BC's Representational Silviculture and the Negative Affect of the Pine Beetle Animal Story

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Abstract: Examining the broader question, “What role does the animal story play in the narration of ecological crisis and how does that narrative impact the story subject,” this paper focuses on the Mountain Pine Beetle eco-crisis consuming the forests of BC. I assert that the government constructs an animal story for the Pine Beetle and capitalizes on the negative affect it associates with the story to manipulate the public’s sense of blame and responsibility for the crisis. As a result of this representation, the Pine Beetle ceases to be animal and bears responsibility for the crisis while being denied the possibility of an inhabitant’s right to the forest.

Mountain Pine Beetles (MPB) infest the forests of British Columbia in record-breaking numbers.¹ Over the last century, beetle populations have escalated to epidemic proportions and, as a result, the beetles are swiftly converting the evergreen forest ranges to piles of dead, rust-coloured wood. Salvage harvesting now represents a portion of the province’s logging practices and MPB management strategy² and while the BC Ministry of Forests, Mines and Lands openly engages in the economic management of BC forests, its representational silviculture, or the management of the idea of “forest” through cultural mediums, is significantly less explicit. Interrogating the government’s responses to ecological crises reveals the complex problems associated with forest management not just in terms of mediating ecological and financial risk, but also in terms of how the forest and its animals are represented in the narration of eco-crisis. When it comes to the MPB, the provincial government actively manipulates public understanding of the pine beetle infestation and of the resulting state of the forest as a whole. It constructs an animal story through rhetoric and taps into the negative affect created by that story to direct the public’s understanding of blame and responsibility for the crisis. I propose that the provincial government’s efforts to manipulate public perception of the beetle crisis dislodge the MPB from the category of animal and the context of ecosystem. The animal story that results from this dislocation demonizes the beetle, dislodges the

beetle from its ecological context, and over-rides the possibility of the beetle's animal rights while simultaneously attributing it blame and thus some form of logical responsibility. The beetle story obfuscates issues of blame and responsibility in the stewardship of BC's forests, allowing the province to reject negative responsibility for the crisis while reinforcing the assumed human right to stewardship. The MPB, an insect native to BC pine forests, lays its eggs in mature Lodgepole Pine trees. When the eggs hatch, the larvae feed on the tree's phloem and disrupt the transport of nutrients throughout the tree. During periods of infestation, the disruption increases in intensity and the tree dies. Traditionally, fire disturbance patterns and seasonal temperature changes keep such infestations in check. However, aggressive wildfire suppression and rising winter temperatures have created a superfluity of potential host trees and encouraged uninterrupted growth in MPB populations.³

The BC provincial government, having taken the dominant position of forest stewardship in BC, extends its managerial scope from the economic sphere to include the cultural/representational sphere as well. Affective strategies, including aesthetics, perform an essential role in influencing the public as part of representational silviculture. This form of symbolic forest management is apparent in an examination of the governmental narration of the MPB eco-crisis. The Lodgepole Pine's value lies primarily in its commercial, economic use. Thus, deployment of pragmatic actions to protect the pine forest as a financial stock is unsurprising. More remarkably, a traceable deployment of ideological initiatives becomes discernable as the Province of BC expands the scope of its forest stewardship. Three particular cases exemplify the government's silvicultural expansion into the public social sphere through the use of aesthetic and affect: the "Holly, Prince George" commercial produced by LiveSmartBC as part of the *You Choose, You Save* campaign, the Mountain Pine Beetle exhibit in the Royal BC Museum, and the physical section of the Coquihalla Highway that runs through the Cascades Forest District. These cases help elucidate the importance of affect to representational silviculture in the public social sphere since all three are instances which the public is likely to come across them casually and without actively seeking them out, unlike many of the governmental press releases and action plans for forest crises damage control. The passive consumability of these examples affects the audience they reach and how they influence that audience; these channels initiate exposure with the individual rather than requiring the individual to seek out information thus broadening the province's audience. Embedding the messaging as part of an individual's casual experience, especially in the commercial and highway cases, can contribute to how the individual forms opinions about the MPB situation without taking the time to critically

analyse the messaging. Similarly, the museum display bypasses critical assessment under the authority of the museum itself since museums lay claim to veracity as institutions of knowledge. The opinions we form as a result of exposure to these case studies stem from sub-conscious value judgements we make in response to the emotions elicited by them.

Aesthetics are key to the construction of the pine beetle animal story, as they help access affective reactions in the viewer. The heated philosophical debate over the relationship between affect and aesthetics has been and remains grainy at best. Part of the difficulty in delineating the relationship is that defining affect itself remains a highly controversial discussion. The non-controversial aspect of affect definitions maintains that emotions come about as a particular type of reaction to certain stimuli. While most thinkers/philosophers agree that emotions come about as a particular type of reaction to certain stimuli, after that opinions start to diverge. Rather than attempt to formulate my own affect theory, I will defer to the definition given by Martha Nussbaum. In her important work, *Upheavals of Thought: The Intelligence of Emotions*, Nussbaum defines affective reactions as “involv[ing] judgements about important things, judgements in which, appraising an external object as salient for our own well-being, we acknowledge our own neediness and incompleteness before parts of the world that we do not fully control.”⁴ She asserts that affective reactions are judgements of value; judgements made too quickly to be considered conscious in the way that we traditionally think of as conscious. These value judgements are made in recognition of those things in the world that are outside of our control, yet are salient to our ability to flourish as individuals. These judgements help to inform our beliefs about things in the world. For example, take a movie that makes you laugh. Suppose you recognise laughing as an activity you cannot necessarily incite in yourself yet is important to your overall quality of life. Thus, your affective reaction of happiness to the movie results from your access to something recognized as out of your control yet relevant to your flourishing, i.e. laughing. We experience affective reactions multiple times a day every day, evoked in a number of different ways. My argument takes aesthetic provocation of the emotions as a primary mode of eliciting affect and creating the animal story in the pine beetle eco-crisis.

As part of the *You Choose, You Save* campaign run by LiveSmartBC (a provincial government program), the “Holly, Prince George” commercial runs periodically on CTV. Imagine watching prime time television or flipping through the channels when delicate, imploring strains of piano notes arrest your attention. A close up of a woman’s taut and concerned face greets you as the voiceover confesses a fear of climate change. The camera pulls out and Holly, whose name appears at the bottom of the screen, locates herself as a resident of Prince George, BC. A lake and

mountainside mosaic with different species of trees provides a scenic background. Next, the screen flashes to a vignette of Holly walking through a stand of birches with a young girl, presumably her daughter. Their smiling faces at once evoke thoughts of the future and empathy for the family. The images of their relationship and the green, leafy forest becomes associated with feelings of approbation supported by background music.

The music playing in the background of this commercial fits easily into the genre of ambient music. The piano/guitar duo melodiously produces a calming, thoughtful mood in the listener without anything disruptive in the sound pattern to break its quiet spell. The notes progress slowly and are held long. The multiple harmonious notes played simultaneously display consonance, or a perfect mathematic ratio between the different notes. Musicians calculate these “perfect intervals”⁵ purposefully to produce music that sounds more pleasing than other combinations of notes. Perfect intervals sound particularly good when the notes are in a major key, as they are in the commercial, since music theory generally judges major keys as the “happy” keys.

Dissonance, rather than appearing in the musical score, occurs in the visual shift from beautiful and healthy birch trees to a panoramic shot of rust-coloured dead pine trees. As Holly’s explanation that “the pine beetle devastation in this area is huge”⁶(00:08s) conflates the Pine Beetle with the dying forest, implicitly offering a story of the beetle that is synonymous with destruction. However, as she goes on to discuss the lack of lower winter temperatures required to kill the pine beetles, the images on the screen switch from sick pine trees to non-descript, green leaves dotted with dew and new grass shoots at the water’s edge. Subsequent scenes of pine trees and leafy trees are spliced together arbitrarily and Holly’s message ends on a hopeful note before another female voice directs us to the LiveSmartBC website to learn how to be part of the solution. The problem we are left to solve appears to be that of the beetle itself.

The music, voiceover, actors and images of the LiveSmartBC commercial all engage in aesthetic, affective manipulation while working together to implicitly narrate the story of the pine beetle. The music primes us to receive the commercial’s message by creating a thoughtful, sympathetic, receptive mood. Holly’s voiceover conflates the issue of the Pine Beetle with the issue of climate change by mentioning the two together vaguely without any details describing their relationship. The narration neglects the human role in both climate change and the increasing pine beetle population. Thus, when the voiceover switches voices and directs viewers to the website, we become implicated in the solution to a non-specific problem (presumably the beetle, somehow) but are no way implicated or historicised as part of any cause of the problem.

The representation of the forest is likewise ambiguous. The pine forest, and thus the at-risk forest, remains indistinguishable from the marsh or deciduous forest. In fact, the interspersed images create only a distinction between healthy forest and unhealthy forest. Healthy forests are green, often covered with dew and depicted in close-up. Unhealthy forests appear only once, from afar. They are dead stands of pine trees allowing the viewer to infer that the pine beetle is present in this unhealthy forest. Women and children can bond happily in the healthy forest, while the unhealthy forest remains uninhabitable, unusable.

The commercial capitalizes on our affective attachment to the bonds of family. Close-ups of Holly's face, images of her as a mother, and the confessional form of her narrative create empathy for Holly in the viewer. By inserting Holly into the (visually mixed) forest, the commercial transfers our emotional response to her onto the BC forest as a whole. Emotional investment in Holly and the BC forest increases the likelihood of citizen-motivated change in behaviours involving the environment. The desire to incite environmentally conscious individual (consumer) behaviour becomes easily apparent when we read the commercial alongside the LiveSmartBC website, which we find filled with information on how individuals can act in the better interests of the environment and buy more environmentally friendly products. The commercial holds the Pine Beetle obtusely over our heads as an ever-present threat without individual action, while only associating the beetle peripherally with climate change.

Housed on the second floor of the Royal BC Museum, the MPB exhibit speaks to tourists and locals alike. It directs the public's beliefs about climate change, the MPB, and the level of our responsibility and involvement in the beetle eco-crisis. Spatial division of exhibits plays a primary role in where blame rests for the pine forest losses. The Pine Beetle exhibit is located on the Natural History floor of the museum, implying that it is part of the natural evolution of an ecosystem. There is little to no evidence of people on this entire floor; humans have their space on the floor above. The physical division between the second and third floors, the space of Nature and the space of People, insinuates that people played no role whatsoever in the infestation.

Heading down the hallway towards the beetle exhibit, you are faced with a fiery, hellish panorama. The accompanying sound effects add to the overall effect; the cacophony of screeching sirens, thudding helicopters, and the loud crackling of the entire mountainside consumed by flame envelope you as you enter the hallway. The fiery panorama and hectic acoustic encourage just a little bit of dread to creep into your chest as you lean in to read the tiny placard contextualizing the photo. But there isn't one. An undercurrent of the unknown has now been introduced into your experience

of the exhibit. Your choice now is to either turn away from the inferno and look to the opposite wall or, if your need to know dominates, you may feel compelled to slide down the wall to the glass case that appears related to the visual and auditory discord that greeted you.

The next exhibit is just as shocking. Like a time capsule, the glass case contains battered, antique looking jars and some pictures giving context to those jars. The presentation of these items persuades you to believe that perhaps these are ancient artefacts from some lost civilization. Yet the contextual photos say otherwise. As it turns out, these jars are just some of the specimens found after the 2003 wild fire in Kelowna. The photographs show the carnage wrought on the Kelowna community in the form of piles of ashes and charred household items. The air is still crackling and ringing in your ears as the audio filters over from the wild fire panorama. Overwhelmed with these images of destruction, you are now primed to place blame. Surely the blame rests not with people. The people are the victims in this scenario. Surely the dusty, warped pottery is evidence enough to convince you of that. No, the humans are not to blame. But if not them, then who?

Enter the MPB, in all its 100x-magnified glory. The exceptionally oversized model is offered up like a sacrifice to our discriminating gaze and renders the insect even more alien than the real specimen is. Of the entire wall of this hallway, the Pine Beetle is the only living entity to make an appearance. Yet the beetle's size and context deface it's animality, individuality, and extracts it from any realistic context and appearance. The title of the beetle exhibit is "Beetle Mania," drawing an association between the insect and the band. Presumably, the correlation is meant to be the contagious spread of the beetle infestation with the spread of the band's popularity. Yet, this doesn't do anything to warm our attitude towards the beetle. Alongside the monster beetle model, the exhibit displays two samples of pinewood affected by the MPB. One piece shows the blue tinge that ruins MPB wood as a commodity. The other piece shows how the beetle kills trees by eating its phloem, cutting off the tree's supply of water and nutrients. The placard that contextualises the exhibit explains how, traditionally, cold winter temperatures usually keep beetle populations under control. It states, "warming winters have allowed beetles to spread, decimating forests hundreds of kilometres beyond their range" (The Beetle That Could). The piece neglects to inform you how poor forest burn-off management has helped to create forests full of sick or weak trees, trees targeted primarily by beetle populations for infestation. Though the exhibit occurs in the "natural" section of the museum, it is not the beetle, the infestation, or the ensuing wildfires that are being naturalised. Rather, the idea of a static, monoculture forest implicitly becomes the median of what is natural.

Prominently displayed beside the tree slices rests a duotone map with no legend. It is entitled “Pine Beetle Territory, 2005” and divides BC into one green and one red section. Braun devotes a portion of *The Intemperate Rainforest* to the semiotic analysis of a map lauded by many in environmental discourses as hard proof of the disappearance of Vancouver Island’s old growth forests. The main idea he mines from his analysis is how the map makes certain epistemological claims that could not formerly be made in support of conservationist agendas. Although the map included in the MPB exhibit is considerably less detailed and “realistic” than the one Braun examines, it holds just as much significant meaning for us to excavate.

The map implies the same “disappearing forest” message as Braun’s map does; this time lost to the Pine Beetle rather than to logging and human development. Without a legend, we must assume that the red portion of the province represents the beetle-infested region and the green portion the “healthy” forest. This assumption is easy to make, since the red forest fires are fresh in our minds and the MPB continues to be conflated with the rust-red trees it has feasted upon. The red portion of map also perpetuates the subtle pathologization of the forest by caching in on our associations with the colour red and blood or injury (think of the first-aid symbol). Doing so creates a dichotomy between the green, “healthy” forest and the red “sick” forest. It also promotes the impression of a clean division between the infected forest and the healthy forest. The colour division obscures the multiplicity of different forest types throughout the province; its solid blocks of colour suggest that *all* of the trees in the red zone are victims of the pine beetle, be they pine, cedar, aspen, or arbutus trees. The trees become a monoculture of victims.

The narrative of climate change takes primacy over that of forest management. Climate change as an abstract scientific concept obscures the complex relationship between people, the trees and the forest. Because science has the appearance of empirical truth, separate from human interference, climate change becomes an empirical fact beyond human interference:

In the summer of 2003, Kelowna residents learned that hot, dry weather can bring an inferno to their doorsteps. The likelihood of this kind of fire will increase as summers become hotter, drier and longer in the decades ahead. Climate models suggest that the incidences of fire will rise greatly, especially along the coast and in mid-elevation forests of British Columbia.⁷

Climate change is also privileged in the etiology of the Pine Beetle outbreak over the role of poor forest management. Generally speaking, an overabundance of host trees are created by hyper controlled burn-off, become infested with beetles and die, adding to the tinderbox mass of dead brush clogging the forest.⁸ This is especially true in areas of replanting where clearcuts are replaced

not by the same diversity of flora species that existed previous to the cut-block but instead are replaced with a mass of genetically similar, single species saplings. However, the placards insist only that, “long periods of extreme cold (below -40 degrees C) controlled the beetle’s range. But warming winters have allowed beetles to spread, decimating forests hundreds of kilometres beyond their old range. Climate models show that MPBs will eventually occupy the full range of Lodgepole Pine and perhaps spread into Jack Pine territory in Canada’s boreal forests” (The Beetle that could). By omitting information regarding stewardship practices, and by inserting placards about climate change, the museum prevents viewers from blaming human agents for the dying forests represented throughout the floor. Thus, as the museum presents it, the MPB caused Kelowna wild fires and the placement of a picture of a dead beetle-infested forest next to the beetle model spatially reinforces this connection.

The oversized, scary, alien-looking beetle has victimized the beautiful trees, damaged the forestry industry, and traumatized the British Columbian community at large (not to mention the communities directly affected by the fires – though, strangely enough there is no mention of how the beetle has affected other communities where fires were not prominent like Prince George). It has no apparent cause; the museum exhibit makes no mention of how Pine Beetles have evolved alongside Pine trees and work in a somewhat symbiotic relationship as the beetles eliminate weak trees to make room for healthier trees to flourish. Climate change cannot truly be conceptualised as a cause since it is scientifically abstract (it cannot even be concretely represented by the museum itself) and is presented as an ecological inevitability. Blaming climate change seems just as viable as blaming the trees for being treelike. The beetle is the closest thing we get to an agent in the whole series of exhibits.

Demonizing the MPB gives us a scapegoat onto which we can displace blame for forest mismanagement. The Royal BC Museum has undermined its human-fault based message for climate change in the Climate Change exhibit by juxtaposing it with the Pine Beetle hallway. The fear and confusion created by the fire panorama, audio uproar, and giant beetle model prime us to focus our angst and blame on the Pine Beetle rather than on ourselves. The emotive strategies used in these exhibit make a spectacle of the Pine Beetle infestation and the Kelowna wild fires. They conceal the human aspect of these eco tragedies and compel observers to search for an explanation. The MPB provides a convenient explanation and target for our outrage and blame. It keeps the forest a pristine, unaffected entity beyond human contamination and preserves the tidy division between people and the forest that the museum is based on.

The Cascades Forest District, ranging through Princeton, Merritt, and Lillooet, embodies the most visible Pine Beetle salvage logging operation in BC. The Coquihalla Highway that runs through the Cascades Forest District contributes exclusively to the high visibility of the salvage site. As you drive through the Cascades Forest District, evidence of Pine Beetle habitation becomes pronounced. Stands of dead, rust-coloured trees dominate the mountainsides. Just when you begin to feel some concern rising in your throat about what seems like a rampant epidemic, a white sign flashes by. If you're travelling under the speed limit and perhaps have a wandering eye while you drive or a photographic memory you may be able to actually read the sign, which proclaims Aspen Planers as the contractors hired by the province to log the area. If you aren't quick enough to catch all that, the stamp of authority as represented by the presence of the sign itself and its gargantuan image of the MPB assuage your fear nonetheless, asserting that someone is in charge here. You have entered the MPB Salvage Harvest.

The signage at either end of the Cascades Forest District gives the illusion of enclosure to the forest devastation. The implication of locating the signs at either end of the district is that either salvage operations don't exist outside of the designated area or that the MPB infestation is contained within the signed area. The latter is more likely the assumption drivers will make; the image of the giant pine beetle takes precedence over the qualifying text along the bottom of the sign that specifies this area as a salvage site. Yet again, the giant representation of the beetle becomes an ominous agent in the narration of eco-crisis.

As we continue into the heart of the salvage area, more and more bald stretches of land roll over the horizon. In many locations, dead trees are scattered across the landscape and occasionally stacked high in piles. But whether or not you can actually see the beetle/logging-induced clearing depends on how determined you are. At many points, the view is obscured by a veil of fresh, young, green trees planted carefully in a line along the shoulder of the highway obscuring the dead forests behind. The aesthetic of healthy trees mediates and diffuses feelings of anxiety provoked by the sight of the dead and dying pine forest. The sign and tree-planting measures intercede in our affect process. The aesthetic strategies interrupt the feelings of shock and sadness that are likely to arise from the sight of the extreme damage in the Cascades region by soothing drivers with the implied assurance that someone is in control and taking proper care of the situation. Although private contractors are managing the harvest, those contractors are ultimately working as agents of and are answerable to the Province of BC.

The LiveSmartBC commercial targets residents of British Columbia directly through appeals to affect and indirectly through manipulations of aesthetic. It appeals to their sense of regional pride and calls upon them to protect their home. The overall goal of the commercial is to motivate citizens to action. What kind of action is only clarified by viewing the LiveSmartBC website where climate change is identified as the problem they want solved. Ambiguity in the commercial conflates climate change with the MPB, deliberately misdirecting blame for the dying forests onto the beetle. The commercial encourages initiative primarily by inciting sympathy for the forest via identification with the mother and her daughter. Simultaneously, the music curtails any fearful or angry responses, lulling the audience into a calm acceptance of the messages that the forest is good, the beetle is to blame for losing the forest, and the public bears responsibility on an individual level for rectifying the situation.

Both the Royal BC Museum exhibit and the framing of the Cascades Forest Region target residents and tourists alike. The museum aesthetically fetishizes the beetle as a monstrous figure and displaces responsibility for the BC wildfires onto the beetle, obscuring the human etiology of climate change, wildfires, and MPB spread. It arouses our negative feelings towards the wildfires and capitalizes on fear of climate change, then presents the beetle as a scapegoat for these feelings. In aesthetically framing the Cascades Forest Region through signage and strategic tree placement, the provincial government mollifies our concerns incited by the obviously ravaged forest. It promotes the misperception that the government can and is sufficiently managing and containing the beetle population. It positively represents governmental action surrounding the pine beetle by advertising its salvage logging operation, a form of logging with less negative emotional baggage than clear-cutting. By making it publicly known that the logging in the Cascades region is salvage, the government deliberately overturns the likely assumption based on the appearance of the region's forest – that the logging is clear-cut – and thus promotes a more positive impression of the logging operation as a whole.

The governmental appeal to our emotions generates an implied narrative of the pine beetle crisis. The visual, affective rhetoric manifested in my case studies lacks an explicit argument and is not supported by reasons. Instead, the Province of BC tells us how to *feel* and what to *believe* about the beetle and, therefore, the crisis, not what to *think* about it. Utilizing the negative animal story of the Pine Beetle allows the province to access affective judgements in the public and thus mediate the Pine Beetle habitat expansion. Doing so, the government bypasses our rational capacity so that we come to believe their messages independently of argument. Agitating our affective reactions to

images of the healthy and the dead forest initiates recognition that in some ineffable way the forest is crucial to human flourishing; feelings of approbation towards the healthy forest indicate that we are in possession of something beyond our control yet that is vital to our well-being, while feelings of disapprobation towards the beetle as the agent of the dying forest indicate a potential loss of that vital component of our well-being. The aesthetic management along the Coquihalla capitalises on the assumed human right to forest management while reducing and displacing responsibility for the devastation. The messaging in the museum and in the commercial also displaces responsibility by scapegoating the beetle and omitting the role of forest management.

In *Education, Cultural Myths, and the Ecological Crisis*, Bowers expresses the concern spreading throughout eco-crisis discourse that “coverage of environmental ‘disaster’ and ‘catastrophes’ are becoming so frequent that these words are losing their power to hold the public’s attention.”⁹ Because the government has bypassed argument, they avoid employing words that have become devoid of power like ‘disaster’ and ‘catastrophe.’ Thus they accomplish the goal of revivifying public attitudes towards eco-crisis through near pre-linguistic avenues accessed through the construction of an animal story. Perhaps, just as this strategy revivifies the public’s attitude, it also realigns their attitude to one of genuine concern and action, an attitude shared and expressed by many forest stake-holders. Although the animal story offers a convenient access-point for agitating interest in eco-crisis, there is an ever present risk of doing violence to the animal by converting it from animal to symbol. The government’s strategy runs this risk as our relationship to the pine beetle shifts from a potentially neutral or positive impression of the beetle as a forest denizen to a negative impression of the beetle as an alien intruder bent on destroying our natural heritage. This also seems to change our relationship to ourselves insofar as we shed our responsibility for poor forest management; our sense of responsibility to the forest shifts away from shame or guilt (self-directed sense of responsibility for our poor forest management) to retribution (other-directed sense of responsibility). Further inquiry might consider whether it is possible to narrate ecological crisis effectively without the animal story or whether the animal story, even the negative animal story, is required in order for the audience to access larger non animal narratives and what the ethical implications are in using the animal story as a vehicle for motivating activism.

Notes

¹ S. W. Taylor and A. L. Carroll, "Disturbance, Forest Age, and Mountain Pine Beetle Outbreak Dynamics in BC: A Historical Perspective," *Mountain Pine Beetle Symposium: Challenges and Solutions* (2004): 41.

² Chris Ritchie, "Management and Challenges of the Mountain Pine Beetle Infestation in British Columbia," *ALCES* 44 (2008): 131.

³ Ritchie, 127-129. This exposition of the MPB lifecycle is a brief gloss. Ritchie's and many other articles explore the topic in more depth than is appropriate to this article.

⁴ Martha Nussbaum, *Upheavals of Thought: The Intelligence of Emotions* (New York: Cambridge University Press, 2001), 19.

⁵ Mark Evan Bonds, ed. *A History of Music in Western Culture*, 2nd ed. (New Jersey: Pearson Education, 2006), 111.

⁶ Government of British Columbia, LiveSmartBC, "Holly, Prince George," Media Room Video by the Province of British Columbia. <http://www.livesmartbc.ca/media/video.html>

⁷ Government of British Columbia, *Fire on the Mountain* exhibition, Royal BC Museum (Victoria, 3 November 2008).

⁸ Bonita McFarlane, R. Craig G. Stumpf-Allen and David O. Watson, "Public Perceptions of Natural Disturbance in Canada's National Parks: the Case of the Mountain Pine Beetle," *Biological Conservation* 130 no.3 (2006): 340.

⁹ C.A. Bowers, *Education, Cultural Myths, and the Ecological Crisis* (Albany: SUNY Press, 1993), 13.

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