

The Metagovernance of Climate Change: Institutional Adaptation to the Mountain Pine Beetle Epidemic in British Columbia

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Abstract

The interior region of British Columbia is experiencing the most extensive mountain pine beetle outbreak ever recorded in North America, with 9.2 million hectares of red-attach pine forest identified in 2006. The epidemic is attributed to changing climate conditions and forest management policies that have resulted in a large number of mature, even-aged pine trees. Owing to the dominance of the forest industry in this region, there is widespread recognition that the mountain pine beetle outbreak will have significant socioeconomic impacts on forest-based communities in British Columbia. This paper examines the adaptation strategies of several communities that are affected by the mountain pine beetle epidemic. First, drawing from household survey research, latent levels of institutional capacity are discussed. Second, recent institutional adaptations are examined through the emergence of regional-scale beetle action coalitions. These institutional innovations can be characterized as a form of metagovernance, whereby collaboration and negotiated decision making are realized in the context of bureaucratic hierarchy and the extension of state power. The paper concludes with a call for stronger linkages between public and private sectors, as well as more robust forms of civic engagement as the basis for collective response to the mountain pine beetle outbreak.

1.0 Introduction

In the past 5 years, the mountain pine beetle (*Dendroctonus ponderosae*), an insect that attacks and eventually kills mature lodgepole pine trees (*Pinus contorta* Dougl.), has infested large tracts of forests in the central interior region of British Columbia. Although the mountain pine beetle (MPB) occurs naturally in western Canada, the outbreak is the largest the province has ever experienced and is responsible for killing millions of hectares of forest. The outbreak has been attributed to climatic factors, such as unusually warm winters and dry conditions, allowing the beetle population to grow and expand its natural range throughout the province (Ministry of Forests, 2004). As a secondary impact from climate change, the MPB is causing rapid ecological change and major challenges for forest-based communities and economies in the region. Owing to the dominance of the forestry sector in particular, there is widespread recognition that the MPB outbreak will have significant socioeconomic impacts on forest-based communities in British Columbia.

This paper examines the adaptive capacity and adaptation strategies of several communities affected by the MPB epidemic, with a focus on recent institutional developments. The literature on institutional adaptation to climate change pays particular attention to aspects of policy learning and social networks as important building blocks for adaptation. The climate change literature also considers state-based institutional activities as distinct from institutional activities within civil society. Yet current scholarship points to other institutional arrangements that are characterized by a collaborative and partnership-based integration of state and civic institutions, i.e., a hierarchical core to a network of horizontal relationships. As a case in point, recent institutional adaptations in British Columbia are characterized by the establishment of formal institutions at the regional scale, with linkages upward to the state and downward to a group of regional municipalities. Within this context, the state provides oversight, coordination, and financial support. In addition, local institutions work collaboratively to garner ideas and insights and to determine local objectives and strategies. This general set of institutional arrangements is discussed by some scholars as metagovernance, which involves an iterative approach to decision making between top-down and bottom-up forms of governance. As a form of metagovernance, the Omineca Beetle Action Coalition (OBAC), headquartered in Prince George, and the Cariboo-Chilcotin Beetle Action Coalition (CCBAC), headquartered in Williams Lake, offer an innovation in institutional adaptation to the MPB epidemic. Moreover, the emergence of such regional governance structures deserves further attention as a potentially important contribution to capacity building for climate change adaptation.

After summarizing the ecological and social impacts from the MPB epidemic in British Columbia, this paper reviews the literature on institutional adaptation to climate change and discusses metagovernance as a potentially important aspect of adaptation. The case study is developed, in part, by analyzing household survey data from communities affected by the MPB. Survey results offer insights into the institutional potential for adaptation as a collective community response. Further insights are gained from a more detailed examination of the structure, goals, and achievements of the Omineca and Cariboo-Chilcotin beetle action coalitions. The paper concludes by discussing the utility of these institutional adaptations along with several ways in which these adaptive responses can be strengthened.

2.0 Mountain Pine Beetle Epidemic in British Columbia

The interior region of British Columbia is currently experiencing the most extensive outbreak of the MPB ever recorded in North America, with 9.2 million hectares of red-attack pine forest identified in 2006 (see Figure 1). A naturally occurring insect, the MPB has expanded its population and natural range considerably over the past 10 years, through a combination of older age-class forest that is vulnerable to disease, coupled with above-average seasonal temperatures (Ministry of Forests, 2006). There is considerable evidence that the outbreak is related to changing climate conditions and that if climate conditions continue to favour the beetle (i.e., warmer winters), the outbreak will expand significantly (Carroll, Taylor, Régnière, & Safranyik, 2004). The outbreak threatens the long-term viability of the forestry sector, which is a core sector in the

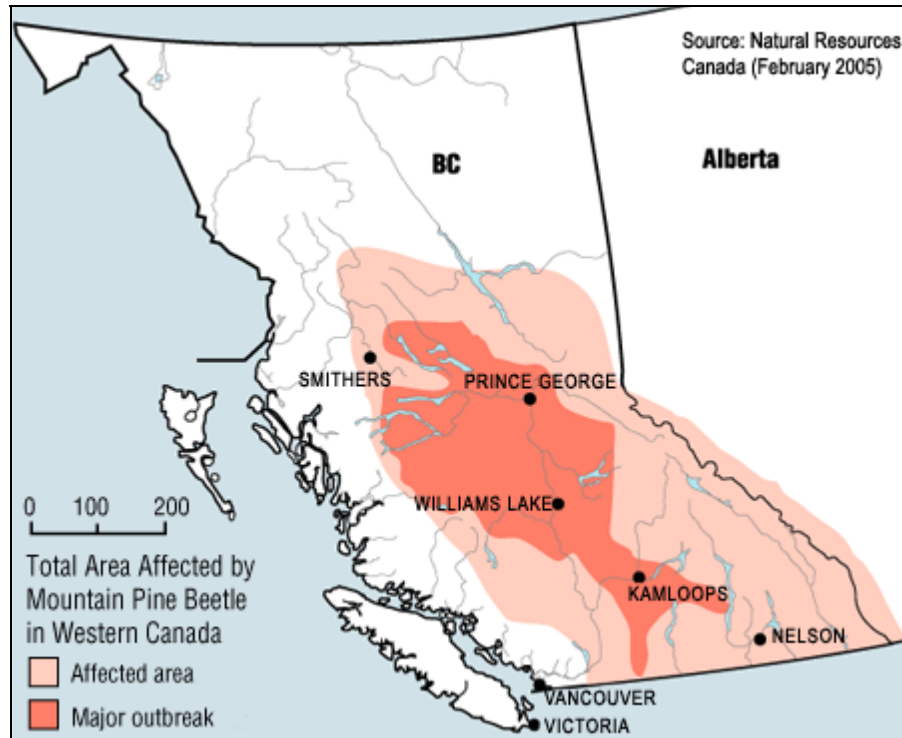


Figure 1. Extent of mountain pine beetle outbreak in Western Canada.

Source: Natural Resources Canada, http://mpb.cfs.nrcan.gc.ca/map_e.html

British Columbia economy and the primary economic driver for many rural communities in the province.

These communities experience a combination of ecological and economic impacts. In the short term, the infestation has prompted a significant increase in forest harvests as a means to remove merchantable timber before it is affected by the outbreak. These temporary increases in harvest will eventually be outpaced by significant long-term decreases in timber supply because of tree mortality (Ministry of Forests, 2003). Threats to the forest sector, changes to the visual aesthetic of the forest landscape, and the short-term economic boom from temporary harvest increases are the immediate social and economic impacts on communities located in beetle-infested forests. The current infestation involves direct impacts on more than 30 communities and 25,000 families who rely on the forest industry for their livelihood (Ministry of Forests, 2006). Within these communities, at least 30% of direct and indirect income is derived from forestry, and over the long term, when salvage of dead trees becomes infeasible, analysts expect that 25% or more of the present income level in these communities will be lost (Ministry of Forests, 2006).

3.0 Institutions and Climate Change

Within the climate change literature, a notion of institutional adaptation to climate change is embedded within a larger notion of vulnerability, defined as “the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity” (Intergovernmental Panel on Climate Change [IPCC], 2001, p. 6). Moreover, adaptive capacity is a function of technology, social capital, resource availability, human capital, public perception, and institutional decision-making capacity (IPCC, 2001).

Although widely cited, the IPCC conceptualization of vulnerability has been criticized in favour of definitions recognizing a greater complexity in the meaning of vulnerability. Social science approaches to climate change vulnerability begin to address some of these criticisms. Adger, Brooks, Bentham, Agnew, and Eriksen (2004), Brooks (2003), and O’Brien (2004), for example, argue that the definition of vulnerability for social systems must be distinct from that of biophysical systems and that vulnerability must emphasize not only impacts and damage to systems but also the characteristics of the system that allow it to cope with change. In general, this literature recognizes that vulnerability is a state or a process rather than a set of biophysical impacts arising from a particular event.

Assessments of vulnerability for industrialized nations, in particular, focus on institutional and political factors associated with adaptation. In this context, an understanding of the institutional context for planning and response to climate change is an important consideration (Adger & Kelly, 1999; Dow, 1992; Handmer, Dovers, & Downing, 1999). More closely linked with institutional analysis, several fields of study prevail. Social capital in particular—social networks that enable collective action—is closely connected to institutional analysis. The mobilization of dense informal networks of kinship and familiarity, along with the cultivation of trusting relationships, to provide mutual assistance and accomplishments are examples of how social capital reduces vulnerability (Adger, 2003; Pelling & High, 2005). Closely coupled with the social capital literature, authors have also pointed to risk perception as a critical factor in vulnerability assessment (Davidson, Williamson, & Parkins, 2003). They argue that individuals who perceive a presence of risk or vulnerability are more inclined to act in ways that will mitigate risk. Heightened risk perception works to engage actions that lead to adaptive strategies.

Policy learning and adaptation to changing conditions in key political, social, and economic institutions are also considered essential to develop adaptive capacity (Adger, 2000; Adger & Kelly, 1999; Handmer et al., 1999). According to Adger (2000), institutional adaptation is the outcome of institutions’ evolving in response to external and internal forces, while policy learning is the strengthening of organizational objectives in response to change. Adger argues that institutional adaptation is a function of both decision making and non–decision making, where non–decision making involves preventing issues from entering the political domain. In his examination of flooding and typhoon impacts in Vietnam, Adger (2000) focuses also on the ways in which hierarchical forms of institutional adaptation can limit the potential for collective action and the maintenance of civic institutions.

Researchers have also focused on other aspects of institutional adaptation to climate change. For instance, Crabbe and Robin (2006) examine institutional barriers and opportunities for water resources management in eastern Ontario. Also, Naess, Bang, Eriksen, and Vevatne (2005) study institutional adaptation to flooding in Norway. These authors focus on the structure of the relationship between national, county, and municipal levels of government and the extent to which local institutions can act independently from the national level when developing and implementing flood response policies and procedures. A key observation from their research is the weak interplay among municipal, county, and national levels. The authors state that “while the local level is critical, adaptation in terms of reducing vulnerability may require measures carried out at several different scales” (Naess et al. 2005, p. 136). Citing earlier research from Olsson and Folke (2001), they call for stronger comanagement systems that can increase the robustness of institutional responses in the face of external changes.

4.0 Metagovernance

Following the observations above, with respect to the need for institutional integration across different scales, this section offers a more focused discussion of these possibilities. The notion of governance is not new to the lexicon of contemporary resource management. Inclusive of ideas and issues such as rights, responsibilities, decision making, tenure, equity, and management authority, governance regimes take many forms with often embedded and overlapping scope and jurisdiction. Within the forest sector, the governance of natural resources is closely associated with concepts such as public participation, community forestry, and market-based certification. In general, issues related to governance reflect the changing relationship between civil society, economic forces, and state regulation and leadership.

Whereas the notion of government is defined as a rigid relationship between the governor and the governed, governance is understood to include a wider group of actors who participate in the process of decision making and regulation within a market-based capitalist system. This trend toward governance is documented in the published literature over the past three decades (Parkins, 2006) and one of the more concrete outcomes from this network-oriented approach involves comanagement, costeering, and coproduction activities that incorporate a broad range of actors within a governance framework (Kooiman, 1993).

The shift away from hierarchical and state-driven decision making is the basis of a “hollowing out of the state” thesis and ongoing claims by some scholars that a new localism is emerging within the regulatory processes of capitalist systems. According to Brenner and Theodore, a “new localism” is associated with localities that “are increasingly being viewed as the only remaining institutional arenas in which a negotiated form of capitalist regulation might be forged” (2002, p. 341). Coupled with these political theorists, economists point to the inabilities of national and centralized governments to generate and equitably distribute social and economic benefits (e.g., economic growth and full employment). This has resulted in calls for more local and regional decision-making authority and demands from towns and municipalities “for specifically tailored and targeted urban and regional policies to be implemented from below” (Jessop, 1999, p. 385).

Yet this idea of a hollowed-out state, where important decision-making processes are increasingly thought to be diffuse and locally based, is being questioned and

rearticulated. Through their observations of environmental management in several countries, scholars are observing a set of institutional relationships between the state and local authorities that do not fit well into the theoretical constructs of a hollowed-out state. In contrast, institutional conditions are observed to be more complex in the way that decentralized and self-organized decision-making networks are in fact organized and governed from above. In this sense, the idea of metagovernance has come to signify a hybridity of governance structures and a multilayering of governing bodies (Bell & Park, 2006). Metagovernance is understood in simple terms as the organizing of self-organized partnerships, networks, and governance regions, or what Scharpf (1994) describes as governance in the shadow of hierarchy.

Within these hybrid structures of horizontal and vertical integration, the actions of government are reconceptualized and rearticulated. According to Jessop (2003), government would:

Provide the ground rules for governance; ensure the compatibility or coherence of different governance mechanisms and regimes; act as the primary organiser of dialogue among policy communities; deploy a monopoly of organisational intelligence and information with which to shape cognitive expectations; act as a “court of appeal” for disputes arising within and over governance; seek to rebalance power differentials by strengthening weaker forces or systems in the interests of system integration and/or social cohesion. (p. 6)

In addition to this emerging role of governments as overseers, coordinators, and mobilizers within a governance system, metagovernance also signals a new approach to decision making that is based on negotiation and collaboration. According to some theorists, these articulations of state power may be associated with more socially penetrative modes of governance (Bell & Park, 2006) and may help to enlarge state competencies (Andersen, 2004, cited in Bell & Park, 2006).

In his analysis of urban policy reform in the United Kingdom, Whitehead (2003) articulates the benefits of metagovernance. Metagovernance breaks down the unhelpful dichotomy between government and governance and helps to position empirical work within the context of the changing relationship between state power and key social and economic forces. Moreover, an analysis of the hierarchical structures of metagovernance and the relationships among institutions is required to understand the political hierarchies where negotiation and political struggles associated with governance are played out; the interdependencies between hierarchical structures and local political coordination then becomes more apparent and can be brought into our analytical frames (Whitehead, 2003, p. 8).

The current research trajectory in the study of metagovernance provides a compelling opportunity to expand analysis of institutional adaptation to climate-induced environmental challenge. Moving from analysis of social networks and social capital, along with consideration for policy learning environments within the current climate change literature, metagovernance may be an instructive framework for analysis of institutional adaptation for several reasons. First, it offers a frame for theory building and empirical analysis that links local political activity (where local power struggles are played out and where local solutions are forged) with hierarchical structures (where policy and fiscal measures are mobilized and where international political forces come into play). Second, the

utility of metagovernance as a tool for enlarging state competencies remains an open question and one that requires further empirical exploration. At best, metagovernance may offer advances in our understanding of institutional adaptation and the challenges of coordination, negotiation, and collaboration within and between private and public institutions as they respond to the MPB outbreak.

5.0 Assessment of Institutional Capacity and Adaptation

As illustrated by the literature review, an assessment of vulnerability will include aspects of exposure, sensitivity, and adaptive capacity. Adaptive capacity, in particular, will include consideration for the institutional dynamics of vulnerability and the ways in which groups of individuals are positioned to respond to environmental and economic threats. Institutional capacity is defined as latent organizational practices and behaviours that are available to communities to respond to various threats. Capacity is assessed in this context through levels of trust, risk perception, and satisfaction with local leadership. Institutional adaptation is defined as a mode of adaptation that is realized through the actions of local organizations (both formal and informal). Institutional adaptation is assessed in this context through a case study of emerging institutional structures (i.e., beetle action coalitions).

5.1 Household Survey

As a component of a larger study (Parkins & MacKendrick, 2007), the household survey was conducted in 13 rural communities in British Columbia during the year 2004 to assess institutional capacity at the community level. The survey was mailed out to 2,217 households in 11 British Columbia communities and 589 households in two Alberta communities (see Figure 2). Respondents were randomly selected using a household telephone directory and then recruited by telephone. For those who agreed to participate, a questionnaire was mailed to households within 10 days of the telephone conversation. To further randomize the sample, all participating households were asked that the individuals in the household over the age of 18, and with the most recent birthday, complete the survey. After several follow-ups with respondents by regular mail, a total of 1,764 surveys was completed and returned, for a response rate of 62%. Sample sizes varied according to the size of the community, with the smallest samples in Cheslatta Carrier First Nation ($n = 21$) and Cache Creek ($n = 45$), and the largest samples in Quesnel ($n = 231$) and Hinton ($n = 215$).

Survey data were entered into SPSS version 10.0.5, a statistical software program. As male respondents were overrepresented, data were weighted to reflect the actual gender distribution in the community population from the Census of Canada. For more detail on survey methods, see MacKendrick and Parkins (2005).

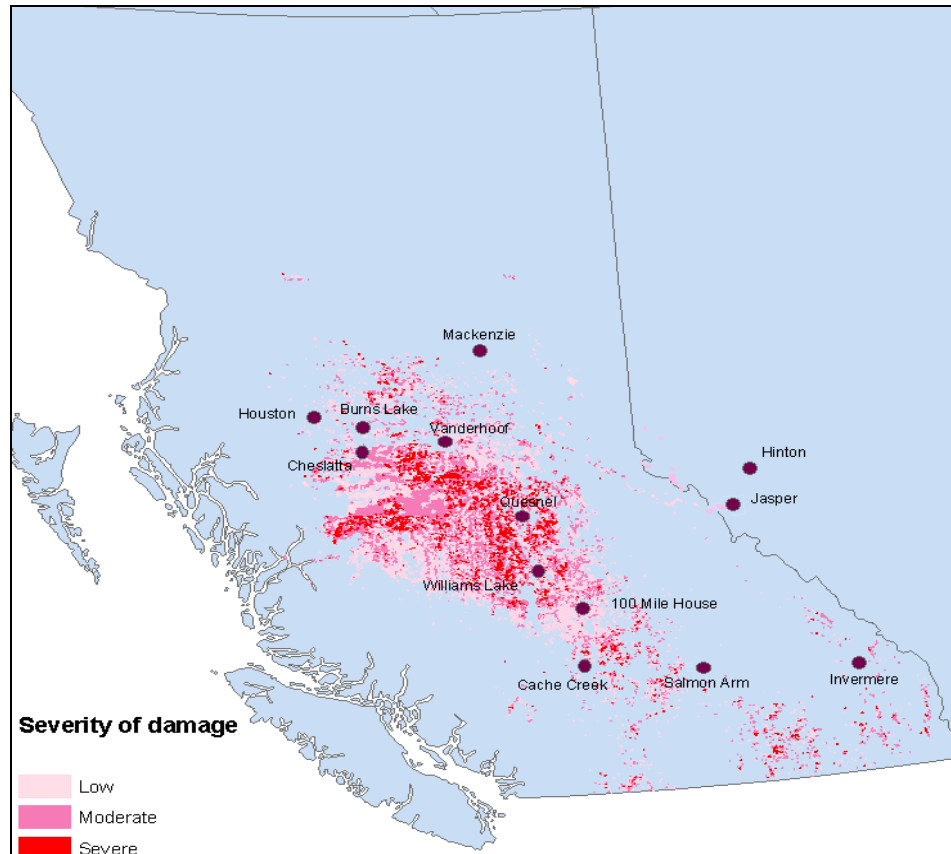


Figure 2. Map of study communities and severity of mountain pine beetle damage in 2004.

Several indicators of institutional capacity were measured in the survey. As emphasized in the literature review, issues of trust and responsibility were identified as indicators to gain insight into the potential for communities to respond collectively and adapt to changing circumstances. Risk perception, evaluation of community efforts to respond to beetle presence, and satisfaction with local beetle management effort are also potential indicators for community response to the threat of MPB. Collectively, these indicators provide insights into current perceptions of organizational activity related to the MPB. They also provide insights into the capacity of community members to respond to leadership at various levels of government and the private sector.

In response to questions about who should be responsible for managing MPB activity (see Table 1), respondents indicated strongly that provincial government forestry departments were thought to be the primary agencies of responsibility (98% said yes). There was also a strong indication that other provincial and federal departments, as well as forestry companies, should hold some responsibility in this area. In contrast, there was less clarity about the role of municipal governments in managing this epidemic.

Table 1. *Responsibility and Trust in Organizations Associated with MPB Management*

Organizations	Should this organization be responsible for MPB activity?		Level of trust*
	Yes (%)	No (%)	
Municipal government	55	45	2.4
Provincial government forestry departments	98	2	2.7
Provincial government parks or protected areas departments	84	16	2.6
Federal government agencies	81	19	2.1
Forestry companies	86	14	2.9
Other**	97	3	2.7

*Based on a 5-point Likert scale in response to the question “How much trust do you have in the following organizations to properly manage for mountain pine beetle activity?,” where 1 = no trust and 5 = complete trust.

**Includes: general public, land owners, First Nations, and logging contractors.

In addition to these results regarding who should be responsible, respondents indicated their level of trust in a variety of organizations. None of the organizations listed in Table 1 were found to enjoy high levels of trust among the pool of respondents. In fact, all mean scores are below the midpoint of 3 on a scale from 1 to 5. Although the levels of trust are relatively consistent among organizations, with forestry companies being slightly more trusted than other organizations, these aggregate scores from all 13 communities tend to hide some important differences among communities. Levels of trust for forestry companies in Jasper and Hinton were higher than the average in British Columbia (3.4 and 3.3, respectively), thus pulling up the average reported in Table 1. Also, communities such as the Cheslatta Carrier First Nation and Hinton had higher levels of trust for the provincial government than did many other study communities (3.0 and 3.2, respectively). These community-specific scores provide insights into the perceptions of community members in 2004 regarding who should be responsible and who should be trusted for managing MPB issues. The extent to which levels of trust, social networks, and collective action are linked in this context will provide a partial view of institutional capacities at the community level—capacities that were observed to be relatively low by these indicators.

Considering other indicators of institutional capacity, results indicate a high level of perceived risk in most study communities (see Table 2), with most communities reporting risk to be above 6 on a 7-point scale. Given their strong tourist- and amenity-based economies and lower dependence on forestry employment, Jasper and Invermere reported the lowest levels of perceived risk, and Burns Lake, Houston, and Quesnel (as highly forestry-dependent places situated within the

MPB outbreak area) reported the highest levels of perceived risk. The evaluation of community efforts to respond to the MPB epidemic were varied, with respondents from Cheslatta Carrier First Nation, Burns Lake, and Vanderhoof being satisfied with community efforts, and Cache Creek and Salmon Arm being dissatisfied.

Table 2. *Perceived Risk, Effort, and Satisfaction Related to MPB Management in Study Communities*

Study community	Perceived risk to community from beetle*	Evaluation of community efforts to respond to beetle presence**	Satisfaction with local beetle management efforts**
100 Mile House	6.3	4.6	3.3
Burns Lake	6.6	5.7	3.3
Cache Creek	5.5	2.6	2.5
Cheslatta	6.4	6.0	3.8
Houston	6.6	5.1	3.5
Invermere	5.4	4.2	3.6
Mackenzie	6.4	4.9	3.5
Quesnel	6.6	5.3	3.3
Salmon Arm	5.7	3.2	3.2
Vanderhoof	6.4	5.8	3.7
Williams Lake	6.3	5.4	3.5
Jasper	5.2	4.2	4.5
Hinton	5.7	3.9	4.5

*Based on a 7-point Likert scale, where 1 = poses no risk and 7 = poses a great risk.

**Based on a 7-point Likert scale, where 1 = very dissatisfied and 7 = very satisfied.

Finally, satisfaction with local beetle management efforts was consistently low (below the midpoint of 4 on a 7-point scale). These scores are relatively uniform and they may signal a desire among respondents to see more concerted efforts with respect to addressing potential impacts from the epidemic on their communities.

Several general trends are evident from these results. First, there is some evidence that respondents are expressing a shared experience with respect to their recent history with government and industry. Specifically, levels of trust are fairly low across several jurisdictions within the public and private sector, perceived risk is high, and satisfaction with management efforts up to the year 2004 was relatively low. These results must be interpreted to some extent within a longer historical context in British Columbia, where the years preceding the MPB outbreak brought government downsizing and the closure of many government services in the study communities, coupled with industrial reorganization and the closure of many mills

across the province. For instance, according to recent statistics from the Canadian Forest Service, more than 2,800 employees have experienced layoffs between 2003 and 2006 (Canadian Forest Service, 2006). Since these same organizations that have radically changed their relationship to and presence within many of these communities are now the same organizations responsible for managing the MPB outbreak, it is not surprising to observe lower levels of trust. Rhetorical commitments to community development and sustainability may be high within the public and private sectors, but many communities have observed recent decisions and changes that have resulted in significant hardship.

Second, there are some indications from Table 1 that respondents identify areas or domains of responsibility for managing the MPB within several levels of government and the private sector. Results from the “Other” category also speak to the idea that management of the epidemic is a shared responsibility. Although the causes of this outbreak are due in part to provincial forest-management policies (resulting in an overabundance of mature pine trees), there is also a realization of the climatic aspects of this outbreak, which extends responsibility well beyond the provincial scale. Given these various causes, Table 1 signals a need for coordinated response across scales and jurisdictions. Equally, many respondents are not completely comfortable with municipal governments’ taking responsibility for this epidemic; nevertheless there is a strong sense that municipalities have the most to lose from the long-term economic impacts of this epidemic and are, therefore, compelled to take on more of a leadership role.

Third, levels of satisfaction with local beetle management efforts were low in 2004. Even though municipal governments were not thought to be the primary organization of responsibility, municipal leadership may have sensed some pressure from their constituency to take responsibility and step forward in some significant ways.

From this general overview of institutional perspectives, we now turn to more recent developments in the region and focus attention on the emergence of several institutional adaptations associated with the MPB epidemic.

5.2 Management Through Metagovernance: The Case of Beetle Action Coalitions

The second phase of the assessment involves a detailed case study of beetle action coalitions. This research took place in early 2007 and represents a follow-up to household survey research in 2004. Whereas the household survey provides insights into the institutional capacity of rural communities, this case study provides insights into a particular mode of institutional adaptation. Research involved content analysis of publicly available documents from beetle action coalition websites, provincial and federal government websites, government news releases, and planning documents. Additional research involved telephone interviews with three key informants, two conference calls, and attendance at two meetings where research and capacity building for beetle action coalitions were discussed. These methods provided opportunity to observe key structures and relationships between municipalities, beetle action coalitions, and other levels of government, and to understand the nature of metagovernance in this context.

The mission of the CCBAC is:

to develop a coalition that will be effective with government regarding the Mountain Pine Beetle epidemic and the future of our communities. To ensure that our communities are economically stable, that there are jobs in all sectors, and support the entrepreneurial spirit that is fundamental to the Cariboo-Chilcotin lifestyle (CCBAC, 2005).

Gaining initial momentum in 2005, with a \$1.6 million grant from the Province of British Columbia, CCBAC was initiated by municipal leadership from three major centres in the region: Quesnel, Williams Lake, and 100 Mile House. CCBAC directors include the mayors of these three communities along with chairs and directors from the regional district, First Nations, and the local conservation society and land-use strategy. The coalition is intended to encompass perspectives from sectors that include land use, land management, and government direction regarding policy, tenure, and legislation. Initial tasks have included the development of strategies and tactical and operational activities within the region. Detailed strategies have been developed in the areas of retention and attraction of people, the log home sector, and the secondary wood sector. Within the secondary wood products sector, for instance, the report outlines a detailed strategy to double the size of this sector in the region over a 10-year period (CCBAC, 2007). A \$1.2 million budget is proposed for the first 5 years of this strategy, which includes office staff to work in key departments and to promote sector development within the region. In March 2007, the Province of British Columbia granted CCBAC an additional \$900,000 to continue its work in dealing with the impacts from the MPB epidemic through the development of strategic plans for various sectors of the economy.

The OBAC is a slightly younger organization that was initiated with a grant of \$800,000 from the Province of British Columbia in September 2005. These funds were granted “to enable communities to better respond to the challenges and capture opportunities created by the bark beetle epidemic” (OBAC, 2007). Membership in the OBAC Society includes numerous communities along the Highway 16 corridor from the village of Valemout in the eastern part of the region to the town of Smithers in the western part of the region. The OBAC board is composed of mayors from each member community or someone designated by the mayor or chair of the board. Similar to CCBAC, OBAC has embarked on a series of sector strategies to guide its activities. These strategies include a mineral exploration strategy, an alternative energy strategy, and a “retention and attraction of people” strategy. Within the OBAC region, there is particular interest in the alternative energy industry and the development of green energy through the use of wood fibre. According to the OBAC, increasing availability of low-quality wood fibre (beetle-killed pine) could spur the development of “green energy projects such as cogeneration, increased wood pellet production, development of a bio-fuels industry, carbon/energy production and others such as heat and electricity for local use and export” (OBAC, 2007, March).

In addition to these two organizations, which have gained some momentum over the last few years and have well-defined organizational structures, staffs, and sets of sector strategies from which to operate, there are several other action coalitions that are currently under development. The BC First Nations Interim Mountain Pine Beetle Working Group is working toward an action plan (BC First Nations

Forestry Council, 2007), and the provincial government recently announced financial support for the Southern Interior Beetle Action Coalition (Ministry of Forests and Range, News Release, April 5, 2007). General commitments to these regional coalitions are also evident in the 2006–2011 MPB Action Plan (Province of British Columbia, 2006).

Within a metagovernance structure, where hybrid institutional arrangements are forged within various levels of government and civil society, beetle action coalitions show several signs of institutional hybridity in their horizontal and vertical relationships. First, beetle action coalitions have emerged to fill a gap between local and municipal politics and provincial-level politics. The linkages downward extend primarily into municipal-level political institutions, with the mayors of villages and towns in the region as the principal directors. There are indications that formal linkages also extend to nongovernmental organizations, such as conservation groups and business interests (particularly within the CCBAC structure), but these formal links to nongovernmental organizations appear somewhat limited to date. Informal linkages into civil society, however, are more evident with respect to the activities of these coalitions. For instance, the OBAC declares a strong commitment to a community-drive approach and OBAC personnel have spent considerable time and resources in the early phase of their development to visit communities, document concerns, and build grass-roots awareness of problems and opportunities. Community dialogue notes are posted on the OBAC website from eight communities in the region.

Regional governance arrangements for resource management are not a new phenomenon (Parkins, 2006), and the establishment of regional institutional arrangements in response to the MPB outbreak is consistent with this trend. But one of the key features of metagovernance, as distinct from governance, is the focus on hierarchy and the ways in which an otherwise collaborative and partnership-oriented approach to governance provides new opportunities for the projection of state power.

The “meta” in *metagovernance* in this case comes by way of examining the unique reflections and projections of state power within the context of these beetle action coalitions. Indicators of this hierarchical shadow are observed overtly through the funding mechanisms that allow these coalitions to operate. Funds are granted to these groups from provincial government coffers on an ongoing basis. Whereas initial financial support has allowed the coalitions to develop work plans and specific sector strategies, implementation of these strategies will require large and continued cash infusions. The proposed budget for CCBAC’s retention and attraction strategy and secondary wood products strategy total almost \$15 million, and these two strategies are just a small part of the overall funding envelope required by these coalitions across the province. If these strategies are to be implemented, provincial government funds will play a major role, and their contributions will depend a great deal on alignment between provincial government and beetle action coalition priorities.

More subtle forms of metagovernance are observed through stated commitments within action coalition and provincial government documents. For instance, in CCBAC’s 2005–2006 Business Plan (2005), the top four commitments start with the phrase “to assist government.” These commitments include assisting government in (a) measuring all impacts from the MPB epidemic, (b) addressing information issues, (c) addressing job loss, and (d) developing with specific

economic measures. In this business plan and in the CCBAC mission statement there is a clear sense that these regional coalitions are intended to operate in conjunction with the state in ways that allow for the development of community-based strategies and action plans to emerge. Responsibility continues to reside, however, with the state for implementation. In this sense, action coalitions provide an opportunity for municipalities to work collectively, to get organized, and to develop more effective ways of influencing and directing state resources, while at the same time acknowledging the central role of provincial and federal governments in managing this epidemic.

Similarly, provincial government documentation highlights the vertical linkages between the state and regional institutions. The first objective of the 2006–2011 MPB Action Plan (Ministry of Forests, 2006) is to encourage economic sustainability of communities. The plan states, “[W]ith funding assistance from the province, these groups provide local leadership in designing economic development and community transition strategies. Provincial government agencies will continue to support the beetle action coalitions by providing expertise in designing these strategies” (2006, p. 6). In addition to playing a key role in designing and funding these strategies, the provincial strategy that is described within the MPB Action Plan also makes direct reference to regional beetle action coalitions as a key aspect of the government’s coordinated and strategic response. In this sense, the provincial government sees a clear role for these coalitions as an extension of state power and a way of enhancing provincial response through collaboration at the regional level. These claims suggest an opportunity to enhance state competencies through regional partnership.

6.0 Bridging Private and Public Institutions

One of the aspects of metagovernance that Jessop (2003) articulates is a need to seek rebalance between power differentials and a need to strengthen weaker forces in the interest of system integration and social cohesion. He is also interested in the ways in which governance can help to solve problems of system complexity by way of coordination across private and public spheres (Jessop, 2003). In the case described above, we observe some of the earmarks of metagovernance in the way that the potential weaknesses of isolated municipal governments are strengthened by the collaborative efforts of beetle action coalitions. These arrangements allow for improved collaboration across scales and provide opportunities for the development of shared objectives and strategies. Provincial government support for these regional institutional arrangements appears to be a positive sign and an opportunity for more balanced negotiations across different scales of government.

There are also some opportunities for coordination between public and private sectors, particularly through the development of specific sector strategies (e.g., the advisory teams assembled for the development of the secondary wood products sector). However, metagovernance structures, like all governance structures, are prone to failure, in part because they are inevitably incomplete (Jessop, 2003) in their efforts to garner democratic legitimacy. That is, they fail to encompass all requisite spheres of public and private life that are required for system coordination. In reviewing the basic organizational structure of CCBAC and OBAC, notwithstanding involvement with the development of sector strategies, one area of incompleteness within the network of regional actors appears to be the core involvement of private sector partners. The organizational structure of both beetle

action coalitions is limited in terms of representation from the private sector. This break between government institutions and private institutions appears to be significant for at least two reasons: (a) the considerable human and financial resources available to the private sector (especially the resource-based industries) and (b) the significant political influence this sector has with various levels of government. These institutional divisions, and the exclusion of private sector representatives, may be strategic in that municipal institutions intend to use the beetle action coalitions as a source of empowerment and strategic engagement at the municipal level. This coordinated effort can then be deployed within the larger sphere of government and private sector negotiation. But this dimension of incompleteness may require further attention if the metagovernance of the MPB epidemic is to achieve some level of success. A strong link to the private sector appears particularly crucial if there is going to be any opportunity for a negotiated reordering of market relationships in the region.

6.1 Legitimacy through Civic Engagement

Another aspect of metagovernance is addressed by Bell and Park (2006) with respect to the accountability and legitimacy of the governance arrangement. They argue that these arrangements are “likely to be best achieved when all relevant actors and stakeholders are included in the network and where agreed mutuality gains are achieved” (2006, p. 68). Along a similar line, Jessop (2003) identifies the opportunity for “spontaneous sociability” or the opportunity for metagovernance to cultivate what is more commonly discussed as trusting and collaborative social networks. These networks, in turn, can facilitate social transactions, lead to collective action, and enhance community capacities.

In their current form, both OBAC and CCBAC are governed through the principles of representative democracy—mayors are elected and serve as representatives of the people. To foster legitimacy within these governance arrangements, however, a dependence on representative democratic commitments alone is often inadequate. There are indications that the beetle action coalitions understand this and are reaching out, for instance, through the OBAC community dialogue sessions. Yet, household survey results reported in Table 1 signal a degree of distrust across all areas of the public and private sector, including municipal governments. Given the acute challenges brought on by government and industry downsizing in recent years, residents in these communities are not likely to warm quickly to new government initiatives, especially when they are observed to be functioning at some level of isolation from a broader set of public interests and constituents. Given these survey results, therefore, there appears to be an urgency here to expand democratic legitimacy through a more broad-based process of civic engagement. In particular, representation from rural districts (outside the main towns and villages) and First Nations communities are comparatively thin.

One potential outcome from a more broad-based process of civic engagement, extending beyond the need for democratic legitimacy, involves the opportunity for such activities to spur a degree of collective understanding and collective response to the challenges that are faced by these communities. In particular, one stream of research associated with collective action is focused on social behaviors and linkages between social capital and collective action. Researchers are concerned with the densities and qualities of social network and the potential for these networks to facilitate collective action and improve community capacities in

various ways (Adger, 2003). From this standpoint, expressions of civic engagement within the beetle action coalitions may be instrumental in drawing together a critical mass of local actors who are in tune with coalition strategies and are working together to achieve success. Civic engagement represents a call here for more democratic legitimacy as well as more collective interest and ownership of coalition goals and objectives.

7.0 Context Matters

Lastly, this paper draws attention to institutional innovations that can lead to improved adaptive capacities at the regional and local scale. The analysis also outlines the ways in which state capacities can be enhanced through collaboration and negotiated decision making. The central and northern interior of British Columbia faces important historical and structural constraints that good governance alone may not be able to overcome. For instance, BC Stats (2004) report a low level of socioeconomic status relative to other regions in the province. Lower education levels, higher rates of children at risk, and crime and health problems are all significant factors in this region that draw down the capacities of communities to engage meaningfully in social and economic reform (Parkins & MacKendrick, 2007). Isolated communities and long travel distances to markets place major constraints on the development of internationally competitive manufacturing and tourism. Rigid economic relationships between the core (Vancouver and the Lower Mainland) and the periphery (the interior of British Columbia) result in a drawing down of capital from these regions and a resistance on the part of political and economic elites to reinvest in periphery areas. These and other structural factors provide important context for beetle action coalition efforts, and their attempts to develop political will and local capacity is intended to break down some of these structural barriers. Yet, it remains important to maintain a focus on the broader social and economic context, as distinct from these new governance arrangements, that are associated with vulnerability to climate change and a host of other challenges facing communities within this region.

8.0 Conclusion

Beetle action coalitions represent a promising institutional adaptation to the challenges posed by a changing climate. Organized to enhance local capacities in response to the MPB and to find a stronger voice for negotiation with provincial and federal governments, the coalitions represent a form of metagovernance through the simultaneous management of networks and hierarchies. Although these coalitions embody a form of metagovernance, the state-level response to this epidemic is also, and perhaps more accurately, a complete expression of metagovernance. Beetle action coalitions represent an emerging opportunity for provincial governments to extend their competencies with regard to policy development and investment at the community and regional level. Given the emergent nature of these institutional adaptations, more detailed research is required in order to understand the full extent of their potential and their limits. This will require in-depth ethnographic work, along with continued observations of successes and failures in the months and years ahead, at the local and provincial levels. In their ability to fill the gap and create linkages across institutional scales, these institutional adaptations show signs of success that other governments may seek to emulate and other researchers may wish to study in comparative context.

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