activities, budgets, or large-scale management priorities. The Forest Service remains the decision maker for all types and scales of decisions, and is guided by national laws and regulations. However, US CBF practitioners on federal lands have identified points in the governance system where they could increase their ability to participate. Several policies such as the National Environmental Policy Act of 1969 (NEPA) and the National Forest Management Act of 1976 (NFMA) required the Forest Service to conduct environmental analysis of its planned activities, and to provide opportunities for public input during that analysis.

Stakeholders in many communities began to meet regularly to discuss planned forest management projects and provide collective input. US CBF practitioners also sought opportunities to create local economic activity through the Forest Service’s systems for selling timber and distributing service contracts, which often did not go to local businesses (Moseley and Reyes, 2008; Moseley and Shankle, 2001). They argued that these sales and contracts could be awarded locally. With partners at regional and national scales, they pushed for the implementation of new approaches such as stewardship contracting (a Congressional authority), which could be used for projects that created ecological benefit; and for use of new criteria to incentivize selection of local contractors and timber purchasers (Moseley and Charnley, 2014). In isolated instances, CBOs or other partners have also provided technical expertise to, or taken charge of, environmental planning processes for certain projects. Finally, US CBF practitioners and partners banded together in a network called Rural Voices for Conservation Coalition (RVCC), which sought to gather common needs and priorities for transmission to national-level agency managers and legislative decision makers, given that most of the laws and regulations that structure the Forest Service are set at this level (Cheng et al., 2011; Enzer and Goebel, 2014). Through RVCC, practitioners also attempted to share their own local innovations and efforts in the hope of fostering “bottom-up” change.

3. Methods: identifying CBF literature in the Western United States

We conducted a literature review using a systematic search and review approach that, while not equivalent to a formal systematic review, offers a rigorous and appropriate way to examine the type of research typically involved in US CBF literature (Booth et al., 2016). We first identified any peer-reviewed books, articles, and reports about US CBF on federal lands in the western United States that explicitly used the terms “community-based forestry”, “community-based natural resource management”, or “community-based ecosystem management” in their research questions or as the object of study in the context of forested landscapes located within the US. All three of these terms have been used interchangeably to describe governance approaches for federal lands in the US West that focus on community participation and outcomes. We first compiled this literature by conducting keyword searches for those terms related to US CBF on Google Scholar and 1Search, a global library search engine available at Oregon State University. Publications with these terms were compiled in a Zotero database. We then took a second step and reviewed each identified publication to identify the presence of three key terms as the object of focus: “public lands”, “federal forests”, and/or “Forest Service.” For each qualifying citation found that contained any of these terms as the object of focus, we then used Google Scholar to identify any other publications by the same authors, to explore works cited in each publication, and to review other works citing each publication. For each additional work identified via this step, we then repeated the steps of confirming focus on community-based forestry and federal lands using the two keyword searches described.

A final total of 37 publications were used for this review. The majority were scientific journal articles, but two edited volumes and one book are included. Publications fitting the review criteria were found between 1998 and 2018, with a median date of 2008. Several articles were published in 2001 in a single volume special issue of a journal dedicated to community-based forestry in the U.S. The majority of authors of this literature were affiliated with a research university or agency research institution, but several were from applied research and practice nonprofit organizations such as American Forests, Forest Community Research, the Watershed Research and Training Center, and the Ecosystem Workforce Program. Several authors were affiliated with the research branch of the U.S. Forest Service and were working for the Pacific Northwest Research Station.

For analysis, each of the 37 publications were reviewed and coded for key attributes using thematic coding (Strauss and Corbin, 1998) to collate material on each of the following topics: definition of US CBF and constituent components, methods used, findings, and concepts or theories presented. We then examined the frequency and prevalence of common components of a CBF approach, methods for studying it; and findings, concepts, and theories most often found across the entire selection of literature. We also noted which components of a CBF approach were described yet received less attention as the subject of study. We discuss the results of this literature review, then offer some overall observations about this literature considered as a whole and in the context of other research on the roles of communities in forest governance in the western US and globally.

4. Components, methods, and concepts in the US CBF literature

4.1. Definitions and components of US CBF

Across the literature reviewed, definitions and components of US CBF were notable for their similarity. In earlier years, US CBF was described repeatedly and generally as a new approach to “restructuring relations between people and forests” (Baker and Kusel, 2003, 2) founded on the principle that “human communities and natural ecosystems are interdependent” (Gray et al. 2001, 2). In later years, more concise definitions emerged, e.g., “an approach to achieving the dual goals of ecological health and socioeconomic wellbeing by incorporating local communities into sustainable forest management” (Danks, 2008, 186); and “the management of forested landscapes by community residents for environmental, community, and societal benefits; it seeks to vest, to some degree, authority and responsibility for forest management in the community” (Cheng et al., 2011, 1).

The concept of US CBF was based on five components that were repeatedly explored in many of the earlier books and articles. These components were often presented as necessary ingredients or components of a CBF approach on federal lands in the US West, and are adapted here from Gray et al. 2001:

- *Stewardship*: Sustainable forest management based on the condition of the land rather than solely resource extraction or outputs.
- *Collaboration*: Democratic, collaborative processes that allowed stakeholders within a community to interact with each other and with forest management agencies through dialogue that built common understandings and ideas for action.
- *Monitoring and learning*: Efforts to track and learn from actions taken and adaptively adjust as needed, as well as to build collective knowledge and trust.
- *Power and relationships*: The empowerment of communities to participate in natural resource management as well as questions of how CBF may alter established power relations, and who has the power to participate and why.
- *Investment*: The application of resources and energy toward managing the land and toward the activities and organizations necessary to do so.

Notably, these components were often presented in a rather intermingled fashion and as requisite co-ingredients. For example, stewardship was not only a management approach, but necessitated democratic processes in order to engage the community in caring for the land (Ack et al., 2001; Mitsos and Ringgold, 2001). Investment enabled effective stewardship because it supported organizations and processes for democratic dialogue, monitoring, and learning.

4.2. Theoretical and conceptual foundations in the US CBF literature

The US CBF literature consists of 1) pieces that offer theoretical and conceptual foundations, many attempting to explain the basis for CBF

and its goals, and 2) more limited empirical contributions that relied on qualitative, case study approaches¹. Several practitioners or scholar-practitioners working from applied research or policy organizations were lead authors on work offering both foundation theories/concepts and their experiences working with communities attempting US CBF (Baker and Kusel, 2003; Gray et al. 2001; Kusel, 2003). For the empirical work, some publications focused on a single case, while others examine up to seven; but a hallmark of the field regardless has been deep-diving, contextualized “thick description” (Adger et al., 2003). This research typically provided a historical and socioeconomic portrait of each case before documenting why and how CBF initiatives arose, rather than addressing many specific research questions or evaluating outcomes. Certain case study locations were repeatedly examined, including the Hayfork and Quincy areas of northern California (Danks, 2000), the Applegate Valley of southern Oregon (Weber, 2003), and Wallowa County in northeastern Oregon (Waage, 2001). In some of the edited volumes, other cases from outside the western US context are incorporated as examples or parallels (e.g., from West Africa and the Great Lakes region of the US). Other cases were based on issues such as the working conditions of forest workers, or the need for monitoring. Not all of the empirical research focused solely on characterization and description.

Through both the conceptual and empirical work, several specific themes in US CBF emerged through the late 2000s and into the 2010s, although the total volume of research on each was not vast (Table 1). Taken together, these themes—of institutional arrangements, community capacity and role of communities as stewards, social learning and equity—also related to themes discussed in the global literature, yet with some important distinctions.

Institutional arrangements: The organizations, processes, and activities of CBF have been termed “institutional arrangements.” Following a rich body of knowledge in the global CFM literature on community-based institutional arrangements and resultant outcomes on forests and livelihoods (Agrawal et al., 2018; Bartley et al., 2008; Nelson and Agrawal, 2008; Ostrom, 1990a,b, 2008; Luintel et al., 2018; Stickler et al., 2017; Richards, 1997), effort has been made in the US literature to categorize institutional actors and their outcomes when possible (Coleman, 2009). Generally, US CBF groups or CBOs have been recognized as the key players in local communities (Luzadis et al., 2001), while “partners, participants, and promoters” worked at other scales to “envision and enact” CBF more broadly by bringing locally-developed solutions to federal decisionmakers to foster policy and administrative changes (Danks, 2008). More recent work has sought to refine what CBOs are and has situated them as “institutional entrepreneurs” operating in a space defined by the insufficiency of both government and the private sector to provide for rural community wellbeing in a federal landownership context (Abrams et al., 2015, 2017; Molden et al., 2017). The relative power of actors to make management decisions is particularly examined (Menzies, 2004), echoing a theme in the global CBF literature that questions whether genuine devolution of authority for forest management decision-making from the state to communities has occurred, who in the community has decision-making power, and the roles of internal and external actors in community forestry (e.g., Agrawal and Ribot, 1999; Ribot et al., 2010; Schusser et al., 2016). One case study described a CBF effort that led to greater flexibility in federal land management where practiced, asserting CBF as a means of “supporting the state to meet its obligations” (Kelly, 2018, p.174). This theme resonates with CBF literature from LMICs, where CBF has been justified as a means of providing capacity for forest management that

¹ This remains the predominant form of empirical study in the global CFM literature as well, although meta-analyses abound (Pagdee et al. 2008; Hajjar et al., 2016; Brooks et al., 2012), and more recent work has looked to use national-level data sets in a number of countries to assess impacts of CFM (Blackman et al., 2017; Rasolofson et al. 2015, 2017; Oldekop et al. 2019).

Table 1
Themes found in US CBF literature.

Theme	Topics covered in literature
Institutional arrangements	<ul style="list-style-type: none"> ● Organizational types engaged at local and higher scales ● Roles of actors ● Rules and policies employed ● Potential role of neoliberalism ● Evidence of decentralization
Community capacity and roles of communities as stewards	<ul style="list-style-type: none"> ● Abilities and resources of local CBF-focused groups and higher-scale actors ● Roles and advantages of governance at community scales
Social learning	<ul style="list-style-type: none"> ● Construction of shared knowledge and concepts ● Monitoring and adaptation
Equity	<ul style="list-style-type: none"> ● Who participates and makes decisions in CBF ● Who benefits or receives outcomes from CBF

weak or resource-poor states lack (Charnley and Poe, 2007). Yet other work has further situated US CBF as a result of processes fostering neoliberalism and/or decentralization of federal government roles. One researcher has argued that US CBF is an inextricable component of restructuring of governments' roles in governance, and that it unrealistically posits communities as separate from and preferable to state rule (McCarthy, 2005, 2006). This work draws on larger theoretical critiques of the "romance of community" and the assumptions that underlie elevation of community-scale approaches.

Community capacity and role of communities as land stewards: Capacity, or the ability "of local, community-based collaborative groups to organize, coordinate, and manage people, resources, and tasks to achieve desired outcomes over time" (Cheng and Sturtevant, 2012), namely though collective action, is recognized as a key factor in why certain initiatives succeed or fail. In the US literature, a large focus has been on what can be termed building social capital for collective action. Capacities for organizing, learning, deciding, acting, evaluating, and legitimizing have been identified, as well as roles for individuals, groups, and supportive networks "in mobilizing and applying assets" (Cheng and Sturtevant, 2012, np). The need for groups or actors to foster dialogue that overcomes social conflict and disunity has been particularly recognized (Burns, 2001; Moote et al., 2001), as well as enduring challenges in funding the diverse types of social labor entailed in CBF (Johnson et al., 2001) and the need to foster increased investment in landscapes and communities to achieve the many goals of CBF (Luzadis et al., 2001). Less prevalent in the US studies are themes of capacity building as they relate to human capital and community development; many studies in LMICs have in contrast focused on training communities in forest management practices, value added processing of forest products, monitoring and enforcement, carbon accounting (more recently), and to a lesser extent, business management skills (Caria Vega and Keenan 2016; Hajjar et al., 2011; Macqueen, 2013; Newton et al., 2015).

Many of the theories and narratives in US CBF work draw from similar themes found in research conducted in LMICs – such as the promise of communities as effective stewards of natural resources given appropriate enabling conditions (e.g., Bray et al., 2006; Cronkleton et al., 2008; Michon et al., 2007; Sikor et al., 2013), and local institutions for common-pool resource management and institutions (Agrawal and Benson, 2011; Agrawal, 2003; Ostrom, 1990a,b; Persha and Andersson, 2014) –. Authors focused on these themes have clearly argued for and promoted the role of communities in more directly managing federal lands, stating that "communities are key to sustainability because they represent a scale and set of interactions with natural ecosystems that people can comprehend and affect" (Gray et al. 2001), pointing to theories about this role and CBF from elsewhere in the world. They recognized that CBF efforts in the US were emergent, but suggested that if supportive policies and programs were in place, these efforts would likely flourish and produce similar outcomes as in other locales. Particularly the earlier publications, but even those later, did not marshal extensive empirical evidence from the US itself, but

depicted CBF as a somewhat proven global phenomenon that could take productive root in this new context, rather than necessarily also exploring the tensions and challenges that CBF still faced globally. In a sense, these pieces together attempted to tell a story of community-forest relationships in the context of federal lands. They sought to make a case for the disconnection of communities from their rightful role in managing these lands, collect and present the tenets of CBF as something of a panacea, and cohere a concept and a movement. The global CBF literature provides examples of scholarship and advocacy combining to promote CBF as a way to conserve forests and restore the rights of forest peoples previously appropriated by governments, with empirical evidence for these arguments (Bray et al., 2005; Bullock et al., 2017, and Sikor and Stahl, 2011). However, several other scholars have used theoretical approaches and meta-analysis to critique and challenge these premises, which we discuss shortly in relation to themes in the CBF literature.

Social learning: The concept of social learning in governance of natural resources has received significant academic attention in the US, but to a lesser extent in LMIC community forestry settings (with some notable exceptions, such as Akamani et al., 2015; Rodríguez et al., 2018; Sapkota et al., 2018; Wollenberg et al., 2001). As applied to US CBF, researchers have explored how CBOs and other practitioners: 1) build common knowledge and conceptual foundations, and 2) intentionally monitor, reflect upon, and adapt their actions (Cheng et al., 2011; Ballard et al. 2008). Researchers have also noted the practical, social, and organizational challenges CBOs and practitioners have faced in operationalizing the ideals of social learning theories (Fernandez-Gimenez et al., 2008). This body of work has primarily focused on internal capacities for learning, but has also identified a need for learning among CBF entities from different communities given the higher-scale drivers and barriers inherent in federal land management governed by national policies and programs (Johnson et al., 2001). This focus on social learning in the US has advanced our understanding of adaptive management and community forest resilience.

Equity: The concept of equity is critical in the global CBF literature (Agrawal, 2001; McDermott and Schreckenberg 2009; Thoms, 2008), with who captures CBF benefits, and gender, being focal topics. There is limited research explicitly on equity in US CBF, despite the prevalence of this theme in the global literature (Miller and Hajjar, 2019; Shyamsundar et al., 2019; Sunderlin et al., 2005; Wunder 2003). One line of inquiry is whether US CBF can indeed help alleviate poverty, and particularly how the benefits of CBF management may be distributed. One study suggests that "in the US case, equity is a possible outgrowth of, rather than a primary objective of, community forestry" (Glasmeyer and Farrigan, 2005, 64); another argues that marginalized populations have not gained increased access or equity as a result of CBF (McDermott, 2009a, 2009b, 2009c). Some research has illuminated the working conditions and cultures of marginalized populations such as labor-intensive forest workers performing forest restoration or fuels reduction work (Moseley, 2006), and non-timber forest products harvesters who largely operate outside the timber economy (Ballard and

Huntsinger, 2006). But studies of these populations have not linked these conditions to US CBF or other dimensions of federal forest governance to evaluate if and how CBF approaches incorporate them and their interests. As a result, “there is a lack of understanding about how harvesters understand and respond to various management approaches and permit policies” (Ballard and Huntsinger, 2006, np). This gap may reflect a tendency in the US CBF literature to use units of analysis other than the household or individual (see below), which is more common in the global literature.

Another aspect of equity is who participates in and controls the practice of CBF. The issue of “elite capture” in participatory forest management approaches has been examined globally (Vyamana, 2009; Springate-Baginski and Wollenberg, 2010), although more extensively applied to development efforts in general. In US CBF, attention to who the process itself may (dis)enfranchise is lacking, save for some discussion of these issues when conducting participatory action research on CBF (Wilmsen and Krishnaswamy, 2010), and one study examining who does and does not participate in a case of multi-stakeholder collaboration on federal lands that was not explicitly CBF (Cheng and Mattor, 2006). Finally, in stark contrast to the global literature (Colfer et al., 2017), the topic of gender has rarely been addressed in the context of US CBF, and is only starting to gain attention in the broader literature on forestry in the US (e.g., Colfer et al., 2019).

Overall, when regarding the body of research on US CBF as a whole, it appears that its theoretical and conceptual developments have been somewhat scattered. Some scholars have attempted to apply certain theories or advance use of certain concepts, but only in one or two studies, rather than through sustained study. This, combined with the emphasis on syncretic case-making and practitioner engagement, potentially detracts from the scientific rigor of CBF and the ability of research to more critically inform practice.

5. Taking stock: does existing research address all core components of CBF on federal lands?

If the themes that we just elucidated are considered in light of the five core components of CBF approaches (stewardship, collaboration, power and relationships, monitoring and adaptation, and investment), it becomes apparent that the body of research about US CBF has produced uneven knowledge. The majority of the concepts that scholars have advanced around CBF in the western U.S. could be grouped under the component of *institutional arrangements*. A subset of the research has also focused clearly on *monitoring and adaptation* through the themes of multiparty monitoring and social learning. Research that asked if CBF could lead to equity and that characterized it as neoliberalism did address *power and relationships*, but by and large, these more critical perspectives made up a much smaller proportion of the overall literature reviewed. The components of *stewardship* and *investment* also appear less well-explored in the literature that we reviewed. They may be part of the CBF vision, and are frequently mentioned in the theoretical and conceptual elaborations we have described, but they are not necessarily directly addressed as the explicit subject of research inquiry.

When one considers other research about federal forest governance in the U.S. West beyond our frame of CBF, the emphasis on institutional processes becomes even more pronounced. The majority of these studies over the past five years use collaboration and collaborative governance as framing concepts, instead of CBF; and further hone the focus on democratic process rather than the stewardship or investment aspects integral to CBF. They do this in several ways. First is an increasing focus on understanding the activities and capacities of specific types of collaborative organizations, such as agency-designated Collaborative Forest Landscape Restoration Program projects (e.g., Butler and Schultz, 2019; Schultz et al., 2012, 2014), or “forest collaborative groups” (Davis et al., 2017, 2018). As others have noted, there is growing evidence that collaborative efforts with “the ability to organize and sustain [themselves] as a group” (Cheng and Sturtevant, 2012) may

be more successful, and there is concomitantly a growth in research about collaborative organizations rather than just collaborative processes. Second, given the importance of the U.S. Forest Service as the main manager of federal forestlands, there has been more research about the agency itself and its roles in collaboration. This work has examined the importance of agency participation in leading to positive outcomes (Butler, 2013; Wondolleck and Yaffee, 2000), and the impacts of Forest Service-“mandated” collaboration on how collaborative processes and organizations are structured (Monroe and Butler, 2016). Third, numerous studies have evaluated the importance of social dynamics, especially trust, in the interactions of participants in collaboration (Lachapelle and McCool, 2012; Stern and Coleman, 2015; Stern and Baird, 2015). Finally, there has also been interest in collaboration on federal land management issues at scales beyond the community of place, via multi-scalar entities such as “learning networks” (Butler and Goldstein, 2010; Goldstein and Butler, 2010) or large landscape coalitions or networks (Bixler et al., 2016; Wyborn and Bixler, 2013).

Yet, what of the themes of stewardship and investment; and of the concerns for livelihoods and equity inherent in the vision of CBF? Are scholars interrogating the relationship between collaborative governance and CBF models, and their ability to address these themes? Are these topics receiving attention in the context of the U.S. West? As noted, there are studies on topics related to equity, such as forest workers and job quality (Moseley, 2006; Moseley et al., 2014; Sarathy, 2006), the economic impacts of agency contracting policies on different communities (Moseley and Shankle, 2001), how agencies can plan and manage to better foster job creation (Charnley, 2014), and the role of CBOs in attempting to create local economic development opportunities (Abrams et al., 2015, 2017). But these studies do not explicitly analyze whether CBF or collaborative governance could be a means to accomplishing more equitable forest management outcomes. They do suggest in part that fostering more local economic impact and more equitable outcomes from federal lands management may require investment. For example, Charnley (2014) recommends strategies such as targeting work to communities in need and investing in local infrastructure to foster economic development opportunities. As for topics related to stewardship, such as the ecological goals for, or outcomes of, CBF in the western U.S., we could not find and are not aware of any studies that actually evaluated these livelihood goals and outcomes. This is in stark contrast to the global CBF literature, which has largely focused on the dual objectives of improving livelihoods of forest-reliant people and conserving forests. Many papers discuss the synergies and trade-offs involved in achieving these goals, and the contextual conditions that lead to better outcomes for people and forests (Agrawal and Chhatre 2008; Bray et al., 2008; Jagger et al., 2018; Oldekop et al. 2019; Persha et al., 2010, 2011; Rasolofson et al., 2015, 2017). Others examine whether CBF has better conservation outcomes for forests relative to alternative tenures (e.g., Porter-Bolland et al., 2012).

6. Moving forward: forests and communities in the western U.S

When we considered the CBF literature and more recent work on federal forest governance in the western US, together with our own experiences as applied researchers, we recognized several overall trends in research and practice and what they may signify for future research on US CBF:

The community of place as a unit of analysis or focus is less common in the western U.S. than the study of occupational or other types of communities, as well as that of organizations, agencies, networks, and other institutions and scales; yet political (and problematic) invocation of “the community” continues. Many CBF studies premised that community was a powerful and effective scale of action, and some work has emphasized “community-based collaboration” (Dukes et al., 2011), but not all collaborative governance concerns the local scale. The public forestlands of the West are federally-managed, and affected by policies

and decisions made in national and regional arenas, which communities cannot necessarily control. However, we have observed that local practitioners, agency leaders, and policy makers still often refer to “the community” and to “community collaboratives”, referring to the forest collaborative groups that have formed around specific federal forest landscapes, typically to provide recommendations on planned management activities (Cheng and Sturtevant 2009, Oregon State Board of Forestry, 2009).

This tendency has a potentially problematic implication: collaborative groups are often treated as if they are representative of local communities of place, when in fact they often contain a mixture of stakeholders that may be more accurately considered the community of interest around that given forest landscape. Federal laws and regulations allow for any American to participate in forest management decisions as they specify required opportunities to provide comments, object, or litigate; one does not have to reside locally to a proposed project or management plan. Moreover, although there may be many participants in collaborative groups who do indeed reside locally, they tend to be professionals in the forest industry, natural resource management agencies, or nonprofit organizations, rather than other local citizens or recreationists (Cheng and Mator, 2006). The dialogue within these groups is often very technical and scientific, replete with silvicultural and ecological concepts and agency acronyms that are not immediately accessible to non-professionals in natural resources. This does vary by group and location, but it points to an enduring question that vexes global scholars of CBF, and of CBNRM broadly: who is the community (Brosius et al., 2005; Flint et al., 2008), and is the community represented in the governance models used?

There is little evidence that CBF has signified meaningful governance change on federal lands. The literature on CBF on western federal lands offers concepts and examples of attempts at practicing CBF. But it does not provide evidence of how CBF may have actually resulted in increased decision-making power for local communities in federal land management, with rare exceptions (Frost, 2014). There has been some hope amongst CBF practitioners that solutions generated at the local scale will “trickle up” to influence higher-level spheres, but many recognize that a combination of actions strategically taken within and across scales may be more likely to effect change. A few efforts appear to embrace this logic, such as the Rural Voices for Conservation Coalition (Enzer and Goebel, 2014) or the Dry Forest Investment Zone project, yet the efficacy of these initiatives is not evaluated. Further, they seem to have focused on fostering broader policy and programmatic conditions for the generalized practice of collaboration with the Forest Service, rather than deliberately building a new governance model that would structurally enable more local control of federal forestlands. As some scholars increasingly recognize, the engagement of CBOs and other local to regional actors in managing federal lands may be more likely attributable to the limitations of bureaucratic governance capacity of those lands, and the ability of some of these actors to help fill gaps (Abrams, 2019).

Wildfire risk management and forest restoration are the contemporary drivers of policy and incentives for collaboration, rather than ecosystem-based management, which initially spurred US CBF. Early US CBF literature reflected the origins of CBF as, in part, a response to the Forest Service’s shift to ecosystem-based management. The stewardship component of CBF emphasizes holistic management, ecological rather than extractive motivations, and a range of potential forest and watershed restoration activities. However, by the late 1990s, community and policymaker concern was rising about the effects of large wildfires on federal lands, particularly in the drier forest types of the inland West (United States Forest Service, 2013). Much Forest Service policy and program development since that time—and a large portion of its budget—has been focused on wildfire suppression, preparing communities for wildfire, reducing hazardous fuels, and restoring forest health (Schultz et al., 2019). Further, the specter of wildfire is likely more visible and motivating for many rural

communities than the concept of ecosystem management, which could be broad, vague, and disenfranchising to those accustomed to an economy and culture founded on the forest industry. These wildfire-focused policies and programs have incentivized collaboration around these topics; for example, by making available funding to communities willing to collaboratively create community wildfire protection plans (Jakes et al., 2007), or to stakeholder groups and Forest Service units willing to collaborate on planning large landscape scale restoration projects to reduce fire risk (Cyphers and Schultz, 2019; Schultz et al., 2012).

There are many implications of this wildfire focus for the practice of US CBF. On one hand, a fire-driven environment naturally pushes for collaboration and governance models beyond the local community scale toward larger landscapes, biophysically-defined areas such as watersheds and fireheds, and across land ownership boundaries, as fire often does not adhere to political lines or small spatial extents. The rise of Fire Learning Networks and landscape-scale coalitions and collaboratives testify to this (Butler and Goldstein, 2010; Schultz et al., 2012; Kelly et al., 2019). Further, fire suppression and to some extent, fuels reduction, take place within an expert, professionalized culture established by federal agencies. This culture typically is not organized to incorporate or necessarily value local, nonprofessional knowledge (Davis et al., 2014). On the other hand, the very local scale is where many engage with wildfire risk, be it in their own yard making their immediate environment fire-safe, or in attending a community meeting about a nearby fire event (Mell et al., 2010). The national Cohesive Strategy for comprehensively addressing wildfire risk recognizes this and supports a network of Fire-Adapted Communities and associated collaborative projects. Collaborative partnerships built through wildfire management and forest restoration initiatives help increase community capacity for CBF (Charnley et al., 2017; Cyphers and Schultz, 2019), the drivers and focus of which will likely continue to evolve over time.

Myriad livelihood and equity dimensions of federal lands governance remain out of focus. Running throughout much of the CBF literature is the premise that community and forest health are intertwined. This premise been drawn from global narratives about CBF and political ecology, centered on the concept of livelihoods and equitable community access to the benefits that forests produce. As we discussed, only a few scholars have critically examined the ability of CBF in the US to actually deliver these outcomes, mostly from theoretical perspectives (Glasmeier and Farrigan, 2005; McDermott, 2009). But no research has set out to measure or otherwise capture specific means by which CBF approaches versus federal forest management generally may have resulted in changes to livelihoods—and for whom. Partly, this may be due to the challenge of identifying what CBF is in practice and then how to trace its effects. Some CBOs have attempted to measure their own economic impacts. These organizations may employ people from their communities to help conduct technical analysis or implement work on the ground (Abrams et al., 2015). But the Forest Service retains management and control of federal lands, so while outcomes of agency activities such as timber sales, service contract values, jobs created, and other economic impacts can be measured, precisely identifying the effects of CBF on these outcomes would require examining exactly how CBF processes and organizations may have changed what the agency was planning to do otherwise (White et al., 2015). Measuring against such an unknown counterfactual poses challenges, but researchers in the western US could look to impact assessment methodologies being used globally to better understand when and how CBF contributes to local livelihoods. The same issues are also evident if one seeks to measure economic impacts of forest collaboratives. Agency leaders and decision makers have suggested that if collaboratives can forge more social agreement on forest management priorities, then federal lands can be more actively managed and desirable economic outcomes will result (US Forest Service Eastside Strategy 2013). To date, efforts to measure the economic impacts of forest collaboratives have been limited to monitoring and estimates associated with large landscape

restoration projects (Collaborative Forest Landscape Restoration Program and Joint Chiefs' Program projects).

In addition, while economic impacts are an important measure of some benefits from forests such as jobs and economic activity, and the location and distribution of some impacts can be identified, an economic perspective does not encompass all potential livelihood and equity dimensions. Yet we have observed through our own embedded experience participating within collaborative groups and policy dialogues that this economic perspective more often has primacy over a narrative of community wellbeing more broadly conceived. For example, in the inland Pacific Northwest, a recent Forest Service strategy to accelerate fuels reduction and forest restoration states that, "The current pace of active forest restoration with thinning and prescribed burning is not keeping pace with forest growth. In addition, the economic livelihood of several communities is threatened by the potential closure of sawmills, bringing with it the loss of jobs of not only millworkers, loggers and truck drivers, but also teachers, store clerks, fuel suppliers, county road crews, and more" (US Forest Service 2013). The assumption inherent here is that if there is more restoration, there will be more logs to the mill and more direct and secondary jobs. Other aspects of community wellbeing and personal livelihoods that are well-understood globally in forest-community relationships are not explicitly addressed, such as household and community assets, social capital, culture, poverty, and vulnerability.

Several US CBF scholars and practitioners have focused on the issue of the forest workforce, or the jobs based on federal lands including but beyond logging and equipment-intensive work. Labor-intensive hand work is often required for restoration projects, such as clearing small trees and brush with chainsaws; harvesting of nontimber forest products is also labor-intensive. Much of this workforce consists of immigrant, undocumented, and/or transient populations from Latin America and Southeast Asia (Charnley et al., 2018), who may be politically and socially vulnerable; and they often perform this work at lower costs to the Forest Service (Moseley et al., 2014). However, in many rural communities, this workforce is seen as problematic because their lower prices can outcompete other local, typically white businesses that might want these contracts. During the late 1990s and early 2000s, CBF practitioners integrated the exploitation of workers and the need for equitable jobs into their vision (Baker and Kusel, 2003; Gray et al. 2001); we do not find this expressed in the dialogue of today's forest collaborative groups or appearing as a focus of research about collaboration.

Access to forestland and its benefits is also a related, substantial issue in the global CBF movement that remains largely unanalyzed in the US West. For example, there are groups in rural communities across the West concerned with their access to Forest Service land, particularly via road systems for motorized recreation and use (Williams et al., 2017). Through our own experiences in some communities and by reading webpages and social media of such groups (e.g., Forest Access for All), we have observed that some local community members are aware of and follow the activities of collaborative groups and the Forest Service's required public participation processes. But by and large, they actively reject collaborative processes as agents of restriction, arguing that collaborative processes and Forest Service decisions are leading to road and area closures intended to keep them out of land they are rightfully entitled to use. We also observe that these groups critique the forest industry itself for participating in these efforts, rather than celebrating the jobs and economic activity potentially created by forest restoration. Other populations that may value access include those who harvest non-timber forest products for personal, subsistence, and cultural uses (Charnley et al., 2018, Long and Lake 2018), or who use the forest as traditional gathering places. It is likely that relationships to federal lands and community wellbeing cannot be captured by economic measures alone, and that governance approaches such as collaboration that seek to create economic outcomes are not sufficiently addressing the other ties that communities have to forests and their

perceptions of inequity.

In the global CBF literature, the potentially detrimental effects of local populations accessing and using forests for their needs has been well understood. In the western U.S., uses that degrade federal forest lands can include illegal residence (Baur and Cerveny, 2019), cannabis or other drug cultivation (Carah et al., 2015), and over-and mis-use of recreation infrastructure (Chavez and Tynon, 2000). However, these activities have not typically been the subject of research about collaborative group dialogue to date, and this has not been an arena in which there is much known about how land managers have sought community-based approaches to resolving these issues (but see Everett, 2018).

Finally, the roles and needs of American Indian tribes in federal lands management are not prominent in either CBF or collaborative venues, or in associated research (but see Rasmussen et al., 2007). Some tribes have obtained sovereignty over portions of their ancestral forestlands, but for many tribes, these lands remain under ownership and control of federal or state agencies (Donoghue et al., 2010). For managing federal lands, there is a government-to-government relationship between tribal nations and the federal government, which creates distinct processes and means of working together unique to that relationship (Burr, 2012; Long et al., 2018). This absence is another divergence from the global CBF movement, which draws from the rights of indigenous people to resources and land (Blackman et al., 2017).

Linkages between governance approaches and ecological outcomes are not assessed. As we noted, we are not aware of any research, academic or otherwise, that concretely asks what ecological outcomes result when communities in the U.S. West receive more control over federal land management decisions. Multiparty monitoring is a hallmark of the CBF movement and many collaborative groups and projects today do have monitoring programs (Schultz et al., 2014). Much of this is implementation monitoring ("did we do what we said we'd do?"), although some is effectiveness monitoring, evaluating how well silvicultural prescriptions met their intended objectives within a specific project area. But monitoring remains limited for many reasons, including costs and capacity, a well-known problem in natural resource management worldwide. At this stage, the monitoring that does occur does not link the actions of collaborative groups or CBOs to observed outcomes.

Research is starting to emerge on the ecological outcomes of Forest Service-implemented projects that have had the influence of a collaborative group (e.g., Johnston, 2016), but it does not necessarily analyze that influence and how it may have affected those outcomes. The academic and practitioner literatures to date have done little to even characterize the types of forest management that collaborative and community groups support (but see Brown, 2012), which would be a prerequisite to studying their outcomes. The use of counterfactuals has been virtually non-existent. This research gap – which contrasts with the global CBF literature – likely stems from the difficulty of distinguishing ecological outcomes associated with increasing community participation in project-level forest management decisions on forestland owned and controlled by the federal government, as opposed to assessing outcomes in discreet, community-owned or managed forests. Issues of scale may also play a role; studies of ecological outcomes in the global CBF literature often rely on remote sensing data, which are more difficult and costly to obtain and analyze at the fine scales of project-level forest management typically enacted on federal lands. Although the Forest Service maintains a rigorous Forest Inventory and Analysis program, its sampling protocols do not generate data useful for project-scale analysis. Nevertheless, much can be learned from the global research on CBF, where ecological outcomes have long been assessed with varying degrees of rigour. Impacts on biodiversity and forest cover have been studied using single-case approaches looking at reductions in ecologically-detrimental activities following CBF (e.g., Fairhead and Leach, 1998), comparative case studies of different tenure types (e.g. Bray et al., 2008), and more recently, using counterfactual research designs and large-scale secondary data sets to determine

impacts beyond the case study (e.g. Oldekop et al. 2019).

Practitioner and advocate voices appear less visible in research. The earlier CBF literature was led by several authors with practitioner or practitioner-scholar affiliations at nonprofit organizations and applied research institutions. They participated in the syncretic case-making that blended theory, empirical work, experience, and hope, generating material for scholarly literature, and partnering with academics to help cohere the CBF movement. Several articles and book chapters identified participatory action research as a feature of CBF. The application of participatory action research has been even more prominent, however, around activities such as non-timber forest product harvesting and labor-intensive forestry work, which are frequently performed by politically vulnerable populations (Ballard and Belsky, 2010; Wilmsen et al., 2012).

In recent years, research on federal lands governance has tended toward 1) examination of relatively accessible populations of experts and professionals visibly participating in collaborative groups and able to serve as key informants, and 2) authorship solely by academic researchers. The former stems from the increased interest in understanding organizations such as collaborative groups, and agency roles vis a vis these groups, given the political support for collaboration and its inclusion in several policies and programs. However, this trend contributes to further movement of research and practice away from the engagement of other populations such as non-expert local community members, and forest workers and harvesters. It also reifies federal lands governance as an arms-length subject of scientific study, rather than a complex set of institutions and relationships operating across science-policy divides.

7. Proposal for a future CBF research agenda on federal lands

We assert the need for a new research agenda that restores the importance of the relationships between communities of place and forests in understanding federal lands governance in the U.S. West. This would include fundamental rethinking of the concepts of community, a return to the inclusion of livelihoods and equity in a meaningful fashion, examination of stewardship outcomes, and a commitment to asking questions beyond those associated with collaborative processes. To accomplish this, we suggest reengaging with the original components of CBF to see what endures, grapple with and be responsive to the current fluid political context and evolving focal management issues, and consider themes from the global CBF literature that might be applicable and enlightening in the US context, as others have previously encouraged (Selfa and Endter-Walta 2008; Taylor and Cheng, 2012). This agenda is intended to help us all critically rethink and refocus on the opportunities and limitations of community-scale engagement on federal lands, which are analogous to other state-held forestlands around the world. We propose the following questions as a start, based on the trends in research and practice that we have identified.

First, there are fundamental questions that we have touched on already but not systematically evaluated yet, such as: what is the status of CBF in the US West, and what are its impacts today? Are there now existing examples of US CBF that may embody its original five components and could be empirically observed, such as the work of community-based organizations? Are there lessons to be learned from community-owned forestlands originating from other types of ownership such as private industrial forestland? Related to these questions, we might also ask, what potential currently exists for using the community as the unit of analysis and study in federal lands governance? Given that federal lands are managed for the American public, could the roles of both communities of place and interest be meaningfully evaluated?

Second, as we have noted, collaborative governance approaches and scholarship seem to have become more predominant than those framed around CBF. Why is the discourse around CBF much more muted than that around collaboration? Funding for research on collaboration, in

our experience, has been far more available than funding for CBF-focused topics. This may help explain why questions about power and relationships are seemingly submerged under attempts to understand and refine collaborative practice. Are there other ways that collaborative groups and processes could more meaningfully be involved in decision-making processes at different scales (e.g., in land use planning, forest-wide standards and rules) or at different times other than during planning? What might be the prospects and challenges for moving beyond collaboration toward community involvement in environmental analysis, implementation, or long-term lease-type agreements on federal lands, perhaps paralleling those found on government-held lands in parts of Canada (Teitelbaum et al. 2016). Could existing vehicles such as stewardship contracts or agreements that allow for partner involvement in project implementation offer a possible path?

Third, given the Forest Service's increased budgetary, programmatic, and political focus on wildfire, what opportunities exist for community-based wildfire risk management? What is being learned from efforts like the Fire-Adapted Communities Network and the Forest Service-Natural Resources Conservation Service Joint Chiefs' Landscape Restoration Partnership? How are communities and federal agencies collaborating on fire response and adaptation, not just mitigation through fuels reduction and forest health restoration?

Fourth, the significant gaps in understanding livelihoods and equity issues relating to federal lands generate many questions, including: Why has the dialogue about forest workers and harvesters been lacking in many collaborative processes and groups on federal lands? How can questions of distribution of work and benefits, and consideration of vulnerable populations, be brought forward? How can under-represented populations be brought to the table to better engage in forest management decision-making—or to create alternate venues better suited to this? What does access mean to rural communities, how do they value physical and other forms of access to forestland, and how does access influence cultures and ways of life? Is it sufficient to relegate community involvement in decision-making to planning and monitoring activities, and to assume that social agreement forged in collaborative groups will automatically result in better management and improve community wellbeing?

Fifth, a similar set of gaps around the ecological outcomes of current federal lands governance approaches also suggests numerous questions. What are the ecological implications of management approaches that are supported by collaborative groups and other community entities? How do these approaches align or diverge from those promoted by scientific and conservation organizations, or agency staff? If there were more venues for community decision-making, what ecological changes might be possible, such as reduced degradation from overuse and misuse? And, how might we best measure the ecological outcomes of CBF on federal lands, particularly how to differentiate the effects of CBF approaches from standard federal management?

Finally, how can we both increase the theoretical and conceptual robustness of research around CBF, and the engagement of practitioners? How can academics better work together to systematically build knowledge? What are the opportunities for practitioners to serve as coauthors and co-producers of that knowledge?

8. Conclusions

We conclude with a return to the contemporary context of federal land management in the United States and reflections from our combined experiences researching and working in the US West and globally. The current political environment in the US is one in which the concept of local community involvement in federal land management is widely discussed. Some advocate for the transfer of federal land management to state or county governments through decentralized approaches, but often lack specific details on how this would manifest. Nevertheless, issues regarding the relationship of rural communities to federal land management are increasing in prominence. Many express

disenfranchisement, suggesting that access to federal lands and their benefits is inhibited by an overreach of government regulations.

In global CBF narratives, these same sentiments, including the rights of local people to participate and even take ownership of government lands, are celebrated. This advocacy typically stems from a generally leftist set of perspectives frequently tied to concern for indigenous and local communities, and issues of rights, livelihoods, and equity. It is further strengthened by evidence for community management producing more favorable ecological outcomes than government management. In the US, this voice usually comes from the political right, grounded in conservative ideals of smaller government, but it does not embrace many of the components of CBF such as ecological stewardship and equity, and in fact argues against investment and in favor of further disinvestment of government in land stewardship. Nor does it delve deeply into institutional arrangements or specific democratic processes that could be used to govern federal lands were they to be devolved to community scales. Academics and practitioners have yet to really grapple with these issues, either through research or through re-development of new CBF visions.

The focus of this review has been on CBF in the context of federal lands in the western US. But it is worth noting that concurrently, issues regarding the relationship of rural communities to private forestlands are also increasing in prominence, evidenced by efforts among community groups over the past decade to acquire tracts of private forestland and transfer them to community ownership and management, with some attempts to facilitate this process through legislation at the state level (e.g., SB 5873 – 2019-20 in the Washington legislature). Some Tribes (e.g., the Yurok Tribe in California) are engaged in similar efforts as they seek to gain ownership over forestlands that were part of their ancestral territories, and manage them as community forests. The U.S. Forest Service supports such endeavors through its Community Forest Program. But research about CBF in the context of nonfederal forestlands is similarly lacking; several of the research questions posed above could be adapted for the study of CBF on other ownerships, generating insights for CBF on federal lands and in the US more broadly.

Continuing to develop and actually implement the research agenda we have proposed would be challenging; we recognize realities such as social conflict, urban-rural divides, anti-science attitudes, political and agency priorities, academic cultures, and funding—all of which constrain and reshape initially ambitious ideas. Yet there is value in beginning to articulate potential inquiries for future research and practice around US CBF on federal lands and other landownership types, and in thinking collectively about how to address some of these barriers, to expand the potential of US CBF to better contribute to the well-being of communities and forests.

Declaration of Competing Interest

The authors have no conflicts of interest to report.

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