

Advancing knowledge about citizen-agency trust in wildland fire management: A collaborative assessment framework for the U.S., Australia, and Canada

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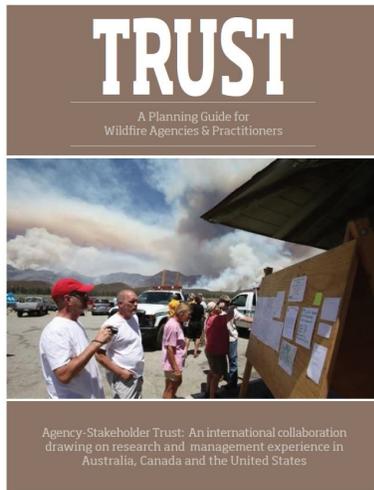
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I. Abstract

People living in forested landscapes around the world have been affected by recent fires with millions of acres burned, thousands of homes and structures damaged, and hundreds of lives lost. How people and communities prepare for and respond to fire is greatly influenced by trust between local residents and the agencies and staff responsible for managing fire and reducing fire risk. There is considerable literature on trust and natural resource management but few of those studies are based on the perspectives of the practitioners themselves, and very few attempt to make international comparisons. The current project was designed to meet two primary goals: 1) examine practitioners' perspectives on trust, how it develops, and actions that can foster trust between community members and resource agencies; and 2) develop a planning guide for practitioners and agencies that addresses trust in fire-prone communities. To accomplish these goals workshops were conducted with practitioners in the U.S., Australia, and Canada. Research team members from all three countries attended each of the workshops during which the participants discussed an initial draft planning guide on trust which had been provided to them in advance of the meetings. The initial draft guide had previously been developed by the research team based on literature and prior research experiences. Detailed notes from the workshops were used to examine practitioners' perspectives on trust, and the draft planning guide was revised based on their extensive feedback. The completed version addresses the relevance of trust in fire management and operations, actions for achieving outcomes that build trust, fire management and trust-building examples, and assessment tools. As such, the final trust planning guide (available at <http://hdl.handle.net/1957/45323>) represents a collaborative effort by researchers and practitioners from all three countries.

II. Background and Purpose

Recent fire seasons in Australia, Canada, and the United States have ended with millions of hectares of forest burned, thousands of homes destroyed, and hundreds of lives lost. Large events such as the Black Saturday Fires (2009) in Victoria, Australia, the Slave Lake Fire (2011) in Alberta, Canada, and the Waldo Canyon (2012) in Colorado, United States have heightened the conversation about managing fires and protecting lives and assets as well as emphasized the positive and negative roles trust can play in fire management. Trust among parties can also smooth emotions over contentious issues and allow practitioners greater latitude in making management decisions, while the absence of trust in agencies or their staff can derail efforts to reach community and agency agreement on management plans (McCool et al. 2006, Olsen and Shindler 2007, Shindler et al. 2011, Lachapelle and McCool 2012, Olsen and Sharp 2013, Gordon et al. In Press). Trust is a key factor in all phases of fire management: pre-fire, during-fire, and post-fire (McCool et al. 2006, Olsen and Shindler 2010).

Trust is fundamental to the success of human relationships (Cook 2001). It is often looked at as a social lubricant (Putnam 2000) because it can encourage open communication, cooperation and continuing interactions (Rousseau et al. 1998, Six 2005). At a basic level, trust can be described as a willingness to rely on others, though it operates at multiple

levels and has many influencing factors (Mayer et al. 1995). Individual trust refers to relationships with an individual (i.e., a specific practitioner), while organizational trust describes relationships with an organization (i.e., a land management agency). Institutional trust is somewhat different in that it refers to how one relates to laws, regulations, or policies (e.g., suppression policy). Four preconditions have been identified that make trust an important dynamic in the context of wildfire—namely the presence of interdependence, uncertainty, risk, and expectations (see Table 1 in Shindler et al. 2014 for an explanation of these preconditions in a fire management context). Trust is based on positive expectations that the other party will fulfil their obligations in the relationship (i.e., trust is based on perceptions of trustworthiness) (Mayer et al. 1995, Rousseau et al. 1998). In other words, trust is something that a person does, and trustworthiness is a quality of the person or organisation being trusted (Mayer et al. 1995).

Considerable research has focused on improving our understanding of how trust and trustworthiness is gained or lost. Relationship history, including the type, duration and intensity, are suggested to influence the development of trust (Shapiro et al. 1992, Burt and Knez 2006). Negative events, however, usually damage trust quickly, more so than positive events can serve to build trust (Slovic 1999). Yet others suggest trust—once earned—may provide a buffer against negative events (Earle and Siegrist 2006, McCool et al. 2006, Burns et al. 2008).

A number of recent studies have focused on trust and the wildland fire context within countries (e.g., Bright et al. 2007, Liljeblad et al. 2009, Olsen and Shindler 2010, Absher and Vaske 2011, Sharp et al. 2013). In particular, trust among parties has been found to positively influence public acceptance of fire and fuels management strategies (Brunson and Evans 2005, Vogt et al. 2005, Olsen and Shindler 2010, Toman et al. 2011, McCaffrey and Olsen 2012). However, few of these studies are based on international comparisons or on the experiences and perceptions of fire management practitioners. We were attracted to a multi-nation study by the opportunity to further assess similarities or differences in how practitioners in three countries heavily influenced by wildfire perceived trust dynamics.

The purpose of this project was to: 1) examine practitioners' perspectives on trust, how it develops, and actions that can foster trust between community members and resource agencies; and 2) develop a planning guide for practitioners and agencies that addresses trust in a wildfire context. The findings presented are drawn from workshops with managers and other practitioners who were part of a tri-nation study in Australia, Canada, and the United States. An initial step involved developing an initial draft of a trust planning guide based on prior research which was then provided to practitioners before the workshop. The workshops were designed to foster interactive discussion among practitioners and key stakeholders so that we could capture their perspectives as well as their evaluation of the planning guide; hence, discussion focused on the guide (Shindler et al. 2014) and on the intricate dynamics of trust. Field visits were also conducted at each site with a mixture of researchers and local practitioners. While some discussion about trust did take place, the field visits were designed to be more informal and allowed the researchers to better understand the local context.

III. Study Description and Location

To confine the research effort to a manageable scale, the research team purposively selected one research location in each country. Team members reviewed possible locations within their own countries with regard to where: 1) wildfire was a significant concern; 2) there was evidence of existing relationships that suggested a trust-building process had occurred or was on-going; and 3) there was a diverse group of management agencies, practitioners, and stakeholders involved in fire and forest management. The three selected case studies were the Deschutes National Forest area in central Oregon, United States, Kananaskis Improvement District region in western Alberta, Canada, and the forest-farmland interface in the alpine valleys of northeast Victoria in Australia.

Data collection and analysis

The research team included social scientists with substantial fire research experience in one or more of the study regions. At each site, we completed semi-structured workshops to collect qualitative data about trust between agencies and communities in a fire management context. The workshops were held in each of the three countries in September-October, 2012. A purposive sampling approach was employed to select workshop participants based on their ability to address the questions of interest (Leedy and Ormrod 2013). Participants were selected to represent a variety of resource agencies and roles in each location. Individuals with substantial work experience who were expected to be willing to share their insights about trust in their organization were specifically targeted. Prior to the workshop, those who had agreed to participate received a meeting agenda, participant list, and the initial draft trust planning guide, which provided the basis for the discussion. In addition to providing qualitative data for this research, the focus groups allowed the researchers to receive targeted feedback about the planning guide, which was an intended outcome of the workshops.

The initial draft trust planning guide was developed based on recent summaries of the trust literature (e.g., McCaffrey and Olsen 2012, Sharp et al. 2012, Toman et al. 2013) and individual trust-related research experience in fire-affected communities. The first part of the initial draft guide synthesized the trust literature to provide a description of trust for practitioners. The second section discussed the impacts of small (routine), mid-range and large-scale (often collaboratives or partnership) activities on trust and relationships. The third section identified specific actions that could be undertaken to build trust between agency personnel and stakeholders to achieve desired outcomes. A list of key questions was included at the end of each section to help participants reflect on their own situation and assess factors that contributed to or hindered trust-building. Participants were asked to read this document and come to the workshop prepared to discuss the strengths and limitations of the draft guide and suggest ways to improve it.

The workshops occurred in September and October 2012; each one lasted approximately four hours. The same researcher facilitated all three events using a focus group format, and members of the research team representing each country were present at each workshop. Participants discussed aspects of trust relevant to their local context and provided

feedback on the draft trust planning guide. Participants' comments were recorded by two note takers in each workshop session. Each workshop concluded with researchers identifying "here's what we learned" with participants able to edit or clarify comments. In a debriefing period notes were then reviewed by all team members to ensure accuracy. Field visits also occurred at each site. These informal tours included a mixture of researchers and local practitioners and allowed the research team to better understand fire management in the local context.

Qualitative analysis of data collected from the focus groups consisted of coding that led to theme development (Berg and Lune 2012). Specifically, passages from the data were assigned codes, and codes were then grouped by topic or frame. The frames were reviewed, relationships between frames were considered, and data supporting the frames were examined to identify emergent themes. The content of the trust planning guide (including theory related to trust and trustworthiness) was used as a frame for initial identification of themes, though not all components of the trust guide emerged as key themes from the data. Analysis of the data from all three workshops was conducted concurrently, and codes and themes were compared across focus groups. Findings presented in this reflect themes that emerged across the three countries.

Study Locations

All three locations have broad areas of wildland forest and patches of wildland-urban interface where residential development intermixes and abuts the forest, and fuels reduction planning is prominent. Key differences about how fire is managed in each country is briefly described below.

Bend

The Deschutes National Forest in central Oregon was the focus of the first case study, and the workshop was held in the city of Bend in September 2012. Eleven individuals attended the workshop representing the U.S.D.A. Forest Service, the U.S. Fish & Wildlife Service, Deschutes County, The Nature Conservancy, and the U.S.D.I. Bureau of Land Management among others. In the United States, while the U.S.D.A. Forest Service has historically been the dominant actor in wildfire management, agencies within the U.S. Department of Interior also have wildfire management responsibilities as do individual state forestry departments, tribal governments, and a variety of local fire departments. Response to wildfires is handled primarily by paid firefighting staff (local, state, and federal), although volunteer firefighters are often involved in initial response.

Kananaskis

The second case study focused on the Kananaskis Improvement District region in western Alberta, Canada. The workshop took place in September 2012 in Kananaskis, Alberta. Thirteen individuals attended the focus group including representatives from Parks Canada, Alberta Environment and Sustainable Resource Development, Alberta Tourism, Parks and Recreation, Kananaskis Improvement District FireSmart Committee, business representatives and other stakeholders. In Canada, wildfire management is also primarily the responsibility of the provincial and territorial governments, although response to

wildfires is largely handled by provincially-employed firefighters. There is Federal Government involvement with fire management in National Parks and local governments play a key role within their jurisdiction.

Wangaratta

The forest-farmland interface in the alpine valleys of northeast Victoria in Australia was the focus of the final case study. The workshop took place in late October 2012 in Wangaratta, Victoria in late October 2012. Thirteen individuals attended, including representatives from the Country Fire Authority, Wangaratta City Council, Parks Victoria, Department of Sustainability and Environment and the Department of Human Services. In Australia fire management is primarily a state responsibility. Different organizations are responsible depending on whether a wildfire occurs on public (i.e., government departments) or private lands (i.e., non-government organizations (NGO) or hybrid organizations such as the Country Fire Authority in Victoria). These organizations are also staffed very differently, with professionals employed by state departments and mostly volunteers for the Country Fire Authority.

IV. Key Findings

Several findings emerge from this project that merit additional consideration. We divide them here into findings related to the content of the research (i.e., trust and trust-building) and the process of the research (i.e., interactive scientist-practitioner workshops). The key findings include:

Content

- ***Trust is highly relevant to management agencies.*** Practitioners identified trust as critically important to accomplishing their work, generally with the emphasis that management and relationships simply do not work without it. Two key reasons emerged as to why trust is important. First, trust is needed for communication to be effective. Specifically, practitioners believed that if local residents do not trust the source of information (often the agencies in these contexts), they are quite unlikely to listen to the message. This relationship between trust and communication may also impact future engagement opportunities as well; people are unlikely to want to invest significant time (such as in a collaboration or partnership) unless they trust that something will come of it and that it will be meaningful. The second key reason trust was identified as relevant and important is that trust helps achieve business and management objectives. For example, a management unit is probably less likely to face local opposition and possible litigation on a proposed management activity if they have a trusting relationship with local residents. Practitioners may even find more opportunities for creating partnerships with local community groups if trust is well-established. For these reasons, participants indicated a stronger agency commitment to building trust and engaging the public in meaningful ways would be positive.

- ***How trust functions in management situations is complex.*** Research participants were quick to acknowledge that trust can be tricky. Informal interactions between local residents and practitioners can help build a shared sense of community values as well as an understanding about local fire concerns. These can both help in building a trusting relationship. Developing trust through everyday activities (i.e., being competent and reliable) was identified by participants as a potential positive outcome of accomplishing normal daily work, it was also recognized that building trust usually requires intention. In other words, the public is no longer willing to just accept a “we say so” approach from practitioners, which means trust has to be cultivated. It does not simply come with the title of land manager or practitioner. Fostering trust can be challenging at times, as some participants pointed out, because it takes time and resources that are often not planned or budgeted for. It is important that these needs related to building and maintaining trust be identified upfront when planning activities where trust is essential.

Trust in management situations can also be complex because it is dynamic and it does not have an endpoint. It also cannot be assumed that a trusting relationship is the starting point. All activities affect trust now and into the future, and past activities affect the current trust relationship. Trust can also be tenuous; mistakes can damage it, though when a solid cushion of trust is in place, minor mistakes may be weatherable. Trust is also dynamic because it is a two-way relationship; not only does the public have some level of trust in practitioners and the agencies, but practitioners also have some level of trust in the public too. Some workshop participants suggested it is even further complicated with multi-way trusting relationships involving the public (local and extended), other stakeholders, and practitioners and their agencies. It was also pointed out that institutional dynamics and structure can be barriers to building trust. For example, high turnover rates in personnel and centralization of decision-making makes building long-term, local relationships between practitioners and community members difficult.

- ***Many actions for building trust are recognized by managers.*** A number of activities were readily identified as helpful in building trust. It was also useful to think in terms of how these actions contributed to a set of desired outcomes. For example, outcomes such as effective outreach, transparent decision-making, and building community capacity served as a method for organizing specific actions as well as evaluating their effectiveness. Specifically, outreach activities were seen as critical. Having a common language among agencies and stakeholders is important, and it was recognized that the front person who serves as the “face” of the agency during outreach opportunities should be someone who has the proper skillset for engaging others and who has a personality that garners trust. Participants identified that some personnel would clearly not be good for leading outreach efforts.

Thinking more broadly, participants identified a focus on the local community and transparency in the planning and implementation phases for all types of actions as important. Focusing on local places and encouraging transparency can both be

achieved by utilizing citizen leaders to advance proposed plans or projects. These individuals usually have a high level of respect and trust from prior leadership work in the community. Achieving transparency can further be achieved through straightforward acknowledgement of where there is flexibility in plans, where there is no room to bend, and most importantly, when mistakes are made. It is also useful to look at mistakes as a learning opportunity that can put agencies in a better position for future activities.

- ***Trust operates at many levels and in many directions.*** Expanding on the topic of actions for building trust, workshop participants recognized that trust operates at multiple levels and in multiple directions. Participants and researchers identified the agencies, the individual practitioners, and other stakeholders as the key groups or entities. Each of these trusts the others in different ways, and each of these is trusted by the others in different ways. Participants also identified that some actions for building trust are more appropriate at certain levels. For example, an action that agencies could take for building trust is to develop collaborative processes for meaningful public input and discussion which supports transparent and open decision-making. This demonstrates agency integrity, or the extent to which the agency is acting in accord with acceptable values and norms of stakeholders, a trustworthy quality that workshop participants readily identified with. A specific action that is more appropriate at the practitioner and field manager level is to incorporate local conditions and values into risk assessments. This inclusion of local concerns in the planning process contributes to the trustworthy quality of goodwill, or the extent to which stakeholders believe the practitioner will act in their best interest. Additional actions, outcomes, and trustworthy qualities are graphically represented with numerous examples for agencies and practitioners in the final planning guide (Shindler et al. 2014) and was well-received by workshop participants.
- ***Practitioners see great value in learning across international boundaries.*** A common comment made by practitioners during the workshops was that international exchanges of practitioners, such as what they were witnessing with the research team scientists on this project, would be of great interest if opportunities arose. Participants enjoyed hearing about the other workshops, about how fire management occurred, and how trust operated in the different countries. The greatest interest seemed to be in learning about novel activities and strategies for handling fire management and community relations challenges.

Process

This project used a novel research approach by using a draft planning guide to facilitate workshop discussion and feedback from practitioners who are the intended audience of the guide. A number of findings emerged that were specifically related to this process.

- ***Incorporation of practitioner knowledge was clear.*** Participants acknowledged that the initial draft planning guide reflected their own knowledge. In this way, the

workshops with practitioners served as a type of litmus test on the content of the guide; we were able to ensure we were on the right track for the audience we hoped the guide would be useful for.

- ***Overcoming cultural differences.*** Through these workshops, it became clear that mindfulness about cultural differences which could impact how the final guide was received by practitioners was important. A critical point to consider is language. The initial draft guide, as the participants explained, was geared more towards higher level management because of the language and formatting. Because we aimed for the guide to be useful for on-the-ground managers as well, workshop participants were able to give targeted feedback on changes in language that could help with this objective. Participants also pointed out the guide could be made more accessible with real examples from communities at-risk of wildfire. This feedback led to the creation of a new section in the final document with positive and negative examples of trust-building relationships in communities in all three countries. Participants also recommended a reduction in text and an increase in graphics would help with accessibility. This advice was also heeded in the production of the final guide.

The interactive workshop process and field visits also allowed us to better understand practitioners' needs so they could be adequately reflected in the final guide. This further helped overcome cultural differences (this time between researchers and managers). Specifically, participants identified the section of the guide that focused on concrete actions that could be used to build trust as something needed by practitioners. It was also suggested that we make more clear the connection between these actions and how it impacts trust. Participants also appreciated the sections where key questions were listed that practitioners could ask themselves to gauge their progress on trust-related issues. They pointed out these questions would also be useful for in-agency discussions about trust.

- ***Overcoming institutional barriers.*** This project was completed by a team of eight researchers from two government agencies and three universities in three countries. Considerable project time was spent navigating the policies and requirements of all the institutions, particularly when it came to paying for travel and arranging for hosting necessities for the workshops in different countries. Another barrier is reflected in the typical reward system for academic faculty. High quality journals are the preferred outlet for disseminating science, much less so than management publications. More recently, however, researchers are increasingly rewarded for disseminating work to non-academic audiences. All team members complete applied research and place a high value on disseminating research results to end-users which was an obvious goal of this project. Additionally, the Joint Fire Science Program provided additional support by disseminating planning guides to management agencies through the U.S. and featured this work at several large conferences.

- ***Interactions between researchers and practitioners.*** A field trip was conducted by local practitioners in each country providing research team members with local background information. These trips also provided an informal opportunity for researchers and practitioners to interact. Opportunities for informal interactions were also encouraged during the workshops when lunch was offered with no scheduled discussion topic. Finally, both researchers and practitioners expressed satisfaction and appreciation for the opportunity to interact together. The mutual benefits of gaining a better understanding and deeper level of trust were recognized and appreciated.

V. Management Implications

- ***Trust is an underlying ingredient and outcome of daily interactions.*** Indeed, the daily interactions wildfire practitioners have within communities at risk have opportunities for trust-building imbedded in them. Achieving trust can be a desirable outcome of these interactions. This is supported by other research that has found trust is important in similar fire and forest management contexts (Shindler et al. 2009, Olsen and Shindler 2010, Toman et al. 2011, Lachapelle and McCool 2012). Past interactions in particular can be a significant factor in building trust and eventual development of a community fire plans. When new interactions are positive and reinforce past positive interactions, this continues the trust building process and creates a foundation for more ambitious projects and plans (Shindler et al. 2014). A key, however, is aiming for realistic outcomes. Initially, this may mean setting modest goals.

While routine, daily interactions can serve as an important avenue for building trusting relationships with community members, the ability to have regular contact can be significantly hindered by frequent job transfers and the centralization of decision making. This was recognized as an issue at all study sites. When individual agency personnel do not live locally or stay in the same location for very long, it undermines the capacity of practitioners and agencies to build trust.

Acknowledgement of such changes suggests a method for monitoring or benchmarking trust locally may be important.

- ***Elevating the conversation about trust can be useful and is widely supported.*** Participants indicated that making trust a core element of the business of fire management agencies is essential. Specific suggestions about how to elevate the trust conversation ranged from internally acknowledging the importance of trust, holding workshops to explore and evaluate trust-building within their organizations, and designating skilled individuals to liaise between agencies and communities.
- ***Mindfulness of regular, daily behavior can enhance trust at little time or cost.*** Small, simple behaviors can have a big impact. For example, previous research identified that following through on promises was essential and influences

perceived levels of integrity – a recognized trait of trustworthiness (Olsen and Sharp 2013). Additionally, clear message content and more interactive communication also contribute to a trusting relationship. In an era of declining budgets, focusing on message delivery and cooperative interactions are useful strategies for time-strapped personnel. Seemingly, small efforts that often contribute to trust can be accomplished at little or no additional time or cost.

- ***Trust is fragile and can be easily damaged.*** Workshop participants clearly recognized the dynamic nature of trust, often referring to increases and decreases in trust based on single incidents. They acknowledged, however, that where trust has been built, it can withstand mistakes and allow groups to carry on. Trust really has no start or end point; it is important to understand the current context of each situation. Again, this suggests that benchmarking and monitoring trust may be useful. Prior work on how practitioners view trust has not identified trust dynamism as a major finding, though some of the components of trust and trustworthiness discussed by Sharp and colleagues (2013) allude to changing trust levels.
- ***International case studies can be useful in understanding the dynamics of trust as few differences surfaced between countries.*** There were no major differences among the countries in how practitioners view trust. Where we did see distinctions between the three countries was in how a particular challenge or facet of trust surfaced. For example, a lack of long-term local practitioners with whom communities can establish strong relationships was identified as a common challenge of institutional dynamics. In Canada this was largely blamed on a move to centralization of government, while in the U.S. and Australia it emerged more as a problem of personnel turnover. Still, the end result was the same—lack of contact with long-term local practitioners made reaching decisions more difficult. Another example was in the magnitude of cross-organizational collaborations. In the U.S., participants noted legislated initiatives that have resulted in the emergence of a number of large collaboratives that address landscape level projects, while in Canada and Australia most collaboratives discussed were over smaller projects or single activities. The result was the same – multiple agencies and communities collaborated over some common ground – but the magnitude varied.
- ***Large collaboratives have structural considerations to make in understanding ways to get to trust.*** Large collaboratives, such as those becoming more common in the United States (e.g., Collaborative Forest Landscape Restoration Program projects), often include representatives from multiple government institutions, community groups, non-governmental organizations, and others. This makes understanding the multi-level relationships and how trust is built among multiple parties particularly challenging. For example, understanding the structure of the group, who to go to for specific information, and who can be trusted for different purposes takes time and effort. Members and observers will need to have

confidence in the process of how the collaborative operates; no doubt, part of this will be transparency in operations and decision-making.

VI. Relationship to other recent findings and ongoing work on this topic

We are not aware of any recent or ongoing research that primarily examines trust of fire management across multiple countries. The following are projects that relate to our work, but at a smaller scale (e.g., single case studies) or in a different context.

- **Allan Curtis, Lead PI. Integrating socio-economics, policy and decision support systems. National Centre for Groundwater Research and Training. Charles Sturt University, Albury, NSW, Australia.** This project examines natural resource management in rural and regional communities in Australia in the context of groundwater management. Early versions of one publication that has emerged from this work by Sharp and Curtis (2014) were instrumental in the creation of the initial draft planning guide. Drs. Curtis and Sharp from this groundwater research team also participated as collaborators on this JFSP trust project and provided valuable insight into theoretical aspects of trust, as well as contextual concerns related to our Australian research site.
- **Emily Sharp, Doctoral Researcher. Exploring community-agency trust before, during, and after a wildfire. Charles Sturt University, Albury, NSW, Australia.** This project examined trust between communities and fire management agencies before, during and after wildfires. This work (Sharp et al. 2013, Sharp et al. 2012, Sharp 2010) was also instrumental in the creation of the initial planning guide, and Dr. Sharp participated as a collaborator on this JFSP trust project. She provided valuable theoretical, geographical, and contextual information. Data from this project also went into an early journal publication (Olsen and Sharp 2013) that emerged from this JFSP trust project and helped guide future steps for the project.
- **Christine Olsen, Bruce Shindler. Citizen-agency interactions: An investigation of postfire environments. Oregon State University, Corvallis, OR, US.** This project examined relationships between citizens and agencies in postfire environments in Oregon. This work (Olsen and Shindler 2010, Olsen 2008, Olsen and Shindler 2007) was instrumental in the creation of the initial planning guide, and Dr. Olsen was Co-Investigator on this project. Data from this project also went into an early journal publication (Olsen and Sharp 2013) that emerged from this JFSP trust project and helped guide future steps for the project.
- **Jordan Smith, Jessica Leahy, Dorothy Anderson, Mae Davenport. Community/Agency trust and public involvement in resource planning. *Society and Natural Resources* 26: 452-471.** This paper examined the relationship between trust and involvement in resource planning. Findings from this work significantly informed the creation of the initial planning guide.

- **Paul Lachapelle, Stephen McCool. The role of trust in community wildland fire protection planning. *Society and Natural Resources* 25: 321-335.** This paper examined the community wildfire protection planning process and the role that trust played in the development of plans. Findings from this work significantly informed the creation of the initial planning guide.
- **Ryan Gordon, Mark Brunson, Bruce Shindler. 2014. Acceptance, acceptability, and trust for sagebrush restoration options in the Great Basin: a longitudinal perspective. *Rangeland Ecology and Management*. doi:10.2111/REM-D-13-00016.1.** This paper indicates that positive or negative change in trust level of management organizations was the most significant predictor of acceptability judgments over time. Results suggest efforts to increase acceptance should focus on activities designed to build trust rather than simply providing more information to stakeholders.

VII. Future work

- Future social science work that examines trust should include longitudinal analysis to look at changes in trust over time. Because trust is so dynamic and can vary significantly in relation to recent events, caution will have to be used in selecting the location and timing of such studies.
- While this project examined trust in three different countries, it could be very useful to expand the research to other locations, including countries with different social, ecological, and political conditions. For example, case studies in Spain, Greece, and Argentina would provide valuable insight into how trust works in regions that are significantly different from Australia, Canada, and the US.
- As an applied project with good value for practitioners and agencies, additional tech transfer of the findings from this work would be very useful. More printing and dissemination of the planning guide, additional presentations at professional and managerial conferences and workshops, and perhaps some focused workshops on trust would all increase the utility of this project. Working directly with the Collaborative Forest Landscape Restoration Program projects would also be helpful.
- Manager learning exchanges where practitioners visit other agencies, units, and/or countries to learn about the function of the unit and how trust and relationships work would be another positive future activity. Our workshop participants requested opportunities like these and felt they would be very valuable.

VIII. Deliverables cross-walk

Proposed	Delivered	Status
Final Report	Shindler, B., C. Olsen, S. McCaffrey, A. Curtis, T. McGee, B. McFarlane, A. Christianson, and E. Sharp. 2014. Advancing knowledge about citizen-agency trust in wildland fire management: a collaborative assessment for the U.S., Australia, and Canada	Completed August, 2014
Planning Guide (1000 copies distributed)	Shindler, B., C. Olsen, S. McCaffrey, A. Curtis, T. McGee, B. McFarlane, A. Christianson, and E. Sharp. 2014. Trust: a planning guide for wildfire agencies and practitioners. http://hdl.handle.net/1957/45323 .	Completed January 2014
Country specific interactive workshops with researchers, practitioners, key stakeholders	Agency-stakeholder workshops/field visits on trust and trust-building in fire prone communities: Bend, Oregon (USA)—Sept. 18-19, 2012 Kananaskis, Alberta (Canada)—Sept. 25-26, 2012 Wangaratta, Victoria (Australia)—Oct. 30-31, 2012	Completed October 2012
Workshop summary	Workshop summary & highlights for agency-stakeholder trust in the U.S., Canada, and Australia. Oregon State University.	Completed Dec. 2012
Journal articles	Olsen, C. and B. Shindler. 2010. Trust, acceptance, and citizen-agency interactions after large fires: influences on planning processes. <i>IJWF</i> . 19:137-147.	Completed
	Sharp, E., R. Thwaites, A. Curtis, and J. Millar. 2012. Trust and trustworthiness: conceptual distinctions and their implications for natural resource management. <i>Journal of Environmental Planning and Management</i> . DOI:10.1080/09640568.2012.717052.	Completed
	Olsen, C., A. Mallon, and B. Shindler. 2012. Public acceptance of disturbance-based forest management: factors influencing public support. <i>ISRN Forestry</i> . Doi.10.5402/2012/594067.	Completed
	Olsen, C. and E. Sharp. 2013. Building community-agency trust in fire-affected communities in Australia and the U.S. <i>IJWF</i> . Doi.org/10.1071/WF12086.	Completed
	Sharp, E. and A. Curtis. 2014. Can NRM Agencies rely on capable and effective staff to build trust in the agency? <i>Australasian Journal of Environmental Management</i> . doi.org./10.1080/14486563.2014.881306	Completed
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	Olsen, C. 2012. Building a trust framework for communities at risk of wildfire. The 3 rd International Association of Wildland Fire (IAWF) Human Dimensions Conference. April—Seattle, WA.	
	Shindler, B. 2013. How understanding public attitudes can help build and maintain trust. U.S. Forest Service and BLM Conference: An Exploration of what Social Science Can Tell Us. May—Springfield, OR.	

	<p>McCaffrey, S. 2013. Lessons learned in community acceptance of fire hazard reduction. Western Wildfire Conference. April—Kelowna, British Columbia.</p> <p>Christianson, A. 2013. Building and maintaining trust with residents. Alberta Environment and Sustainable Development Workshop. October—Slave Lake, AB.</p> <p>Shindler, B. 2013. Agency-stakeholder trust in communities at risk of wildfire in Australia, Canada, and the U.S. The 5th International Fire Ecology and Management Congress. December—Portland, OR.</p> <p>McFarlane, B. and A. Christianson. 2013. Human dimensions of wildfire management. Canadian Institute of Forestry e-lecture series. October, 2013.</p> <p>McGee, T. 2014. Trust and trust-building in forest communities. Forest Fuels Management Workshop at the Hinton Training Centre. January—Hinton, AB.</p> <p>Olsen, C. 2014. Agency-stakeholder trust in fire-prone communities: an international collaboration. Large Wildfires Conference: Social, Political, and Ecological Effects. May—University of Montana.</p> <p>Shindler, B. 2014. Building partnerships, building trust. Wildland Fire Canada 2014 Conference. October—Halifax, Nova Scotia.</p>	
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