# Blowin' in the Wind: Encountering Wind at Fire Lookouts in the Canadian Rocky Mountains

by

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B.A., University of Ottawa, 2012

A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree of

Master of Arts

in the School of Environmental Studies

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# Abstract

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Weather, how we tangibly engage with climate in our everyday lives, is a central underpinning to life in Canada and around the world. This thesis investigates relating to weather through a focused exploration of wind in the everyday lives of fire lookout observers in the Canadian Rocky Mountains. Stitching together approaches from anthropology, phenomenology and mountain meteorology, it brings to bear insights on coexisting with weather changes through an understanding of lived mountain climates. Perched atop the front ranges of the Alberta Rocky Mountains are located a string of mountain fire lookouts. Tasked with discerning and detecting smoke plumes that may signal the start of a wildfire, lookout observers, who inhabit these remote lookout places for five to six months of the year, are attentive to the wind's effect on visibility, its role in wildfire processes, and as a force to contend with in their daily lives on the lookout. Through participant observation, interviews and photo elicitation, I draw on fire lookout observers' past and present experiences of wind, and its role in larger weather processes. With many lookout observers returning to their posts season after season, the breadth and depth of their experience stretches over three decades. Over the course of a summer's fieldwork, I hiked in, and at times lived with, lookout observers. Walking, as a contemplative research practice, continued beyond the field and into analysis, engaging in a process I call *ambulant listening* as an alternative to transcribing interviews verbatim. This involved walking and listening to interviews multiple times, with notes later drawn out visually using mind maps. Through this process, I learned that wind stirs up much more than simply considering air in motion. Entwined in a variety of multi-sensory engagements, wind touches on broader themes of awareness, encounter and wonder that emerge as weather consciousness. This study offers a rare lens into a way of life that has been increasingly shuttered across Canada and around the world, while at the same time exemplifying ways of being and knowing weather inherent to coexisting with increasingly uncertain and unpredictable weather patterns in the midst of climate change.

# Table of Contents

**Supervisory Committee** ..... **ii**
**Abstract** ..... **iii**
**Table of Contents** ..... **iv**
**List of Figures** ..... **vi**
**Acknowledgments** ..... **viii**
**Dedication** ..... **x**
**Chapter 1: Introduction** ..... **1**
**1.1 Thinking Weather with the Mountain Legacy Project** ..... **1**
**1.2 Research Question** ..... **4**
**1.3 Elevated Living: Lookout Places and Lookout Observers** ..... **6**
**1.4 The Lookout Way of Life** ..... **9**
1.4.1 Isolation Isn't Here ..... 10
**1.5 Motivations for the Research** ..... **11**
**1.6 Thesis Outline** ..... **13**

**Chapter 2: Literature Review and Methods** ..... **15**
**2.1 Literature Review** ..... **15**
2.1.1. Situating Wind and Weather Experience ..... 15
2.1.2 Engaging Environments, Engaging a More-than-Human-Wind ..... 17
2.1.3. Ways of Knowing: Sensory Perception and Enskilment ..... 18
2.1.4 Lookout Literature ..... 19
**2.2 Methodological Approach** ..... **19**
**2.3 Methods** ..... **21**
2.3.1 Interviews ..... 21
2.3.2 Informal Conversation and Correspondence ..... 25
2.3.3 Photo Elicitation ..... 26
2.3.4. Participant Observation ..... 30
**2.4 Walking through Analysis** ..... **35**
2.4.1 Bringing Interviews to Life: Walking and Listening ..... 35
2.4.2 Mapping: Visually Representing Ideas ..... 40
2.4.3 Analysis ..... 43
**2.5 Limitations** ..... **44**

**Chapter 3: Attentive Observation: Discerning, Detecting, Seeing** ..... **47**
**3.1 "We Get Paid to Look out the Window": Looking as an Everyday Practice of Discernment** ..... **47**
3.1.1 Scanning the Country ..... 48
3.1.2. Observing Weather ..... 51
**3.2 Fringe Benefits** ..... **57**
3.2.1 Flora and Fauna ..... 58
3.2.2 Stories from the Past ..... 59
**3.3 Fire Weather** ..... **60**
3.3.1 Fire Danger ..... 60
3.3.2 Wind and Fire Behaviour ..... 61
3.3.3 Wind and the Fire Environment ..... 62

3.3.4 Swapping Fires for Scenery?....64
**3.4 Spooks and Smoke....66**
3.4.1 Smoke Signals....68
**3.5 Visibility Vantage Points....71**
**3.6 Colours and Change: Shades of Weathered and Human-altered Landscapes....72**
**3.7 Looking Closer....76**
**3.8 Inspired Looking....78**
**3.9 Summary....83**

**Chapter 4: Sensing Wind and Weather....84**
**4.1 Sound....84**
4.1.1 Sound Mimicry....84
4.1.2 Sound Masking....86
4.1.3 Indicative Sounds....89
**4.2 Olfactory....91**
4.2.1 Smells of Place....91
4.2.2 Anticipatory Smells....92
4.2.3 Avoiding Smells....93
4.2.4 Blurring of Smells and Taste....94
**4.3 Feeling in the Wind, Part 1....95**
4.3.1 Rocks in your pockets?....95
4.3.2 Skin and Apparent Temperature....98
4.3.3 Pressure....98
4.3.4 Caution with Doors....99
4.3.5 Hair on End....100
**4.4 Feeling in the Wind *and* Weather, Part 2....102**
4.4.1 Views and No Views....103
4.4.2 Ominous Weather....105
4.4.3 Acceptance: Managing Moods....106
**4.5 Summary....108**

**Chapter 5: Discussion**
**5.1 Awareness....110**
**5.2 Encounters....113**
5.2.1 Cabin: Inside-Outside Encounters....115
5.2.2 Encounters with Flora and Fauna....116
**5.3 Wonder....117**
**5.4 Conclusion....119**
**5.5 Future Research....120**
**5.6 Significance of Research....120**
**Works Cited....123**
**Appendix A: Participant Recruitment Materials....132**
**Appendix B: Participant Consent Form....134**
**Appendix C: Interview Questions....138**
**Appendix D: Map of Alberta Fire Lookouts....141**

# List of Figures

Figure 1: Aligning the Photo....3
Figure 2: Mountain Lookout....8
Figure 3: Morning Light on Lac Gauvreau....12
Figure 4: Mountain Legacy Project Panoramic Image Pair....27
Figure 5: Lookout Observer's reflection in Fog Halo....29
Figure 6: Lenticular Clouds at Sunset....30
Figure 7: Descent from Lookout through Grassy Meadow....32
Figure 8: Hiking out from Lookout in August Snow....33
Figure 9: General Map of Study Area....34
Figure 10: Walking in Poekepark, Lotenhulle, Belgium....38
Figure 11: Walking in Mystic Vale Forest....39
Figure 12: Individual Lookout Observer Map....41
Figure 13: Mind Maps, Collectively on the Floor....42
Figure 14: "Local Winds", One of the Seven Theme Mind Maps....43
Figure 15: Looking Out from the Cupola....50
Figure 16: Storm Setting in at the Lookout....52
Figure 17: Looking out through the Blizzard....53
Figure 18: Morning Light After the Storm....53
Figure 19: Beaufort Scale, Adapted to Lookout Setting....55
Figure 20: Beaufort Scale, as Depicted by Lookout Observer (A)....55
Figure 21: Beaufort Scale, as Depicted by Lookout Observer (B)....56
Figure 22: Beaufort Scale, as Depicted by Lookout Observer (C)....56
Figure 23: Beaufort Scale, as Depicted by Lookout Observer (D)....57
Figure 24: Spook....67
Figure 25: Smoky View from Lookout....69
Figure 26: Smoky Sunrise from Lookout....70
Figure 27: Wind Blowing Smoke Away....70
Figure 28: Two Trees Blowing on a Windswept Ridge....74
Figure 29: Flush of Wildflowers on the Slope....75
Figure 30: Crocodile Cloud....77
Figure 31: Capturing a Golden Mantle Stretch, Post Nap....78
Figure 32: Feeling the Wind Painting....80
Figure 33: Air Currents over the Mountain Lookout Painting....80
Figure 34: Rock Mosaic....81
Figure 35: Morning Stillness....88
Figure 36: Bear Smells....93
Figure 37: Rain Barrels Weighted Down....97

Figure 38: Socked in by Fog Hiking up to Lookout.....104
Figure 39: Looking Out in Undercast Conditions.....104
Figure 40: Lightning, as Seen from the Lookout Catwalk.....105

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# Dedication

To my parents, for their love; and for encouraging curiosity about the environment from a wee age. And to my brother, Jimmy, partner in play and collaborator in building what I hope we will always share: an indestructible sense of wonder.

# Chapter 1 Introduction

Weather, how we tangibly engage with climate in our everyday lives, is a central underpinning to life in Canada and around the world. For some, weather is sometimes taken for granted or forgotten, while for others it is central to awareness, directly influencing livelihoods or ways of life. Weather is engaged with to varying degrees. In the midst of conflicting climate change narratives (Hulme, 2008, 2014) and increased media, political and policy attention to extreme weather events attributed at least indirectly to climate change (Jankovic & Shultz, 2016), weather is increasingly occupying a central place in public consciousness. While socioecological futures are largely up in the air, one thing climate scientists are certain of is increasingly uncertain and unpredictable weather patterns (IPCC, 2014). What we do know is that, worldwide, we need strong adaptive capacities. Inhabitants of places with rugged or "tough-luck weather" (Hulme, Neil & Desai, 2011), similar to inhabitants who maintain intimate relationships to their environments, as evident in the breadth of studies on traditional ecological knowledge (TEK), shed light on these capacities.

In this thesis, I shed light on how one group of people experience and come to know weather, perpetually adjusting to its constant fluxes and flows. I do so through a focussed exploration of wind—air in motion. While addressing signs of climate change was not the focus of the research, I have come to learn that wind stirs up a lot more than a simple consideration of air. Wind draws attention to a number of things, for instance, global air circulation without boundaries, one that increasingly begs our attention. Through an exploratory study with a unique group of people and their relationship to wind, daily coexistence with weather in mountain environments is brought to the fore. But first, I would like to honour the dawning of this thesis.

## 1.1 Project Beginnings: Thinking Weather with the Mountain Legacy Project

I was fortunate in the summer of 2014 to be given the opportunity to do fieldwork with the Mountain Legacy Project (MLP), an interdisciplinary project that explores landscape change, ecological restoration, and social perspectives in Canada's mountain west through repeat photography and archival research (Higgs, Bartley & Fisher, 2009).

It was the summer before commencing my Master of Arts degree at the University of Victoria. Heading into the fieldwork, I was on the lookout for potential thesis topics. Hoping to explore wind experience in mountain environments, I had yet to find a study area—or a study group with whom to collaborate.

Daily camera work with the MLP quickly introduced me to new ways of thinking about mountain weather. First, I recognized the importance of visibility. The weather had a direct impact on visibility. As I illustrate in this thesis, connections between weather and visibility are key: weather in a sense becomes how far and how well we can see, when the task at hand is looking. We were constantly assessing visibility, as clarity and details in the photograph are key aspects of the work of the MLP. Central to MLP fieldwork the crew's ability to assess whether the backdrop is too hazy for photography. Haze means that the background features looked light and blurry, obscured by particles of water or smoke in the atmosphere. We also assess whether there are significant shadows on the landscape from rain darkening one area, or sun on landscape features casting shadows. Shadows mean that features will be too dark to gain important information once back in the lab with the photographs. Visibility is something that must be addressed *in situ*.

A second way of thinking about mountain weather came about through writing field notes. As the photographic recording is done in teams of two or more, the person responsible for taking field notes occupies an important supportive role, constantly on the lookout for weather and keeping the photographer(s) aware of conditions and changes. The camera both focuses and distracts. As the camera operator focusses intently on a particular feature through the lens, they might fail to recognize unfolding weather. This can be dangerous in mountain environments, as the weather can change quickly. The note taker would also record weather measurements: temperature, wind speed, barometric pressure and relative humidity. However, it was in writing up the weather narrative in our field notes—the reflective process of finding words to describe what was happening in the sky—that was for me, a second way to further tune in to mountain weather. Weather notes generally varied in length, from very little on days when the weather was clement, to much more detailed in inclement conditions. The length of weather notes corresponds

with an observation about wind made by anthropologist Trudi Lynn Smith: it brings up an awareness of convenience and disruption (Smith, 2014, p. 124).

The camera also offered a third way to tune in to the weather. One of our field cameras was so sensitive to temperature changes in sudden or sustained gusts of wind, or rapid elevation gain in a helicopter, it stopped functioning altogether. To get the camera working again, one technique was to warm it up in our jackets. The camera could not be exposed to rain and to shelter the lens from the sun to prevent glare or lens flare, a lens hood was used. The camera's sensitivities enhanced my own awareness of the weather.

Hiking to a station instead of arriving by helicopter, the camera was less sensitive to the elements, having time to adapt. This was also the case with our own bodies, gradually adjusting to changes in temperature and elevation by slowly making our way up the mountain. Feeling the terrain under our feet, we also noticed how the weather altered the terrain. For example, in rain, limestone scree covered with lichens became treacherously slippery. Like the camera, the terrain under my feat drew my attention to the weather in yet another way.


Figure 1. Aligning the Photo. Vladimira Lacova-Gat and author align photo during 2014 MLP season (Courtesy: Rick Arthur).

The summer fieldwork with the MLP afforded many weather experiences: rain storms, snow squalls, hail, high winds, smoke and haze, and a few close calls with lightning that caused hair to stand on end. Weather guided our lives: working long days when conditions were favourable; hiding out from storms or not going out at all if the conditions were unsuitable for flying (high winds, storms, socked in) or unfit for photography (poor visibility from smoke, haze or precipitation). The field season, brought to life the fast changing and erratic mountain weather and the ripple effects of learning weather in the ways described above flow into my thesis.

It was serendipity that I ended up repeating images at a mountain fire lookout on a rather gusty day. After an afternoon working in the winds, I had a chat with the Lookout Observer, who offered us the finest coffee we drank all summer along with homemade cookies. Things started to piece together in my mind. I learned that Lookout Observers inhabit windy mountain environments for five to six months of the year. Moreover, quite a few Lookout Observers had been returning to these places for many seasons and some to the same lookout location. That afternoon, ideas for a thesis took root and I shared them with my supervisor on the winding outward trail. I am particularly glad that my supervisor and the entourage of Rick Arthur, Mary Sanseverino and an inspiring lookout observer, people who have been very encouraging throughout the phases of this work, were present in the serendipitous moments that led to this thesis.

### 1.2 Research Question

The experience of wind raises many questions about ways of being in and coming to know weather, engaging with its shifts in momentum and learning to coexist with its sometimes inclement conditions. The major goal of this research is to explore wind as experienced by fire lookout observers at lookouts, in the Canadian Rocky Mountains. As employees of Alberta Wildfire[1] (Alberta Ministry of Agriculture and Forestry), they detect and report wildfires at their inception. Through participant observations, interviews

[1] There have been several name changes to the provincial government ministry responsible for Alberta wildfire operations. Throughout the thesis I use *Alberta Wildfire* in reference to wildfire operations both past and present, to avoid confusion amongst names.

and photo elicitation I draw on fire lookout observers' past and present experiences. With many Lookout Observers (LOs) returning to their posts season after season, the breadth and depth of their experiences stretches over three decades.

My work was animated by these questions: how is wind experienced in lookout observers' daily practices and what role does it play in the experience of related weather processes? To answer these questions, I flesh out *how* LOs come to experience wind by exploring how being with wind is a relational process. To do so, I draw on anthropologist Tim Ingold's (2005) concept of the "weather-world" and science and technology studies scholar Donna Haraway's (2008) concept of "becoming with", described in the methodological approach of this thesis, section 2.2.

LOs at mountain fire lookouts are an ideal group of people to study given their deep connection to wind. First, they live in exposed, windswept mountaintop places steeped in fluctuating weather. Knowing wind is not only entwined in everyday living and working on the lookout, an awareness to wind is important for personal safety. The wind can change velocity in minutes. Second, daily requirements of the lookout observer profession call for attentive observations of the sky (for their weather observations in which they measure wind speed and note its direction) and surrounding landscapes (for smoke plumes signaling a fire). Wind plays a critical role in *fire weather*, conditions that influence "fire ignition, fire behaviour or suppression" (Whiteman, 2000, p. 242). Wind also directly impacts visibility, key to how well LOs can scan surrounding areas. As such, LOs come to coexist with wind (and weather) as these phenomena emerge on the lookout. Experiences of coexistence are brought to the fore in a range of practical, sensorial, creative and emotional engagements that I explore in the chapters to come.

This research is significant because it sheds light on a unique way of life and one that in many corners of the world has become obsolete, not unlike professions with similar lifestyles such as lighthouse keepers and park wardens. As fire lookouts have been shut down across Canada and in many places around the world, replaced by drones and high tech camera technologies, Alberta Wildfire maintains the LOs important role in wildfire detection, insisting that "nothing compares to the human eye" (Tim Klein, Provincial Wildfire Technician, personal communication). This thesis helps flesh out what this skilled eye might look like.

The central contribution of the thesis, however, addresses unique ways of knowing and being in wind (and weather) at specific lookout places. The LO posting is a way of life that few people know about, but for those who do, suggests the quintessence of mountain living. Many recreationists venture into mountain environments for day trips, an overnight, or perhaps a little longer. But few have the opportunity to live there for five to the six months of the year. Thus the distinction between a visitor and an inhabitant—the inhabitant sees, feels and lives *all* the weather passing through. And so, this research further tells of co-existing with changing weather by emphasizing the tangible experience of climate, an inherent capacity heading into increasingly uncertain and unpredictable weather patterns in the midst of climate change.

### 1.3 Elevated Living: Lookout Places and Lookout Observers

Along the front ranges of the Alberta Rocky Mountains are located a string of Mountain Fire Lookouts[2] that offer views of surrounding areas. Before describing the study area, I would like to acknowledge, as was common practice amongst some LOs, the *Siksika*, *Kanai* and *Piikani* nations, as well as the Ktunaxa, Nakoda, Cree and Metis peoples, who have moved, for thousands of years, through the mountains and valleys where this research took place. While it is beyond the scope of my research to include First Nations' perspectives on wind here, conversations with First Nation's wildfire crews at wildfire bases where I've stayed over the last three summers have largely influenced the relational approach of this work.

Of the 127 staffed lookouts in Alberta, only about thirty are perched on mountain tops, whereas at other lookouts, towers between twenty and 120 feet tall provide the height necessary for a similar vantage point. Lookout cabins are generally sizteen-by-sixteen feet, with large windows in every direction. The first lookouts were built in the 1920s, some of which I visited during my research, although the original cabin structures had been replaced. Some of these newer structures are a two story trailer, where the

[2] In practice, the term *lookout* and *lookout observer* are used interchangeably to refer to the lookout "person." Lookout is also used to describe the lookout "place." To avoid confusion between the two, I use LO to refer to the person and lookout to refer to the place, and when used differently in informants quotes, I clarify.

second story consists of a cupola (an octagonal or square shaped structure) or small room, with large windows in every direction. These spaces offer expansive panoramic views of the surrounding area from inside the lookout.

Employees of the Alberta Department of Agriculture and Forestry, LOs make up the core of Alberta Wildfire's Fixed Detection System, that is, fire detection that happens from a "fixed" spot. The fixed detection system is complemented by a mobile detection system—helicopter and ground patrols—that mostly scan areas LOs cannot see. The LOs first priority is to detect wildfires; their second priority is to make weather observations. Both of these practices are discussed in length in chapter 3. LOs are also responsible for general maintenance around the lookout, a regular occurrence given the amount of weathering these structures endure in harsh mountain environments.

Despite in large part taking on the lookout job solo, although some currently or in the past have done the job with companions (partners, children, pets), LOs form a *community of practice* (Lave & Wenger, 1998; Grasseni, 2009) through their regular communication (by radio and telephone), shared experience and common activities of monitoring and communicating the weather. Many return every year. Many of the veterans I spoke with this summer had been LOs for over three decades, some nearing four. Often spending multiple seasons at the same lookout, LOs get to know the other LOs in their district (and beyond), and play a key role in helping novices, who receive only one week of training to learn the job. Mentoring novices or "helping your neighbour out" may be done through phone calls, exchanging e-mails, or texting— particularly texting images of different types of clouds or other weather phenomena. A few LOs would do the same with me. Novices may also "shadow" a veteran LO at their lookout for a day, as I also did throughout my fieldwork. But learning to do the lookout observer job is also a large undertaking in learning from personal weather experiences, sometimes shared in the form of stories (and sometimes art) with other LOs. Understanding LOs as a community of practice helps situate these individual experiences as a part of a larger social group— one that is concretized in learning the skills of the job.

Given the immense topographical diversity of the region, each lookout offers a particular vantage point with an ever-changing view: seasons, weather and changing light, the sweeping panorama of a river valley, lakes, prominent mountain ranges, rolling

hills and grasslands. These hydrological and geographical features interact with atmospheric processes, creating weather pockets and micro climates specific to each lookout. For instance, close proximity to water may involve more evaporating fog or cloud development in the area, just as the shape of mountains and valleys may channel strong winds. The windiest lookout is not located on the summit of the mountain, but on an eastern spur ridge, where its erratic and frequent high wind velocities are a result of wind being funneled through the various surrounding valleys.

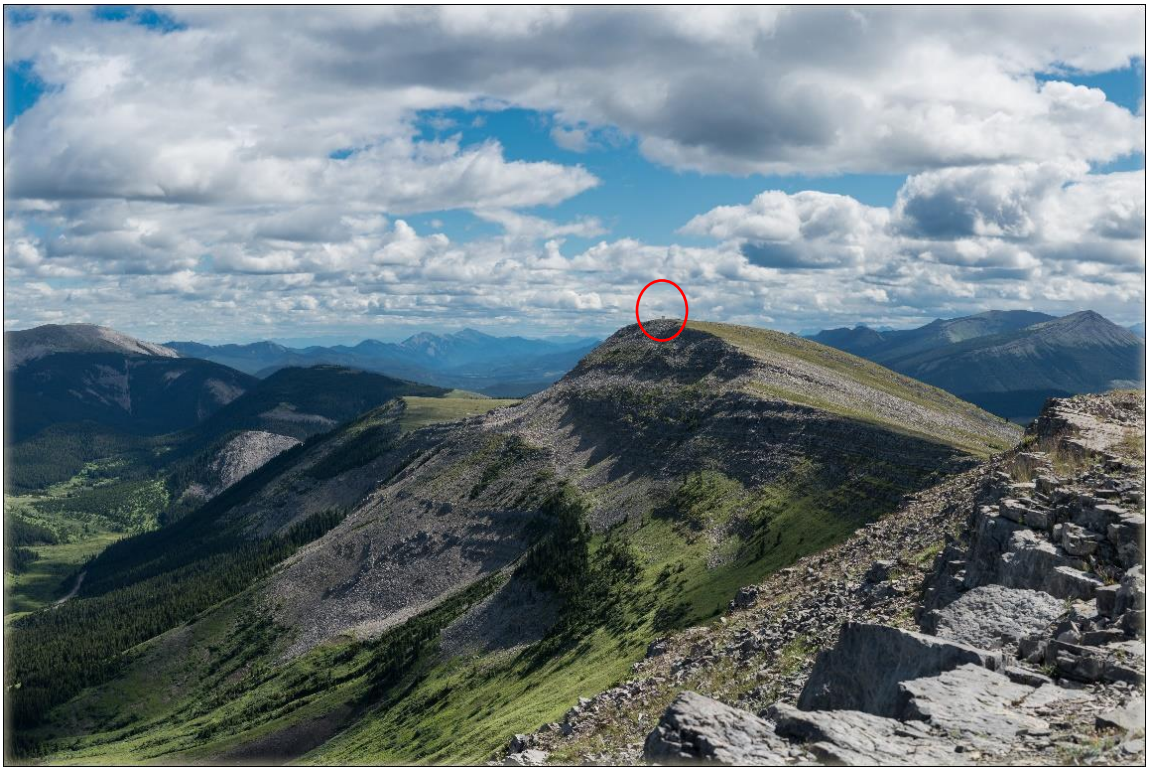

Figure 2. Mountain Lookout. Circled in red, the lookout utilities shed is located atop the plateau, near the centre of image. The lookout itself is a few meters on the other side of the slope. (Courtesy: Mary Sanseverino).

Wind can change velocity in minutes. Some lookouts I visited are subject to steady and strong prevailing winds, while at others, the wind is more erratic. In mountain environments, wind is greatly influenced by terrain and elevation, altering wind patterns from larger scale pressure patterns (Hume, 2008, p.86). Anabatic (upsloping) winds are generally common during the day, when warm air rises during daytime heating; the opposite katabatic (down sloping) winds generally occur in the evening, when cool air

quickly descends (*ibid,* p. 86). The study area is also subject to chinook winds, a warm and dry foehn wind (that can be quite strong and gusty, reaching up to 100 km/h) forming on the lee side of the Southern Alberta Rocky Mountains, where the warm air of the west coast meets cool arctic air (*Ibid*, p.101). In addition to katabatic, anabatic and chinook winds, lake breezes, jets and nocturnal jets, convection induced winds (i.e. downbursts from thunderstorm), dust devils and in a very rare cases, a tornado, are all types of winds—meteorologically speaking—that are possible at some lookouts. The lived experience of mountain winds sheds light on how such patterns are often thrown to the wind: non-existent patterns in some places, or, full of exceptions. In chapters three and four, I explore how different kinds of wind might be experienced.

### 1.4 The Lookout Way of Life

The lookout observer job is a rare, seasonal posting. In order to qualify for the job, applicants must be 18 years or older, have excellent eyesight, a few technical certifications (radio operators certification, first aid), and perhaps most importantly, excellent physical and mental health to be able to live alone ("Lookout Observer", 2016). Individuals must also be self-motivated and self-reliant (*ibid*). LOs spend anywhere from four to six months a year at relatively remote lookouts, depending on the length of the fire season and are flown to and from their lookouts by helicopter at the beginning and the end of season, with exception to a few I visited that were accessible by mountain roads.

Many LOs described the lookout job as a way of life which they described as a simplified existence: no running water or electricity (although some use generators), few material objects, a small (but very secure) cabin; a simple daily routine. The way of life also involves taking on— or "sinking into"— solitude. But perhaps most importantly, it is a way of life that necessitates living in accordance with the flow of weather and the seasons. *Living in accordance*, is a common thread to this research project, as one might anticipate with such an unpredictable phenomena as wind and the study area being mountain environments subject to sudden and fast changing weather. As one LO (Snowy) explains,

> wind and weather play a huge role in our lookout lives. Every day, and all through the day, we are constantly evaluating how the weather might be directing our actions to be able to just live on our mountain tops, or affecting the forests and how we do our job. It is a way of life, literally, and one that is very unique.

Many LOs pointed out that weather "doesn't work on a 9-5 schedule." LOs would get up in the middle of the night to watch a storm and note where lightning strikes had hit to be able to watch for holdovers (dormant fires that might start from a lightning strike in the following days). On the flip side, rainy days or socked in conditions invite temporary rest from looking, if the fire danger is low or views are obstructed. At lookouts accessible by car, this might permit a LO to leave for the day or be a good time for a guest to visit. On the lookout, weather is inherently linked with how LOs spend their time.

**1.4.1 Isolation isn't here.** There are many factors to consider when discussing the remoteness or 'degree of isolation' of a given lookout and there is variance amongst the lookouts where I conducted interviews. Some lookouts were a ten minute helicopter ride, popped up from a nearby fire base, whereas very remote lookouts (in the Northern Boreal for instance) may be a 40 minute helicopter ride. Some lookouts are popular destinations for day hikes (with one lookout receiving up to 4000 people a season) while others receive only a handful. Some LOs do the job solo, while others are accompanied by a partner (human or pet) or may have visitors throughout the year. Many LOs were quick to point out that solitude is not isolation. In response to a hiker querying if she was terrified living on the lookout, one LO explained that she was more terrified of living in downtown Calgary: "Isolation isn't here […] if your perspective is with you, it's where you want to be. So you have to have that within you to begin" (Ranger LO). Other LOs told me they were drawn back to the lookout for the feeling of solitude, described as "aloneness" and "getting comfortable being on your own for a part of the year", but also "serenity", that comes from tuning into flora, fauna, the rhythm of seasons and the rising and setting sun. For one LO what she most enjoyed was to watch the sunrise from bed in the morning, with the views from the cabin over the nearby valley making it feel like living in a tree house. Entwined in this is the romantic pull of "going back to nature and finding out what that's all about", of "getting out of the city", of "immersing oneself in

mountain landscapes." Later in the thesis (section 3.2), I explain other reasons why LOs are lured back to the lookout season after season.

Lookouts are re-supplied by helicopter every three weeks to four weeks depending on the wildfire district with food, drinking water and propane. These resupplies are known as "services." Historically, lookouts were serviced by horse or mule back. LOs order food in advance from designated shops. The Detection Aid, the Alberta Wildfire staff person who takes care of any needs a LO might have on the ground and also comes along on each service for a visit, picks up the food at these locations. In a few cases, family members or friends will drop off LOs food orders at the wildfire warehouse. Propane tanks, commonly referred to as "PIGS", is slung into the lookout on a long line extended from the helicopter, less regularly than a three week service. Propane fuels the lookout heater, cooking stove and refrigerator. LOs might also order non-potable water for bathing and washing dishes if supplies in their rain barrels are low (due to a lack of rain or little snow to melt in the spring). That said, an ethic of little waste prevails amongst LOs, especially veterans— it is very rare to see water wasted or excessive amounts ordered, just as garbage is kept to a minimum as whatever paper cannot be burned must be flown out on service day. A similar low consumption ethic applies to generator use. While all lookouts are equipped with one, LOs might only turn it on for an hour in the evening. Some LOs prefer to sleep with the rising and setting sun, using candles briefly in the evening— or not at all— depending on the seasonal length of day. Lookouts have also been equipped with solar panels since the 1990s that charge small appliances (coffee grinder, computer), even experimenting with wind-powered generators in the 1950s at select lookouts (Davis et al., 2016). So lookout places are partially off-grid, and encourage frugal consumption or a return to a simpler way of life (save for the helicopter resupplies!), as stated above.

Before moving on to chapter two, I explain my motivation for the research that arose from LOs asking how my interest in wind first arose.

### 1.5 Motivation for the Research

Growing up on a lake (figure 3) in the Gatineau Hills (Western Quebec, Canada), my parents, perhaps implicitly at times, taught my brother and I much about learning to read weather on the water: knowing it was raining by looking for water drops on the lake, certain light—northern sun for example—was better for some plants more than others, cold winter winds came from specific directions, and the sun would set in a similar spot on the horizon behind the island, moving incrementally throughout the year.

Exposed to lake breezes, I would often watch the wind's effects: poplar trees by the lakeside swaying and exposing the shiny underside of their leaves, which my Dad reminded me can resemble the sound of rainfall at certain times of the leaves' maturity; corn blown over in the garden; observing waves and currents on the water or moving through them swimming, paddling a canoe or floating on an air mattress. The wind would also blow objects around: tarps from the wood pile, laundry drying on the clothes line, raked piles of leaves— slowing down or speeding up projects in the process.

Figure 3. Morning light on Lac Gauvreau. Ever-changing view from the back deck (Photo credit: author).

My Mom, repeating what her Father had told her, would regularly say “the wind blows away the cobwebs.” Growing up with this expression, I always felt the wind to have a refreshing, clear-your-head kind of effect. It was not until I spent a year on a university exchange in the south of France that I realized the wind could lend to starkly different perceptions. The Mistral, a cold north wind that blows down the Alps and through the Rhone valley in the winter months is collectively thought of as an aggravating, irritating force—one that causes problems for people.

The lake scene would change throughout the seasons. Looking back on photos that my family and I have taken over the years, and now after being exposed to repeat photography processes through the Mountain Legacy Project, I realize these were often taken from the same spot. Similar with the lookout positioning, I would watch a dynamic, ever-changing scene from more or less the same spot. Perhaps most obvious to the eye was the frozen lake in the winter, extending backyards into a large open play and travel space. Snow would accumulate, drift, freeze and melt in rhythm with the weather. Black ice, the ideal kind for skating, would thicken in certain wind conditions and make cracks, just as the lake would burp and gulp under the weight of heavy snow. The spring ice would break up and be carried from one shoreline to another, by the wind or the wave action it spurred, creating a beautiful sound of water sloshing through ice crystals, a quasi-wind-chime.

Most of this experience on the lake, however, was implicit to me, until lookout observers started encouraging my interest in the wind. One day, early in the interview process, I visited a lookout situated near two lakes commonly subject to lake breezes. The lakes were something the lookout observers frequently looked at when observing the weather. Memories of wind and the lake came flooding in along with the realization that not only do we read weather by looking at the sky, but through engaging with features (topographical or other) of our local environments. As we will see throughout the thesis, bodies of water reflect the weather like a mirror, just as vegetation absorbs various forms of precipitation and rock reflects sunlight. This is how I have come to reflect on the intermingling of land and sky proposed in Tim Ingold’s conception of the “weather world.”

## 1. 6 Thesis Outline

Chapter one provides an introduction to fire lookout observers and background for considering their role in wildfire detection and way of life on the lookout. Chapter two commences with a brief literature review and explains the methods used. The findings of this thesis have been split into the next two distinct chapters: attentive observation: discerning, detecting, seeing; and sensing wind and weather. The first of these, chapter three, gives important context to the fire lookout job and sheds light on daily practices involved in the lookout job. In short, I unpack what it means to *see* as a LO. Understanding the backdrop to the LO job lets us understand how wind is entwined in everyday practices, as explored in chapter four, sensing wind and weather. In chapter five I revisit the research question with the aid of findings from chapters three and four, and the literature review in chapter two.

# Chapter 2 Literature Review and Methods

*"It's impossible", said pride.*
*"It's risky", said experience.*
*It's pointless, said reason.*
*"Give it a try", whispered the heart.*
-Author unknown

## Introduction

This thesis is the product of a qualitative exploratory research project with the overarching goal to explore human engagement with weather processes through immersion in mountain environments. My central research question is: *How is wind experienced in lookout observers' daily practices, and what role does it play in the experience of related weather processes?* In this chapter I begin first with a literature review to situate my research question, followed by an explanation of my methods and their appropriateness to address this question. I discus my process of analysis and interpretation and end the chapter with an acknowledgment of limitations.

## 2.1 Literature Review

In this next section, I explore literature significant to this research project and unpack my approach.

**2.1.1 Situating wind and weather experience.** Worldwide, as climate issues attract increasing concern, growing attention is being drawn in both the social and natural sciences to how people engage with their environments. The scholarly consideration of these relationships is illustrated in an array of concepts: cultural landscape (Fowler, 2004), sense of place (Feld and Basso, 1996; Thom, 2004; Feld, 2005), space (Massey 2005), traditional ecological knowledge (Berkes 1999), ecosystem services (Daily 1997), livelihood (Chambers and Conway 1991), and dwelling. (Heidegger, 1971; Gray, 1999; Ingold, 2000). Until recently, the role of weather in these environmental engagements was often ignored or downplayed as something too mundane or something that you make small talk about. An important exception includes French sociologist Martin De La Soudière's 1999 book publication of *Au Bonheur des Saisons : Voyage au Pays de la Météo* and an earlier 1990 article publication *Revisiter la Météo.* Unfortunately none of this work has been translated or taken up in English scholarship. A few ground breaking

collections have drawn attention to weather in everyday life: *Weather, Climate and Culture* (Strauss and Orlove 2003), *Local knowledge and Everyday Life: Issues in Integrated Climate Studies* (Jancovic & Barboza 2009) and a review in *Ethnologie Française: Météo: du Climat et des Hommes* (De la Soudière 2009). Environmental Historian Liza Piper (2004) sheds important light on the role of weather and climate in shaping colonial encounters, what she refers to elsewhere as "weathering colonization." These studies reflect a bourgeoning field of ethnometeorology (the study of local conceptions of weather and climate), seen in the research of Sillitoe (1996), Roncolli, Crane & Orlove (2003), Clark (2009), Jankovic & Barboza (2009), De Vet (2013) and Kolawole (2014), among others.[3]

Wind has been taken up in important and emerging studies of renewable energy (Howe, 2014; Howe & Boyer, 2015; Love & Garwood, 2011). A shift to taking weather more seriously can perhaps be attributed to changes in the weather itself or to a larger movement in academia that recognizes local ecological knowledge, be that traditional ecological knowledge (TEK) or long-time residents' of place (Turner, 2014), as valuable ways of knowing in which weather is, and always has been, entwined. The field of ethnometeorology, has historically received much less attention than related fields of ethnobotany and ethnozoology, some suggesting because weather is harder to observe, measure and categorize (De la Soudiere, 1999), that air is "unthinkable" and escapes the boundaries of the material world (Ingold 2015, p. 69). Of course, as the authors show, the contrary could not be truer. As Strauss and Orlove suggest, "strong human capacity to form attachments with particular places rests not only on the human affinity for landscapes or vegetation, but for seasonal phenomena as well. Even though weather can be very routine, it still commands human attention" (2003, p. 9).

Within the field of ethnometeorology, wind has received even less scholarly attention, at least as a central focus of analysis. Hsu and Low's (2008), *Wind, Life and Health*, is an important exception, exploring wind largely within a medical anthropology framework. Among contributions to the collection, Marina Roseman (2008) and Chris Low (2008) explore how attention is cultivated through sensual experience in a certain

[3] For a comprehensive literature review of ethnometeorological studies, see Dove 2013.

place and time, in the case of their research, different winds that may or may not lend to healing. Sarah Strass' (2008) contribution to the collective explores bio meteorological elements to the foehn wind in Switzerland and Ingold (2008) develops his concept of the *weather-world* and the important role currents of air play in thinking about the relationship between sky and land. The contributions to this collection were pivotal in my thinking through different ways wind is conceptualized cross culturally. Given health and medical anthropology implications are beyond the scope of this research, I have found it challenging to integrate this work into my discussion, save for Ingold's contribution that explores weather perception. To my knowledge, Ingold is the only contributor who has continued to write about wind (2010, 2011, 2013, 2015), although wind is something that is mentioned in support of larger arguments about weather perception. In describing the environment of falconry practitioners, Sara Asu-Schroer uses the term 'weathering' to refer to the ways "the weather influences the movements of human and nonhuman animals, as well as being a medium of perception in which they are immersed" (2014, p. 25).

Another important collection, mentioned above, was the series in *Ethnologie Française*, *Météo: Du climat et des Hommes* (De la Soudière, 2009) which posits the sky as a new field of inquiry. Studies include the everyday measurement of weather by Météo France volunteers (Capel, 2009), in a forty year journal of a French paysan (Pinton, 2009), ways of speaking about, naming and living in the coastal winds of Languedoc (Destand, 2009). This resonated more with themes and topics that surface in my research, perhaps because they align more similarly with how lookout observers engage with wind and weather.

Biologist and novelist Bill Streever's (2016) very recent publication *And Soon I Heard a Roaring Wind,* provides an extensive account of the natural history of moving air, punctuated by a description of his sailing voyage from Texas (USA) to Guatamela, in order to immerse himself in the winds he would write about. While Streever's book is limited to coastal winds and nautical experience, there is overlap with mountain winds. His approach to writing the book through immersion in the phenomena is an interesting one. On a radio interview with CBC, he explained that as a biologist, he spent his career talking about weather processes- he wanted to go out and experience them.

**2.1.2 Engaging environments, engaging a more-than-human-world.** I position relations with the wind and weather under the umbrella of relations to the *more-than-human-world* (Abram, 1996). This concept of the more-than-human-world, building from Irving Hallowell's *Other-than-human-world* (1962) encompasses everything that makes up the world and has the potential to engage humans on a relational level. Following the relational philosophies of Tim Ingold (2000, 2011), Donna Haraway (2003, 2008), Bruno Latour (2004, 2005) and Gilles Deleuze and Felix Guattari (1987), Asu-Schroer asserts the divergent philosophies of these authors find common ground in the idea that becoming happens through being in the world and life is an emergent process (2014, p.27). Kohn (2013) similarly understands human beings' capacity to learn through experience. Ideas of becoming and emergence are pivotal to understanding wind and weather experience as it changes on the lookout. These relational philosophies, in addition to Anna Tsing's (2013) important contributions to thinking through more-than-human-sociality, make way for what is sometimes described as an "anthropology beyond-the-human" or "more-than-human anthropology" (Tsing, 2013). Engaging a more-than-human-world has important implications for thinking about the relationality of place (Tuck & McKenzie, 2015), central to decolonizing methodologies (Smith, 1999), and critical to research by and with indigenous peoples about relationships to land or the environment (Nelson, 1983; Feld & Basso, 1996; Cruikshank, 2005; Guédon, 2005; Simpson, 2014; Turner, 2014, among others). Geographer Doreen Massey (2005) argued that places are not enclosures with a clear inside and outside, but the "coming together of the previously unrelated, a constellation of processes rather than a thing" (2005, p. 14, as cited in Pink, 2015, p. 35).

**2.1.3 Ways of knowing: sensory perception and enskilment.** Rodaway (1994) signaled that to understand our "sensuous encounter with the environment", a theory of perception is needed (1994, p. 19, as cited in Pink 2015, p. 28). Sarah Pink, among others, notes phenomenological philosopher Maurice Merleau-Ponty placed sensation at the centre of human perception (2015, p. 29). Phenomenological approaches to experience emphasize *lived realities,* in which I highlight sensorial and practical

engagements. I adopt this approach to wind experience to tease out what may appear at first notice largely elusive, or bound up in other weather processes. A phenomenological approach, Pink notes,

> enables us to conceptualize experience as multisensory and as such neither dominated by nor reducible to a visual mode of understanding (Ingold 2000, Grasseni 2007). While the visual does not cease to be relevant, it needs to be situated in relation to the other senses, and to be opened up to new interpretations (2015, p. 96).

Ingold's (2000) elaboration of James Gibson (1979) concept of an education of attention, wherein we learn to attend and respond to the things around us and this informs how we perceive our environment, is pivotal to how I have come to understand ways of knowing and being as entwined. Marcel Mauss' (1934) *techniques du corps* or bodily techniques, where understanding the importance of the body and its embeddedness in everyday practices, captured my attention many years ago. Literature on care practice and theory (e.g. Mol, 2008, Mol, Moser & Pols, 2010) offers interesting ways into thinking about care as a mode of attention: taking care of one's body, taking care of the lookout place through maintenance and repair in response to weather events or exposure in mountain environments. Thinking about the care one should take is particularly salient given the dangers of mountain weather and living in isolation.

**2.1.4 Lookout literature.** A few LOs have written personal accounts about their lookout experiences in the United States (Connors, 2012; Spring & Fish, 1981) and in Alberta (Stratton, 2006), while for others the job inspired the broader American environmental writing of Edward Abbey (1968), Gary Snyder (2007), Jack Kerouac (1965) and Philip Whalen (Suiter, 2002). While these works are personal (and poetic) accounts about lookout life over different eras and in different countries, they were very helpful reading for thinking through interview questions before heading into the field.

## 2.2 Methodological Approach

My project is situated at the confluence of anthropology, phenomenology and mountain meteorology. While I attempt to weave these interdisciplinary approaches

together, my background in anthropology necessarily shines through with stronger rays. As I explored in the literature review, the wind is under considered and my approach has very much resembled one of a quilt maker, stitching together pieces that may go well together. I draw on the following key concepts:

- Ingold's (2008, 2010, 2011) concept of the *weather-world.* Earth and Sky mingle to create a medium of perception. How we engage in the weather medium is shaped by our activities in the world and this varied engagement in turn shapes us (2008, 2011). Ingold's conception is useful to this thesis because it places weather at the centre of environmental perception and helps think through weather as movement (fluxes and flows) in the air and on the land.

- Haraway's (2008) concept of *becoming with* was elaborated in human-animal interactions, where humans and companion species meet in "contact zones" (zones imbued in power and uncertainty). Haraway's conceptualization of becoming with extends, I feel, beyond human-animal interactions to include engagements with the more-than-human-world more broadly and is useful for thinking about the unexpected arising between humans, wind and the world.

- Grasseni's (2004) concept of *skilled vision*, an educated way of looking that allows for seeing the world in a certain way. Skilled vision is cultivated in communities of practice and through participation in such practices "one eventually achieves flexibility, resonance with other practitioners and an attunement of the senses" (2004, p. 53).

While wind lends itself to many kinds of experiences, I focus on sensory perception (Ingold, 2000, 2005, 2011, 2015; Grasseni, 2004, 2007; Strang, 2005; Downey, 2007; Spinney, 2007) as a way of knowing about wind. This approach implies multi-sensorality and the interconnectedness of the senses.

Heading into fieldwork, I was influenced by past experiences, some of which I express in chapter one, "Thinking weather with the Mountain Legacy Project" and "Experiences of Lake", as well as much time spent in the mountains. I share in the

assumption that weather experience is a universal experience, although we engage in these experiences to varying degrees and with different expressions. I assumed going in to this research, based on past experience and from literature I had read, that mountains would be windy places, at least at certain times, and that such conditions would lend to thinking about, feeling, and engaging with the wind.

## 2.3 Methods

I sought to explore my research question in four ways. First, and most centrally, I conducted sixteen open-ended interviews with fire lookout observers (LO). Secondly, I engaged in informal conversations and correspondence with LOs. Thirdly, I used photo-elicitation techniques in search of insights into changing landscapes around the lookout. And lastly, I conducted participant observation at lookouts to further contextualize interviews and understand the LO role. I describe each of these methods below.

**2.3.1. Interviews.** Smith, Staples & Rapport assert that interviews are moments of "extraordinary encounter", where the everyday is "continuously constructed through moments of reflection and authorship" (2015, p. 3). Interviews are the core of my project. All interviews (except for two with retired LOs) were conducted in-situ, at fire lookouts.

***2.3.1.1 Participant selection.*** For selection of participants, I drew upon my previous work with the Mountain Legacy Project in July-August 2014, where I made two connections with lookout observers. These LOs suggested contacts in the Alberta Department of Agriculture and Forestry (AAF) who provided names of potential participants. I was granted the opportunity to introduce myself and my research objectives to these potential participants by attending the Calgary Wildfire Management Lookout Observer Commencement Meeting held at the start of their season (May 5, 2015). A few LOs (four) had already opened up due to an early season, and joined us by conference call. Following my short presentation, I stayed to have lunch and chat with LOs and their supervisors. This was a critical first step to establishing good rapport with Alberta Wildfire and gauge whether or not the topic of the thesis project resonated with LOs. Until that point, my assumptions led me to believe that, given the geographical

locations of the lookouts, they would be living in windy environments that might influence and engage them in different ways.

From an ethical standpoint, it was very important to me that LOs be interested and willing to participate in the research. It was also of critical importance to AAF. Their support for the project moving forward would not have happened without the LOs' approval, which they gave by voting unanimously in favour of participating in the research. In the weeks following the meeting, an information letter (Appendix A) and participant consent (Appendix B) form were mailed to LOs at their respective lookouts, asking if they would be willing to participate. LOs replied via phone or e-mail, and, at this time (end of May), I established that I would visit them at their lookouts between mid-July and mid-August. I expanded my initial sample size ($n$=11) from the Calgary wildfire management district to ($n$=16) by including two retired LOs and three LOs in other districts. These additions were made through snowball sampling, from suggestions made by LOs and Alberta Wildfire staff, based on my participation criteria below. [4]

Initial participation criteria were threefold: experience of 15+ years as a lookout observer; mountain fire lookout (and not a tower); and, ideally be in a windy environment. The Calgary wildfire management district offered an almost too perfect combination of these three. Known colloquially as the "retirement district", it contains the highest concentration of LO veterans, with most doing the job for over fifteen years, and many over thirty years. Emphasis was placed on lookout veterans to get a sense of potentially changing landscapes, weather patterns and engagement with weather over an extended period of time. I altered my participation criteria to include a few novice lookouts ($n=3$), who had been doing the job for ten years or less, to offer a potential comparative perspective. Mountain fire lookouts were emphasized over towers, because of my interest in mountain wind and weather. Also, most of the survey photography I would use in the photo elicitation process (section 2.3.3) was taken from mountain lookouts, in order to get a wider view of the landscape for photo-topographical surveys.

[4] I am particularly grateful to Rick Arthur, Heidi Hurst, Tim Klein and many anonymous LOs for their help in this careful and considered selection process.

As mountain fire lookouts, topographically speaking, tend to be windier than fire lookout towers, significant overlap exists between participation criteria two and three.

Travel between Victoria (my place of residence at the time) and the Rocky Mountains being relatively far, I decided to conduct my interviews in one seven-week field season. It was suggested by Alberta Wildfire staff and lookout observers that July and August would be a "good time for a visit", insinuating that it might be a good time to break up the solitude, about half-way through their four to six month season. Upon hearing this, I made a conscious choice not to predetermine the amount of time spent with each LO, but to align the visit with whatever amount of time the LO desired my hiking companion, Mary Sanseverino, and I to stay. Later in the season, at a debrief meeting with Alberta Wildfire staff, they expressed gratitude for our visits, as it had been a busy fire season and they had not been able to visit lookouts as much as normal. They also explained the role that wildfire rangers historically occupied and the prime importance of visiting LOs as a quality of a "good" ranger.

Mary, a senior research associate with the Mountain Legacy project, joined me for the first four weeks of my field season, nine of the sixteen interviews, acting as navigator extraordinaire and to avoid me hiking alone as much as possible. Mary took panorama images from lookout places and also repeated some historic images for the Mountain Legacy Project. Many of the beautiful photos in this thesis were taken by Mary during our field season.

***2.3.1.2 Hiking to the interview.*** Hiking into the lookout added meaning and value to the interview. I conducted one interview per day, outside or indoors around a table, often taking in an expansive view or one obscured by smoke, fog or rain. A day off was normally taken in between interviews, depending on driving distance to the trail head, and, most importantly, the weather. I was keen to visit all lookouts in any type of weather, but Mary and I did not hike in dangerous weather (thunderstorms, hail, etc.) or areas of likely encounter with bears or cougars. Of course, these situations are not always avoidable given the study area.

Our hike into Grizzly Lookout offers a good illustration. The morning looked promising—mostly blue skies with a few clouds—as did the forecast. We had driven for

an hour before reaching the trail head. We started out walking around a large lake and about half way around, spotted a lightning strike quite close. Dark clouds were setting in over the area to which we were heading. We decided to go back to the car and dump all our "metal" (tripod, hiking poles). In the meantime perhaps the storm would blow over, which it eventually did. On our second attempt, a little further along than the previous time, we came within meters of a yearling grizzly that scurried off the trail at the sound of our voices in the direction we were headed. We decided to turn back. But, on our return to the car, we came across a group of hikers heading up and decided joining the large group for the first section of the trail would be a good enough safety choice. We had no further run-ins that day, only spotting remnants the bear left behind on the trail.

After going over the participant consent form, we began our interview. I recorded interviews with a Zoom HN2 recorder. Open-ended, semi-structured interviews facilitated informality and more of a conversational flow. I chose this technique because interviewees had a wide range of experience and I was interested in gathering narratives and other forms of explanation that are perhaps less conducive to a rigid structure (Dewalt & Dewalt, 2011). Also, previous interviewing experience (with homeless families 2013-2014) taught me the importance of making informants feel at ease in the interview process. I encouraged taking breaks to make a warm beverage, use the outhouse, make weather readings or do a scan of the area for smoke and introducing other topics or areas of interest. This loose structure led to interviews ranging in length, from one to three hours, and tangents which proved to be so important for understanding how themes discussed in the interview weave in to other facets of life. For example, one LO spoke in depth about the sound of dirt bikes around his lookout and helped me recognize the different pitch of quads (all-terrain vehicles). I was interested in sounds the wind might make on the lookout. Inquiry about wind sounds quickly led to LOs sharing stories about all sorts of weather sounds (i.e. hail on the roof, different kinds of thunder) and sounds around the lookout place more broadly. LOs are attentive to *all kinds of* sounds. These moments of illumination that emerged from broader contextualization pushed me to consider things not previously addressed. During one interview for example, a LO abruptly stood up when she heard marmots whistling outside. She explained apologetically that she had to go outside, that she normally "pays attention" to these

sounds. Marmots whistling are often a sign of mega-fauna in the area. In this act, she also invited me to pay attention to sound and observe its significance.

Early on in the interview process, a LO commented on listening for different tones on the radio, (i.e. when LOs give their morning or afternoon weather reports). Other LOs also commented on the tone of other LOs' voices throughout the summer. I slowly came to realize the importance of tone in interview recordings, perhaps because LOs had drawn my attention to it. Tone mattered to what people conversed about and how they went about doing it. Tone, and the inability to properly capture it in the process of transcribing would come up again, as shown later, in my data analysis stage.

**2.3.2 Informal conversations and correspondence.** I engaged in informal conversation with lookout observers before and after our recorded interviews and in e-mail or phone/text correspondence prior to and following interviews. Informal exchanges also occurred in the rare case of follow up visits (*n=4*) during the more "distinct" participant observation phase of the research. As I describe in section 2.3.4, LOs engaged me in learning processes on the lookout such as taking the weather, scanning for smokes, etc. Participant observation was an inherent part to visiting each lookout.

While anthropologists in the past have signaled the importance of maintaining relationships with the people we learn from in the field (Dewalt & Dewalt, 2011), recent work in collaborative ethnography (Campbell & Lassiter, 2015) inspired me to view post-interview communications with LOs with added interest. First of all, these were largely unexpected exchanges of LOs reaching out with additional information. While I had anticipated the potential occurrence of follow-up communications and included this in my ethics application, I was astonished by the importance these communications would play in my own learning. They were great ways to follow along with LOs, as the fire weather season progressed. Through texts and e-mails, LOs shared photos and accompanying explanations, along with tidbits of information about day to day weather unfolding on the lookout, the changing season, rare events (e.g. grizzly encounters) or the lookout season coming to an end. Although I was no longer physically present, , their descriptions allowed me to imagine what it might be like at the lookout I had visited a

month before and hear about a weather event that might have been mentioned in an interview but did not unfold during my visit.

These voluntary e-mail or text exchanges allowed LOs to share further on their own terms and importantly share photos that were meaningful to their experience on the lookout. It is hard to know how much of a lingering effect the interview had on people as motivation behind this correspondence, but some LOs did relay that the interview had provoked them to think about things not considered before or at least about which they had never spoken to someone previously. Correspondence also transpired when I presented preliminary research insights at the Mountains of our Future Earth Conference (Perth, Scotland) in the autumn following fieldwork. Some read my extended abstract for the conference and I used some of their photos. It was important to me to include them in the process of sharing their insights with a broader academic community. A few LOs continued to send photos throughout the winter of images they had taken over the years or, around the holiday period, people would check in by e-mail. These exchanges kept the research "alive" for me—and were a constant reminder of the people, behind the research and what they were teaching me. Some of these correspondences continued into the writing stages of the thesis draft. All lookout observer participants, and a few representatives from Alberta Wildfire, were given the opportunity to review the final version of the thesis. Many did so, and provided helpful comments.

I also engaged in informal conversations about weather and fire throughout my summer fieldwork with other members of Alberta Wildfire: helicopter pilots, fire fighters, rangers, supervisors and camp bosses. These conversations helped situate the LO role within the larger wildfire detection system and how wildfire staff perceive and comprehend the LO role. It also helped me see how weather and wind in wildfire processes play an important role in the thoughts of those on the ground – not only those up high.

**2.3.3 Photo elicitation.** Smith signals that photo elicitation can be used as a method to "focus discussion and examine how viewers create narratives with and around photographs" (Smith, 2004, p.21) and this technique has been used by other members of the MLP (Falk 2014). Clark-Ibánez (2004, as cited in Falk 2014) suggests

communication may be opened up between participants and the researcher through the act of exploring photographs together. I adopted photo-elicitation techniques in the hopes of opening up a conversation about potential change around the lookout.

As part of the interview, I showed LOs three to four black and white historical survey images (Library and Archives Canada, LAC), taken near or from their lookouts between approximately 1890 and 1940. Along with the historical images, I showed LOs colour photographs of the very same images taken within the past decade by members of the Mountain Legacy Project. Pairing the historic image with its modern repeat, I gave the printed image pairs to the lookout observer to examine while asking a series of questions about wind, wildfire and landscape change (as it pertained to land-use, weather or climate change), referenced in Appendix C and regrouped under theme four in the question themes. When asking these questions, I did not initially point out areas where changes in the landscape may be apparent, keeping in line with my overarching interview style of open ended questions, trying to lead as little as possible. Following Falk's success with having land-use managers draw on images, I initially gave LOs coloured pencils to draw areas of change on images. This proved to be awkward and I discontinued use of the pencils, in large part because most LOs had surprisingly little to say about landscape change from comparing the two sets of images.

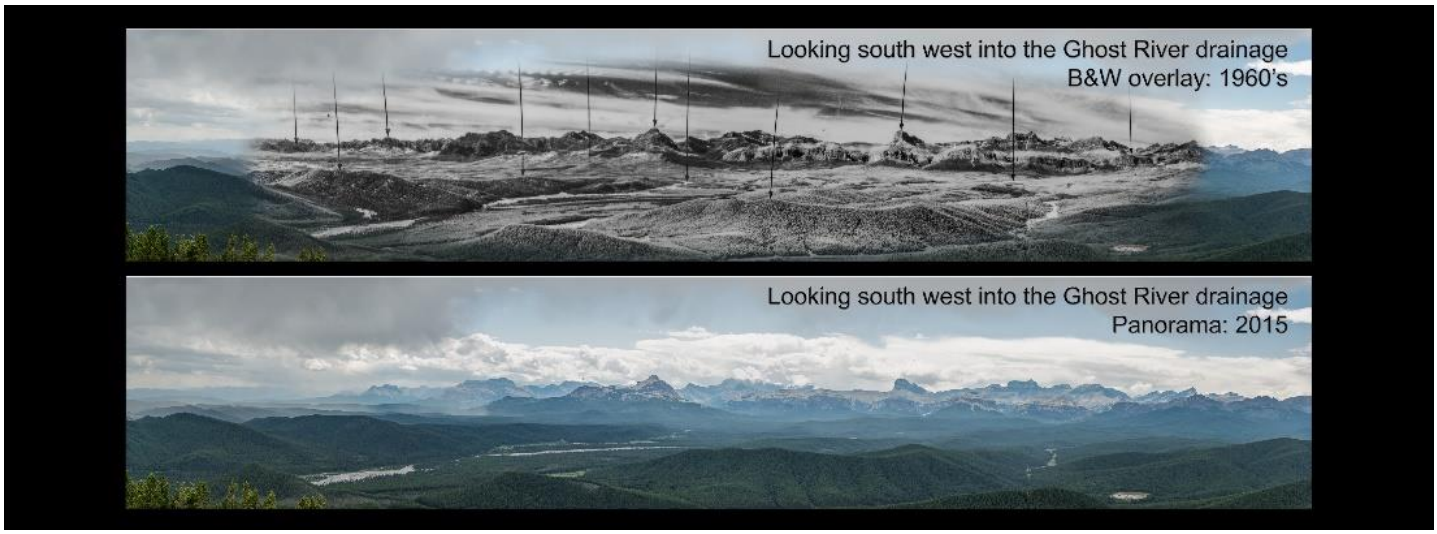


Figure 4. Mountain Legacy Panoramic Image Pair. Panorama image taken in 2015 (Courtesy: Mary Sanseverino).

LOs at this point often went on to talk about the role of wind in wildfire processes (in keeping with the questions I was asking them).

Initially, I thought there might be a problem with images themselves which were small in comparison to the vast landscape surrounding the lookout, i.e. a still 8x10 perspective in black and white versus the dynamic panoramic view of their everyday view. I tried a few different techniques: only showing the historic images and using the LOs' current view out the window or from the catwalk as a "comparison image", following Smith's method of walking with participants and the historic archival images through the landscape, what she refers to as "walking with the archives" (2014, p. 119). While this approach certainly engaged LOs more by looking out on the landscape and attentively sharing in their view, leading to many other interesting—and in retrospect important—conversations pertaining to wind and the lookout job, little had to do with the initial questions I was asking. As a result, in the next few interviews I tried chatting about forms of change we might observe in the image as we looked at it together, like avalanche chute infill (Davis, 2015) or upslope tree growth, considered to be a strong indicator of environments becoming warmer at higher elevations (Trant, Starzomski & Higgs, 2015). Identifying these forms of change seemed to help somewhat, but suggesting to the LO *what* to observe in the image made me feel uncomfortable. In these few instances, it felt as though I was leading what they should attend to. Instead of opening up communication with participants, it led to "yes" or "no" types of answers and a lot of "so much of it looks the same" types of replies. An exception were a few (one to three) LOs who shared stories of land-use changes that had occurred over the years returning to the same lookout: oil rigs being put in, quad trails blazed, areas logged, mountain tops blown off for coal mining extraction. Two LOs spoke of environmental change, mentioning zones coloured red by pine beetle or other forms of environmental stress, separate from looking at the images (something I address in the next chapter, section 3.6).

To my surprise, the photo elicitation process led to lookout observers sharing their own photos, at times eliciting me in return. The act of comparing the LAC and MLP images, I feel, opened up a space within the interview to share any kind of photo. The

photos that LOs shared, however, were of a different kind of change. They took photos of fleeting experiences: sunsets, sunrises, snow curls, bear tracks, temporarily blooming wildflowers. Their photos captured informative moments, moments of beauty, wonder or unusual happenings. Often, many of the photos had the landscape completely cut out of them, with the focus towards the sky, capturing all kinds of weather. Stories flowed fluidly as they shared their pictures, and in many cases their paintings as well. Some LOs continued to share photos through e-mail and text following the interview and continued to do so throughout this research project. Some of the photos in this thesis are images and stories that LOs shared along the way. Sharing their personal photography allowed LOs a different way to participate in the research (Krieg & Roberts, 2007, as cited in Tuck & Mckenzie, 2015, p.123), and one that perhaps resonated more with the nature of their work on the lookout and with the research objectives. Opening up to their images was a good lesson in adaptability in the research process and a fruitful research discovery.

Figure 5. LO's reflection in fog halo. (Courtesy: Andries Van Pelt).

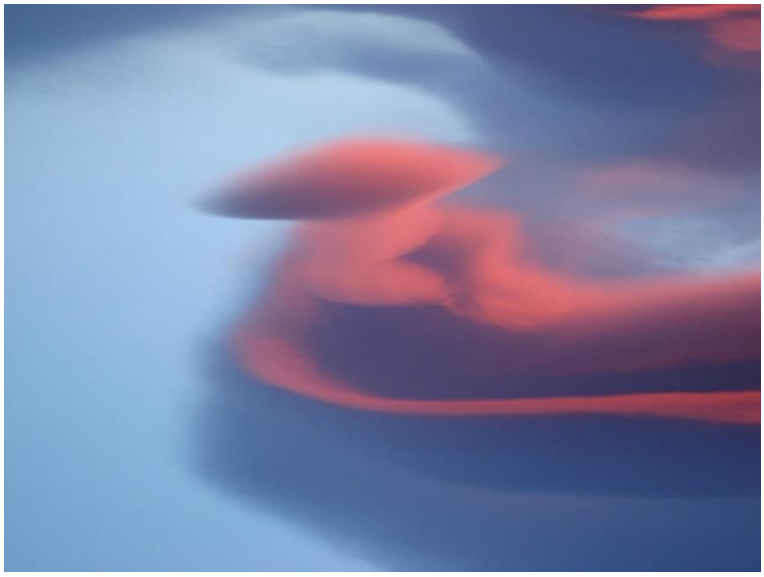

Figure 6. Lenticular clouds at sunset. (Courtesy: anonymous lookout observer).

**2.3.4. Participant observation.** Participant observation is a synchronic method (Dewalt & Dewalt, 2011), used to understand "what is happening now." In this sense, the researcher's experience is tied to a specific time and place. Participant observation is a practice of *waiting* on things to emerge (Masschelein, 2010, p.46), a practice that "pays special attention to learning about the social by being there, rather than just asking the opinions of a few powerful people" (Tsing, 2013, p.30).

Participant observation is often used as a method in combination with others. I used participant observation to further situate interviews, to observe, but also importantly learn, some of the things that lookout observers relayed in interviews. For example, LOs described the quality of light with blizzards and the practical implications of being "stuck" inside. Being able to experience a blizzard myself and live the difficulty of navigating a slippery fifty-foot path to the outhouse, buried by drifts of snow, or the care that must be taken in opening and closing doors when the winds are blowing strongly, are examples of how words were brought to life through my own experience of the weather. Ingold, asserts that to *practice* participant observation is also "to undergo an education" (2014, p. 388). At the lookout, I learned to observe as LOs do, with many LOs taking me on as an apprentice, sharing how to do things in case "I ever had to do the job one day." Anthropologist Christina Grasseni refers to this idea of

learning to see as "good looking" (looking that is done properly) in her work around the skilled visions (2004, 2007) accompanying cattle breeding in Italy. Greg Downey's (2007) study of the "sideways glance" in Capoeira, an Afro- Brazilian martial art and dance, similarly explores other skilful ways of seeing.

Throughout the process of participant observation, I took extensive field notes. These notes, following Dewalt & Dewalt's (2011, pp. 157-178) suggestion for separating notes into different journals (or sections of a journal), were organized in the following way: jot notes (words, sentences to be expanded on later), expanded notes (field notes proper), methodological notes (any notes pertaining to methods, process and changes), logs (to keep track of which interview was done when or what the weather was like that day), meta-notes/analytic notes (in order to attempt to separate any early inclines of analysis from the rest of field notes) and head notes (things that never get written down, often tacit understandings or impressions). I also regularly took photos (a small selection of which appear in this thesis). Beyond fieldwork and into the analysis and management stages of the research process, I continued to maintain some of these notes (methods, analytical, journaling).

Using different techniques with different methods allows for cross validation (Dewalt & Dewalt, 2011, p. 127). I was able to cross-check or oscillate information from field notes with information from interviews. I found these moments to be more about *learning* and less about analyzing.

***2.3.4.1 Hiking into lookouts.*** Lookouts are accessible by helicopter, car, or on foot. I hiked into all lookouts, except for three. Two were accessible by car and with the bridge over an important river crossing out due to flooding, and recent grizzly activity in the area I flew into the third with a helicopter on a lookout service. The thirteen hikes (on nine of which I was accompanied by Mary Sanseverino) ranged from seven to twenty kilometers round trip, averaging fifteen kilometers.

Hiking, as a complementary research method, aligns with emerging theoretical and methodological implications of walking in social science research (Lund, 2006; Lund & Lorimer, 2008; Ingold & Vergunst, 2008; Smith, 2014), building on the earlier works of (Mauss, 1934) and De Certau (1984). I was also inspired by how mountaineers have

historically moved through these mountains and their accounts of the significant role weather played in their mountaineering (Robinson, 2014) and surveying experiences (Maclaren et al., 2005). Hiking into lookouts allowed me to take in the weather of the day and get a sense of the environment or "country" in the surrounding area. This might include geological features (particularly the hiking terrain, sensing it through our feet or gripping with our hands); hydrological features (in regular swims, observing decreased water levels due to a dry El Nino season, or seeing changes in light and weather on the water); flora (on a few occasions, delicious berries); and fauna (from observing birds and small wildlife, to larger mega-fauna: cougars, bears and their traces in way of tracks, stool, marks on trees or in the grass).

Figure 7. Descent from lookout through grassy meadow (Courtesy: Mary Sanseverino).

Figure 8. Hiking out from lookout in August snow (Courtesy: Suzanne Boyle).

These themes sometimes later arose in interviews, when LOs would describe happenings in their area or in areas surrounding lookouts they had worked at previously. Hiking brought these descriptions of place *beyond* the lookout place, to life. I could engage in conversation with them about these features. For example, a LO asked me if I had walked into a certain lookout. Because I had, he was able to explain where the water source had dried up on the dome below, something I had noticed on a hike in a few days earlier.

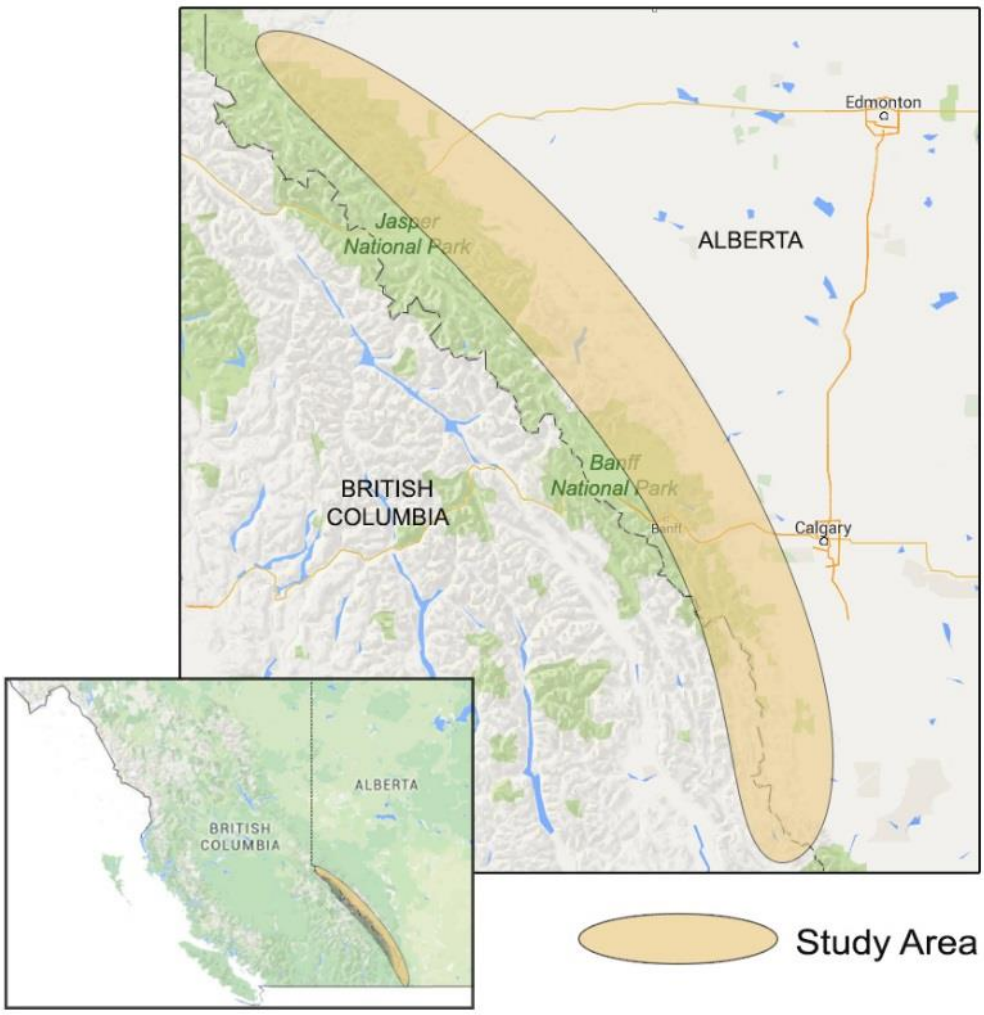


Figure 9. General map of study area. Given the heightened importance of participant anonymity, I do not disclose lookout location names. (Courtesy: Google maps).

Grasseni (2004) suggests that the people you share experiences with draw your attention to certain things. Hiking with Mary, my attention was drawn more to wildflowers; it was a constant opportunity to learn unfamiliar flower taxonomy. Mary and I also regularly discussed visibility, central to the repeat photography work she was doing on the mountaintop and also to the lookout job. We quickly realized early on in the fieldwork that we had different ideas about the kind of conditions in which we wanted to go out. For Mary, clear-cut visibility was ideal, as the photos would be best. I was

interested, however, in visiting lookouts in all kinds of weather to get a sense of how the scene changed. Driving through the landscape to the trail heads, we would sometimes see a lookout we had hiked to or a landscape feature we had spotted from the lookout. This gave us a sound sense of the wider view these lookout vantage points offer and the vastness of the surrounding landscape.

### 2.4 Walking Through Analysis

I engaged in a process of what I refer to as *ambulant listening*, an approach to immerse myself in interview data as an alternative to transcribing interviews verbatim. Because walking had been such a successful component to fieldwork for working through ideas, by discussing with Mary or contemplating and walking, I started to think of creative ways to continue to use walking in the analysis stage. This happened in tandem with a recent movement in the social sciences (and anthropology in particular) to find alternatives to transcribing interviews, at least transcribing verbatim. Despite exhaustive efforts, researchers admit that transcripts "lack certain attributes which are characteristic of oral language production (e.g. intonation, emphasis, voice volume, changes in voice patterns and body language) that lend life to words and add meaning" (Mero-Jaffe, 2011, p.232). *Ambulant listening*, an attentive rather than reactive form of listening which you are fully present in the moment (Barbezat & Bush, 2014), allowed me to engage with these characteristics of "oral language production", whereas when slowing down the cadence of speech to transcribe, the tone of voice is changed entirely to the extent that you can no longer recognize the voice of the person speaking. One friend, in the midst of transcribing his interviews, described this distortion of the interviewee's voice as sounding as if the person were "drunk".

**2.4.1 Bringing interviews to life: walking and listening.** Recent scholarship calls for bringing anthropology or research to life (Pink, 2015; Ingold 2011, 2013, 2014, LaPlante, Scobie & Grandsman, forthcoming). I decided to listen to my interviews as I walked, as a means to enliven my research process and interviewees' voices. For example, as I listened and walked in the outdoors, I would sometimes see phenomena that LOs described in their interviews: the way it might be very windy on a ridge top, and

then ten feet below, one could "hide out from the wind"; how ravens "play" in certain currents or along specific ridges; the proliferation of evergreen cones, as a response to very dry El Nino conditions. Instead of creating a distance between the field and what I would eventually write, I tried to design a method that might afford more continuation of fieldwork into the subsequent stages of the research process.

I listened to the entire collection of interviews four times, listening to each interview once in each round. As this was a technique yet to be explored, I wasn't sure at the outset how many times I would listen. I also wanted to listen for different things in each round. For this reason, I chose to listen to each LO's interview in every round. It certainly allowed me to look for common threads amongst LOs, and places of disaccord. This approach, in contrast with working with a single transcript at a time (as one would generally do when transcribing), allowed the interview to be constantly situated within the larger group. Listening to interviews also gave me a sense of the entirety of the interview, instead of listening to fragmented segments (generally the process of transcribing). Throughout this listening phase, I was diligent about keeping notes on time, allowing me to revisit a specific point in the recording instead of returning to written text.

My first round of listening took place in the field, the same or following day of the interview, usually sitting outside on a deck or at a picnic table. Not only was being outdoors an enjoyable setting to listen to interviews, it was also a peaceful place and one that allowed me to really tune in to what I was doing without distractions. It is also the first time that I noticed how this approach allowed me to be immersed in the weather, *as* the interviewees spoke about weather. This early round of listening helped inform the next interview by tweaking questions and language (vocabulary), improving my interview style and affording me a pool of conversation content to actively engage with LOs in subsequent interviews, relate to what they were saying—essentially to meet them on empathetic grounds. Learning pertinent vernacular, sharing stories and jokes or asking and answering questions allowed me to better understand the experiences LOs described.[5] At this stage of listening, I took minimal notes. I did, however, transcribe verbatim one interview, and it was at this early stage in my research process that the idea first arose

[5] For more on ethnography and empathy, see Ghallenga 2008, Favret Saada & Isnart 2008.

that transcripts may not do justice to the quality of the conversations I shared on the mountaintop. Transcripts miss the emphasis of a well-intended pause (i.e. when a LO would take a deep breath *and then* proceed to talk about the smell of the air). In a transcript it is challenging to capture cadence of speech (when a LO might speed up their cadence excitedly recounting an exhilarating moment or slow it down when thoughtfully considering something that had not occurred to them before). Intonation is also lost. Transcripts might also miss the emphasis on certain words more than others (although italics can indeed help with this) or emphasis on sounds LOs would make when describing something, like the call of a bird or the wind thrashing against the cabin. I was also surprised by the amount of laughter and joking that was a part of our conversations. Transcribing "chuckles" or "laughter" in brackets doesn't have the same effect as listening to that laughter, and understanding what caused it to occur and how it affected subsequent conversational flow. For me, all of these things are much easier to tune into through listening.

In my second round of listening, which took place in Belgium (figure 10) and the Netherlands, I walked outside in quiet areas (a nearby forest or along the coast) listening to interviews. This meant sometimes walking in rain, sea breeze, changing autumn light and foliage colours, or as birds flew in currents above. As mentioned earlier, some of these experiences resonated directly with information LOs were relaying in the interviews, allowing me to imagine how what was happening in that moment might unfold at the lookout. Were the ravens smaller here? How is a sea breeze different than the breeze coming off of the large lake by the lookout? Was the grass already curing at the lookout or the larches turning colour? In this second round of listening, I took detailed notes with a clip board and *Rite in the Rain* paper (water-proof that allows you to write on it when wet). Each time, as in the first round, I would listen to an interview in its entirety. I would occasionally pause or play back segments to catch up with notes, take down key words or short quotes if I judged the language was particularly important. At the end of the interview, I would take 15-30 minutes to reflect on the main ideas - what was unique to that LO's perspective and jot down key points.

Figure 10. Walking in Poekepark, Lotenhulle Belgium. (Courtesy: Pepijn Wyffels).

I learned early on in the second round of listening that it is very distracting to listen to interviews in noisy areas, background noise competing with the sound of interviewees' voices that were at times very soft spoken. While it was initially the need for quiet places that led me to listen in forests or along the ocean (on calm days), I quickly realized the effect of listening in "beautiful places." Contrary to listening in a busy street where the eye might be more inclined to distraction, listening in these places was quasi-meditative. They were places where I felt a sense of joy, but also serenity and I think this was very conducive to tuning in to the voices I was listening to. Like listening to someone reading you a story canoe camping on a beautiful lake or having a heartfelt talk with a friend out on a long walk, there is something to be said about how the context allows a person to drink in what is being said.

In my third round of listening, I continued to listen to interviews outdoors, in all kinds of weather, mostly walking through Mystic Vale (figure 11), a quiet forested area located near my office at the University of Victoria. It was the beginning of the rainy season, and so dressed accordingly I was outside, sometimes for two to three hours. As with the two previous rounds, I listened to interviews in their entirety. In this third round, I listened to interviews in reverse order, working backwards from the last interviews

conducted in my field season. As I had recently completed round two, this meant relistening to interviews I had listened to not that long ago. I continued to take notes, but instead of recording exactly what interviewees were saying in depth, as I had done in the second round, I recorded ideas as they emerged in the interview and in the terms LOs used to describe something (i.e. the idea of "rusty coloured areas" was used by a LO to describe dead zone areas of the landscape that had been affected by the mountain pine beetle, winds, lightning, heavy snow, etc.). Following the interview, I would come indoors to my office and immediately make a mind-map of ideas that arose in the interview. I explain this process below in the mind mapping section.

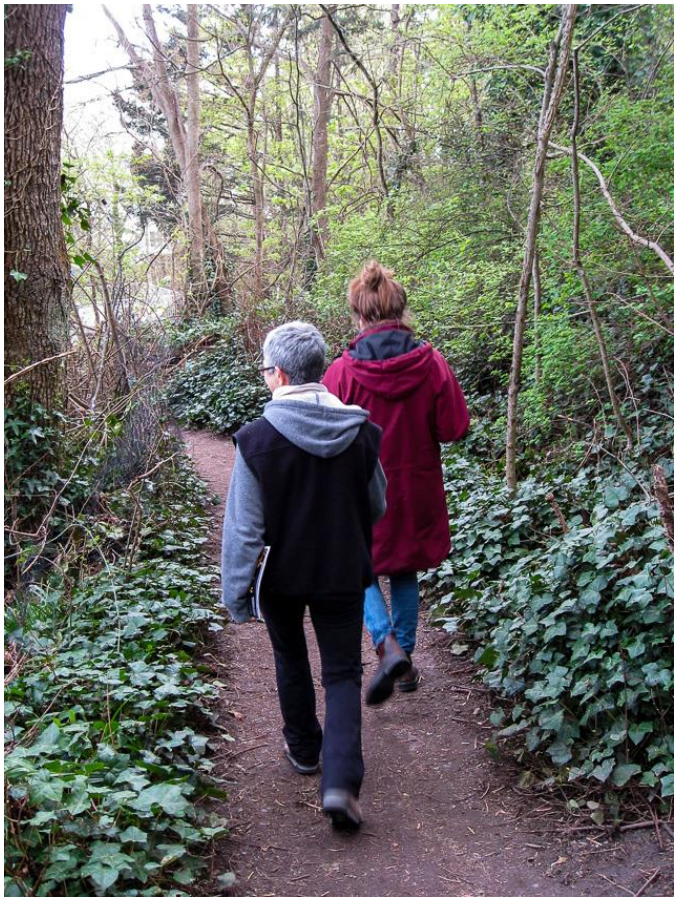

Figure 11. Walking in Mystic Vale forest. Glynis Peters (left), author (right) (Courtesy: Yan Huckendubler).

In my fourth round of listening, I moved indoors and listened to interviews at my desk. In this round of listening, I mixed up the order, sometimes grouping people by years of experience, regions they worked in, or, by LOs who shared in or had conflicting

views of phenomena. I did this to test if the order of listening had an effect on patterns that arose from the listening sessions. While I thought mixing up the order would cause me to listen with attention to certain things (i.e. re-grouping the novice LOs to get a sense of how their accounts might differ from veteran LOs), I realized that when I listened, I naturally fell back into listening deeply, despite attempts to listen for particular themes. As a result, I did not observe any differences by changing up the order.

While listening with the aid of Audacity, an audio recording and processing software, I transcribed ideas and what I felt to be key quotes. Regularly noting time markers throughout the transcript allowed me to have a rough structure of the interview. At the end of the interview, I would cross check these transcriptions with my notes from rounds two and three of ambulant listening. This was a way of internally cross-checking content. I would input any missing words or sentences, so that the typed transcript became the sum of my notes from all rounds of listening, in addition to the ideas visually laid out in mind maps. For instance, I added in the "key points of the interview", identified in the second round of listening, to a section at the top of the transcribed interview. Transcripts were made so that I could easily go back and listen to interviews at specific points, without having to listen to the interview in its entirety or to use key quotes that I had identified. Transcripts ranged from ten to twelve pages long, and took about three times the amount of the interview length (i.e. an interview that was two hours long, took about six hours to transcribe). In the writing stage, I worked with both transcripts and maps and occasionally went back to listen to key passages about which I was writing. Surprisingly, I felt less of a need to go back than I had anticipated— so many of the examples given in interviews had been memorized and documented.

**2.4.2 Mapping: visually representing ideas.** Mind maps were made to visually see the content of ideas— and importantly, examples of those ideas. A mind map is a diagram used to visually organize information in relation to a larger topic while linking smaller connecting ideas (Hopper, 2010, p. 164) Minds maps were drawn out by hand on large sheets of 45 cm x 60 cm newsprint paper. I engaged in two rounds of mind mapping. In the first, immediately following the third round of listening as mentioned

above, I categorized ideas into the seven themes of my interview questions (again, see appendix C).

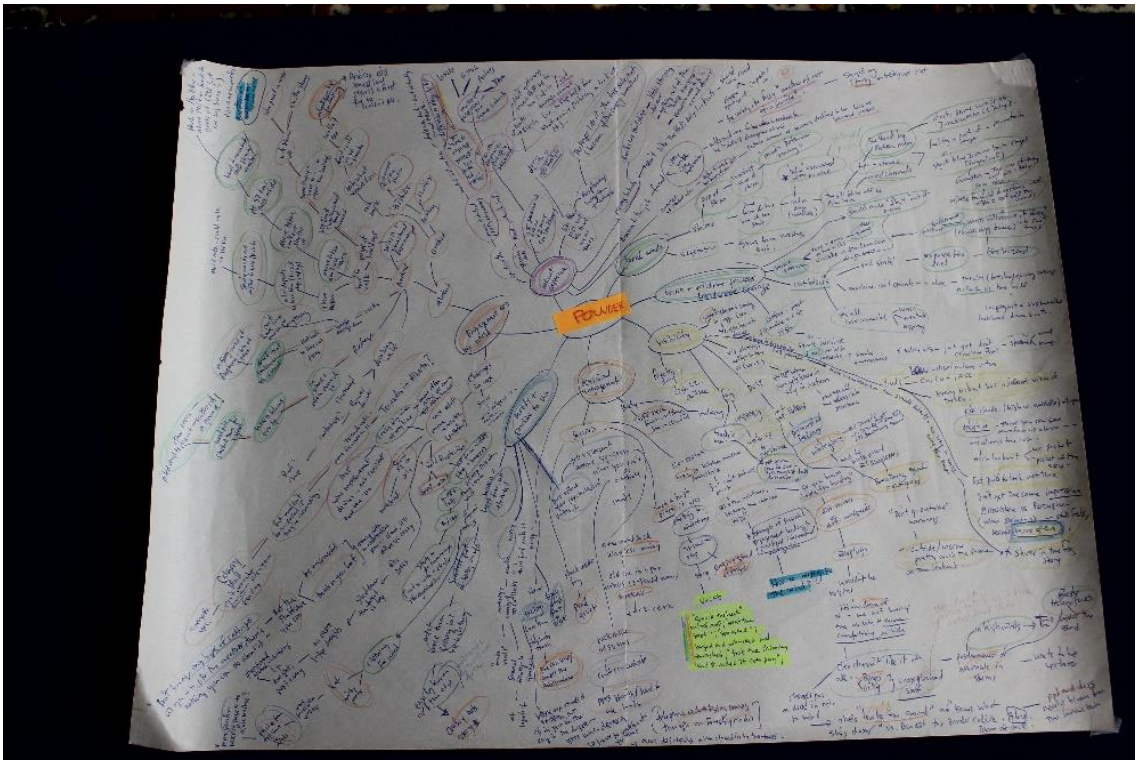

Figure 12. Individual Lookout Observer mind map. Pseudonym given to protect Lookout Observer's anonymity, as in throughout the thesis. (Courtesy: author).

Each theme was placed in a similar location on the piece of paper and each theme given the same colour on every map. Colours would be important for coding emergent themes when I returned to mind mapping after a fourth round of listening, as we will see below. For example, the visibility theme was associated with yellow and always located in the top right corner of the page. I refer to this step in the mind mapping process as "etic categorization" or top down categorization, following the distinction Dewalt & Dewalt propose between etic and emic categorization. Etic categorization happens in reference to pre-established research objectives, questions or interview questions, whereas emic categorization regroups via themes that emerge (2011, pp. 163-194). I categorized what LOs said in the interview based on the seven overarching themes of my interview questions. I produced sixteen maps, one for each LO interviewed. Each map took two to three hours to create.

Figure 13. Mind maps, collectively on the floor. (Courtesy: Author).

While I considered at length transcribing these maps into a mind mapping software, I realized the maps were more about process for me, a way of organizing my ideas and comparing and contrasting points of view. To digitally transcribe what I had already worked through did not seem a good use of time so I chose instead to photograph the maps to assure I had copies, should something happen to the originals.

Following the fourth round of listening, I returned to mind mapping. I taped the 16 mind maps from round one onto my wall, at different heights that were accessible to write on from either sitting on the floor or standing. Here again, I intentionally worked movement into my analysis process, knowing that my ideas flow best when moving around. The maps covered the walls of my apartment for weeks.

My intent with this second round of mind mapping was to allow for themes and concepts to emerge, what I refer to as "emic categorization" or categories that emerged from the research (and were not pre-determined). To do so, I regrouped what all LOs had to say around a similar theme. For example, if we again take the theme of visibility, I placed it at the center of the mind map. I then went around the room to each of the sixteen LOs' mind maps; working through one map at a time circling in yellow (as that was the

colour associated with visibility) everything that LO had to say about visibility. I then wrote this information onto the "visibility theme" map. Circling in colour allowed me to be sure that everything that was on the initial map was transferred to the second map. It also allowed me to visually see how much that particular LO talked about a specific theme. Sometimes things were circled with two different colours. For example, the experience of being socked in by fog has implications both for the theme of visibility and also experiencing weather on an emotive level (another theme). Themes and concepts often emerged at these interstices of overlapping themes, but not exclusively. I continued with this process for the six remaining maps. Each of these maps took five to six hours to develop, demanding thoroughness and great attention to detail.

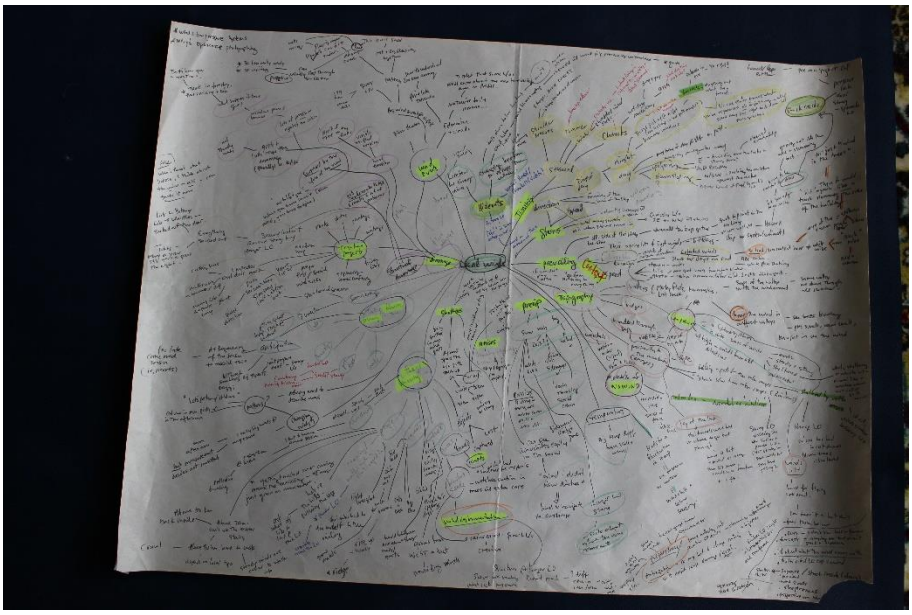

Figure 14. "Local winds", one of the seven theme mind maps (Courtesy: author).

**2.4.3 Analysis**. When all seven theme maps were complete, I started examining each individual map, linking things together on the map and with other maps, looking for emergent themes and concepts. This was the initial phase of "coding." Throughout the process, I kept a code book with a definition of the theme or concept, examples— and sometimes counter examples that offered illustration. When a theme emerged among a number of participants, I looked for counter perspectives in all my sources (interview transcripts and mind maps, field notes and photos). Initially, with about 60, I was

saturated in codes. I boiled these 60 themes down to 17 broader themes, getting rid of redundant themes or outliers. This moment in the research process for me, was the most challenging, and also the most telling of the reduction process. Until that point, I had been tediously dedicated to including every example and counter example. It was a point of culmination and decision; I needed to decide how I was going to tell the research story. From the 17 themes, I then structured the outline of my thesis. Inevitably, there were too many themes that emerged for them all to be equally interesting. LOs are gifted storytellers and perhaps the most challenging part of this research project was realizing that I would not be able to include every story, each well-chosen word or telling photograph. The themes discussed in the following chapters are a combination of what figured most commonly amongst LOs and themes most relevant to answering the research question: *How is wind experienced in lookout observers' daily practices, and what role does it play in the experience of related weather processes*? In the discussion chapter, I offer ideas for future research that regroup some of these themes. I have given the LOs pseudonyms to help ensure anonymity and do not mention place names of geographical locations near their lookouts.

### 2.5 Limitations

The intent of this study was exploratory in nature, to broadly understand how people, a distinctive group of lookout observers, come to know about the wind through their respective experiences. Wind experience in mountain environments extends to many different population groups beyond fire lookout observers (i.e. mountain guides and recreationists, communities living in mountain regions, and importantly, indigenous groups that have lived in the study area for thousands of years and engage with and conceptualize wind). Given the scope of this project, and fieldwork that was not to extend beyond one season, I opted to pursue the topic through the eyes of a select group of fire lookout observers.

The content that arose from interviews was necessarily limited by the questions I asked and to whom I asked the questions (participant selection). As Rosaldo (1986) signals, all observations are necessarily partial. The perspective that I sought out was largely that of LO veterans and of LOs working at mountain fire lookouts (in contrast to

fire lookout towers). This research is not then representative of the entire network of 128 LOs that reaches across the topographically, geographically and ecologically diverse province of Alberta. On the contrary, mountain lookouts, as we saw in the introduction, make up around a quarter of the 128 staffed lookouts in Alberta. Given the scope of a master's thesis, the research was limited to how many lookouts I could visit and, perhaps more significantly, how much time I could spend living at lookouts. My only wish, as Martha Radice puts it so well, is that I could capture things as well as they were told to me (as cited in Gagné, 2013, p. 24).

My fieldwork, the experiences derived from it and the conversations it led to, were largely contingent on the weather. My research was also seasonally limited (mid-July to early September). Unfortunately, I did not experience first-hand how the weather unfolds in what some lookouts refer to as "shoulder seasons", in spring and autumn, where winds and weather tend to be more erratic. While the weather of other seasons was woven into interviews, the weather of the day that interviews took place influenced my hands on and in-situ learning. It is the informal correspondence of e-mail and texting mentioned above which provided opportunities to share vicariously in this shoulder season weather.

The contingent nature of my fieldwork also extends to the analysis stage of my work. Listening to interviews in different weather allowed for serendipitous moments of linking themes or learning that were contingent on weather and place and what I was listening to at those moments in time. I did, however, keep what some might refer to as an "audit trail", notes about when these "aha moments" would occur in correspondence with the culmination of weather, place and things unfolding.

Dewalt & Dewalt note that the distillation process is underway at the stage of considering our research question, theoretical framework and the types of questions we ask in our interviews (2011, p. 163). Issues of what to include or not include, a part of all research (Tuck & Yang, 2014), are also present at this early stage of formulating the research design. While I do not feel these decisions weakened the project, I made active choices not to question LOs about personal or biographical information (life-histories, family situations, religious views, living in relative isolation). My reasons for this were twofold: first, in light of the significant sensitivity around LO anonymity and

confidentiality due to unfortunate events over the years that have placed LOs in dangerous and sometimes life-threatening situations; and, secondly, I did not feel comfortable, as a researcher, asking difficult questions only to then shortly leave the LO, alone, and potentially affected by the content of our conversation, as any individual might be after being interviewed about such intimate topics. As mentioned above, interviews were also intended as "visits" in my research design, moments to learn and share and enjoy each other's company.

# Chapter 3 Attentive Observation: Discerning, Detecting, Seeing

*I like my job. The pay is generous; I might even say munificent: $1.95 per hour, earned or not, backed solidly by the world's most powerful Air Force, biggest national debt, and grossest national product. The fringe benefits are priceless: clean air to breathe (after the spring sandstorms); stillness, solitude and space; an unobstructed view every day and every night of sun, sky, stars, clouds, mountains, moon, cliff rock and canyons; a sense of time enough to let thought and feeling range from here to the end of the world and back; the discovery of something intimate—though impossible to name—in the remote*.

-Edward Abbey, *Desert Solitaire*, 39

Seeing, as one might assume, is central to the lookout observer (LO) job. But different types of looking are required in different circumstances, notably in varying weather conditions, when views might be obstructed or hampered by a variety of meteorological phenomena. While themes discussed in this section of my thesis arose in conversations with LOs about wind and visibility, much of what is discussed here came about as I learned to *see* like a LO in participant observation and through informal conversations on the lookout. This chapter is designed to give background information on the lookout job— and how looking might change in different weather— so that in the next chapter we can delve more deeply into findings that focus on LOs' engagement with the wind. I discuss different ways of looking involved in the lookout observer job and how the trained vision of LOs —or quality of attentive observation—can be tracked in other forms of looking: observing change through colours, looking closer at things and engaging creatively in response and anticipation to wind.

## 3.1 "We get paid to look out the window": Looking an Everyday Practice of Discernment

For LOs, disciplined looking is a daily systematic practice of discernment. Both the weather observations they make and looking for smoke plumes that may signal the early start of a fire, require an ability to distinguish details in the landscape and the sky.

As one LO astutely summarizes, “you definitely do end up noticing a lot more, when it’s your job to pay attention” (Obscured). As shown in this chapter, learning to pay attention has wider implications than just looking for fire.

Lookouts are strategically placed throughout the landscape, to oversee as much crown protected land as possible, particularly “values at risk” areas: infrastructure, resources, environmentally sensitive areas or wildlife habitat.[6] Each LO is responsible for a forty km radius area from their lookout, known as their *area of responsibility*. This radius of land is comprised of *visible* (directly seen), *indirectly visible* (zero to 100 feet below seen), *screened* (100 to 300 feet below seen), and *blind* (300 feet and greater below seen) areas. Visible and indirectly visible areas are where LOs can discern a smoke plume with relative certainty. Screened and blind areas are where supplemental detection systems such as neighbouring LO's, aerial and ground patrols or the public, help in catching fires as early as possible. Screened or blind areas are more common in mountainous terrain, where deep valley dips or mountains surrounding the lookouts make it impossible to view certain areas. Reflecting on the positioning of mountain lookouts in my study area, I realized that they were placed in a similar way that historical surveyors mapped these same Canadian Rocky Mountains with their triangulation method, mentioned in the introductory paragraphs of this thesis. The combined placement of the lookouts provides complete coverage of an area (like a map) and allows them to be able to give a *cross shot* (a geographical bearing) on the fire’s location spotted by a neighbouring LO. The idea behind the cross shot is that each LO’s line of sight will intersect at near to right angles, giving a more accurate position on the smoke.

**3.1.1 Scanning the country.** When looking for fire, LOs are advised to go outside to scan or, if unable to, then look out an open window, as one can see better than looking through window pane glass. LOs are also advised to be consistent by following a same pattern in all their scans and not skip over boring or “difficult to view” areas (i.e. because of the angle of the sun). They are encouraged to rest their eyes frequently to

[6] See appendix D for a map of these locations.

reduce or prevent eye strain. In this regard, many LOs explained they do eye exercises, which I joined in on one afternoon as a LO practiced them.

Frequency and length of scanning are dependent on fire danger. The fire danger, also known to LOs as cupola occupancy rates—literally, *occupying* the cupola (observation) space, is announced to LOs by local forestry dispatch on the radio each evening.

While LOs use binoculars to check suspicious areas, scanning their entire area with binoculars, as they explained, would quickly tire their eyes. As well as being harder to systematically scan an area using binoculars— you are more likely to miss a spot. LOs are encouraged to fine tune their own routine for scanning to ensure coverage of their entire area. Depending on the fire danger level, a LO might be scanning constantly for 11 hours (in the case of extreme fire danger). Such circumstances require great diligence. One LO explained seeing his area of responsibility when he closed his eyes to go to sleep at night. He explained that long hours of watching for fire "affects the nervous system. You become the landscape and the landscape becomes a part of you […] like a vivid movie" (Sulfur LO). In a similar vein, some LOs talked about how watching for fire entered their dreams. Some dreamed of missing a fire, producing faulty weather observations, or flying around their lookout with a better view of their area.

LOs are encouraged to thoroughly learn the country around the lookout. Prominent landmarks such as mountain peaks, bodies of water, roads— even airports or city limits at particular lookouts— can be used as a way of marking distance and aiding depth perception. These distances are often noted inside the cupola on top of the window facing the direction of the landmarked place, on sticky notes or small pieces of paper (figure 15).

Figure 15. Looking out from the cupola. Sticky notes above the windows mark distance or features from the lookout in kilometers (Courtesy: Suzanne Boyle).

As different weather sets in and changes how far a lookout can see in a given direction, being able to pinpoint these features on the land, allows the LO to gauge their visibility in distance. Lookouts must also learn about the places in their area that pose a greater fire risk: recreation areas such as campgrounds, hiking trails, ATV trails; railroads and power lines; cut blocks and construction sites, all increase the likelihood of a fire due to activity in these areas, especially in dry, hot, and windy conditions. Times of heavy use (weekends, holidays) may also increase fire risk in these areas and is factored into lookout occupancy rates. LOs may need to be on constant surveillance as we saw in the fire weather section. As one LO summarized, “we pay attention to inattentiveness.” Inattentiveness includes discarded cigarette butts, poorly put out campfires or leaking engine fuel. These higher risk areas vary a great deal from one lookout to the next. The area around one lookout may be more prone to human caused fires (generally the case in the Southern Rockies), while in other areas, lightning may be the prominent cause of a fire (generally the case in the boreal forest). In the province of Alberta, roughly fifty percent of fires are human caused and fifty percent caused by lightning strikes. All these factors are part of learning the country.

When describing the process of spotting smoke, LOs often spoke of intuitively glimpsing something out of place. One LO (Oatmeal) described going to the fridge and glancing out of the corner of his eye— and there was a smoke. Other LOs spoke of feelings: "something told me to get up and have a look— and there was a smoke" (Sulfur LO), while others described general feelings of "things not being right" (Cougar, Spinach and Grizzly). One LO (Crumsby), when describing how the job had heightened her senses, explained when scanning her territory, she could see the smallest thing— catching the sun's fleeting reflection on the roof of a truck far in the distance. Another LO could see planes landing, 80 km away, at the Calgary airport. Interviews were full of these types of stories, accompanied by the LOs' general sense of amazement at just how far one can see in *clear-cut visibility*, that is, when the air is impeccably clear and affords seeing at great distance and with great sharpness (i.e. the contours or lines of the mountains stand out sharply). Clear cut visibility, however, is far from an everyday reality on the lookouts.

**3.1.2 Observing weather.** Twice daily weather observations are one way of assessing visibility from the lookout. Visibility, which refers to the transparency of air, is something that is commonly reported in weather forecasts on the radio or weather sites online. Understanding the visibility is important when choosing or needing to travel in inclement weather. For the lookout job, visibility is the distance (in km) at which a lookout can clearly detect smoke. 40 km is considered maximum (or best) visibility, while 0-1 km would be considered "socked in" or "zero", so no visibility. This information helps Alberta Wildfire prioritize where to send helicopter patrols, which form part of the mobile detection system, to aid LOs in areas where they cannot see or to check out the location of a smoke plume LOs have identified.

Detection size of a smoke matters. Wildfire objectives are to detect smoke plume before it reaches 0.1 hectares in size, about one tenth the size of a soccer field. Compared to the 40 km radius area over which lookouts must watch this is extremely small. To catch a fire at 0.1 hectares in size requires spotting it early— and contributes to the LO's sense of felt responsibility. Some LOs explained that the window of time they have can be as little as *three* minutes, in the case of extreme fire weather conditions- one LO

(Snowy) even described watching a fire grow from zero to five hectares in a mere five minutes! Being able to see such a small smoke size—0.1 hectares, before it spreads—is largely impacted by the vagaries of weather and accompanying air particles that makes looking significantly more challenging.

For this reason, LOs also note in their weather observations phenomena currently obstructing their view. LOs explained that more often than not, obstructions to vision are either carried in or blown out on the wind. For example, earlier that summer winds had brought in a lot of smoke from fires burning in British Columbia, "thickening the air." A few days of sustained winds can similarly clear the air of smoke that is blown in, similar to a good rain. Other obstructions to vision, in addition to smoke, include haze, fog, rain (in various stages), snow (various types), and hail (various sizes).

Pollen clouds, road dust and clouds of insects were also described by some LOs as obstructions to vision, although they do not figure on LOs' weather reports. While these form temporary obstructions, and some would argue do not hamper views that much, when considering the speed at which a fire can take off in the right conditions, it is worth considering these obstructions that do not fit categorization. Of the obstructions mentioned above, haze, fog, and smoke impact "visibility" the most frequently, constantly changing, within the course of a day— even within hours (figure 16, 17 and 18).

Figure 16. Storm setting in at the lookout. (Courtesy: Author).

Figure 17. Looking out through the Blizzard. (Courtesy: Author).

Figure 18. Morning light after the storm. (Courtesy: Author)

The angle of the sun relative to the lookout's line of sight, as well as the degree of light reflection, also affects a LO's ability to see smoke. Smoke will either stand out or disappear depending on the background. Light backgrounds on the land (grass, brush and deciduous trees) or in air (fog, smoke, haze— essentially anything grey) generally make spotting smoke more challenging.

LOs also report on sky conditions, that is, the cloud coverage of the sky in tenths (under cast, clear, scattered, broken, overcast) and cloud type based on their positioning in the sky (low, middle, high) and many remarked on the role of winds in shifting or stagnant sky conditions. These elements contribute to the amount of shade and glare on the landscape, impacting how a LO can determine the location of a smoke plume and contributing to their perception of the landscape as ever-changing. Clouds, a favourite weather feature for most LOs and a prominent theme in their creative projects (section 3.8), offer fleeting glimpses of the weather that may or may not unfold, contributing to a LO's ability to anticipate and predict weather. LOs are attentive to particular clouds: lenticular clouds (indicative of strong winds); altocumulus castellanus (indicative of cumulus development in the afternoon and high probability of thunderstorms), and

different stages of cumulus and cumulonimbus clouds that may result in lightning. Cloud reporting sent by LOs allows fire crews to modify their patrols or react accordingly when fighting fires when, for example, lenticular clouds are indicative of high wind speeds that might exacerbate fire behaviour or when cumulonimbus clouds may spark lightning in the LO's area.

LOs also take dry and wet bulb readings, to measure temperature then calculate the relative humidity (RH). One LO, jokingly, quizzed me when I was up on the lookout,

"[n]ow, what's the RH if it's raining outside?"

"100?" I replied?

"Yep", replied the lookout. "If it's raining down when you're out doing weather, you can skip the RH— you know its 100."[7]

LOs also report wind direction, wind speed and gusts in their weather observations. Wind speed and maximum gusts (must be 15 km over the average speed and remain there for two seconds) are calculated by an anemometer, provided it has not been taken out by an electrical surge in a storm. In my experience over the summer of 2015, damage to anemometers was quite common. In this case, LOs estimate wind speed and note "wind speed estimated" in their observations. Wind speed is estimated based on the Beaufort scale or, in larger part, previous wind experiences wherein LOs gained a sense of what speeds make different things around the lookout move, create different sounds, or affect the tautness or limpness of the windsock. Two LOs I visited did not have anemometers and used the Beaufort scale and their experience exclusively to estimate winds. One of these LOs creatively adapted the Beaufort scale to better represent her experience on the lookout (figure 19-23).


[7] In the final re-read of this document, one LO pointed out that this is only the case when fogged in and raining. If a rain shower is only passing through with a storm or overcast conditions, the humidity might only temporarily increase—and likely not to 100% humidity.

Figure 19. Beaufort Scale, adapted to lookout setting. This image is broken down in figures 20-23. (Drawings courtesy of an anonymous lookout observer; photograph: courtesy Mary Sanseverino).

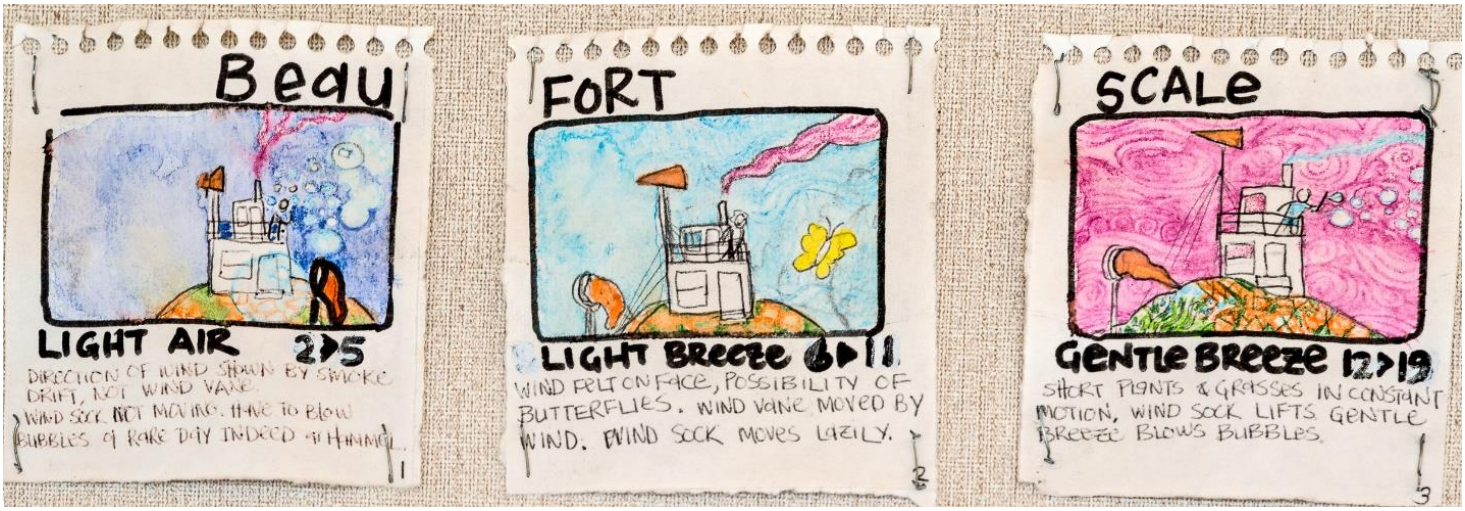


Figure 20. Beaufort Scale (a), as depicted by the Lookout Observer. **Light Air**: "Direction of wind shown by smoke drift, not by wind vane.Wind sock not moving. Have to blow bubbles. A rare day INDEED on the lookout." **Light Breeze**: "Wind felt on face, possibility of butterflies. Wind vane moved by wind. Wind sock moves lightly." **Gentle Breeze**: "Short plants and grasses in constant mtion. Wind sock lifts. Gentle breeze blows bubbles." (Drawings courtesy of an anonymous lookout observer; photograph: courtesy Mary Sanseverino).


Figure 21. Beaufort Scale (b), as depicted by lookout observer. **Moderate Breeze**: "Raises dust and light debris. Ravens can easily glide with a moderate breeze. Laundry on the line will flap. Wind sock erect." **Fresh Breeze**: "Empty buckets and hats will clow away. It's windy, yeah, but a fairly typical day." **Strong Breeze**: "Whistling heard

in guy wires. Umbrellas used with difficulty. Shutters start to rattle." (Drawings courtesy of an anonymous lookout observer; photograph: courtesy Mary Sanseverino).

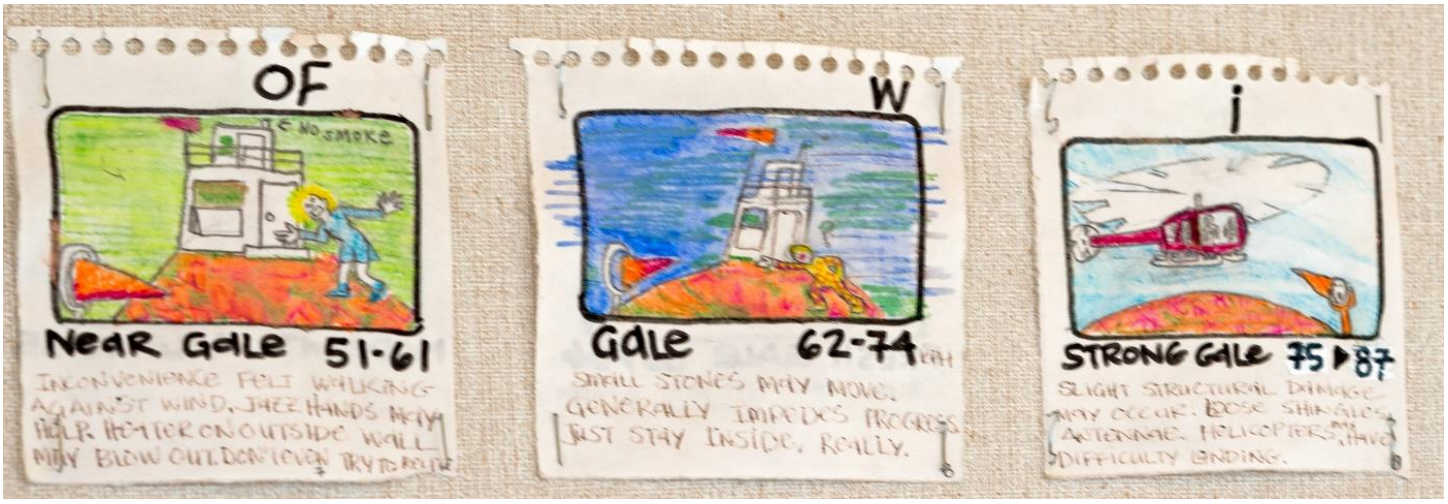


Figure 22. Beaufort Scale (c), as depicted by lookout observer. **Near Gale**: Near Gale: Inconvenience felt walking against the wind. Jazz hands may help. Heater on outside wall may blow out. Don't even try to run." **Gale**: "Small stones may move. Generally impedes progress. Just stay inside. Really." **Strong Gale**: "Slight structural dammage may occur. Loose shingles and antenna. Helicopter may have difficulty landing." (Drawings courtesy of an anonymous lookout observer; photograph: courtesy Mary Sanseverino).

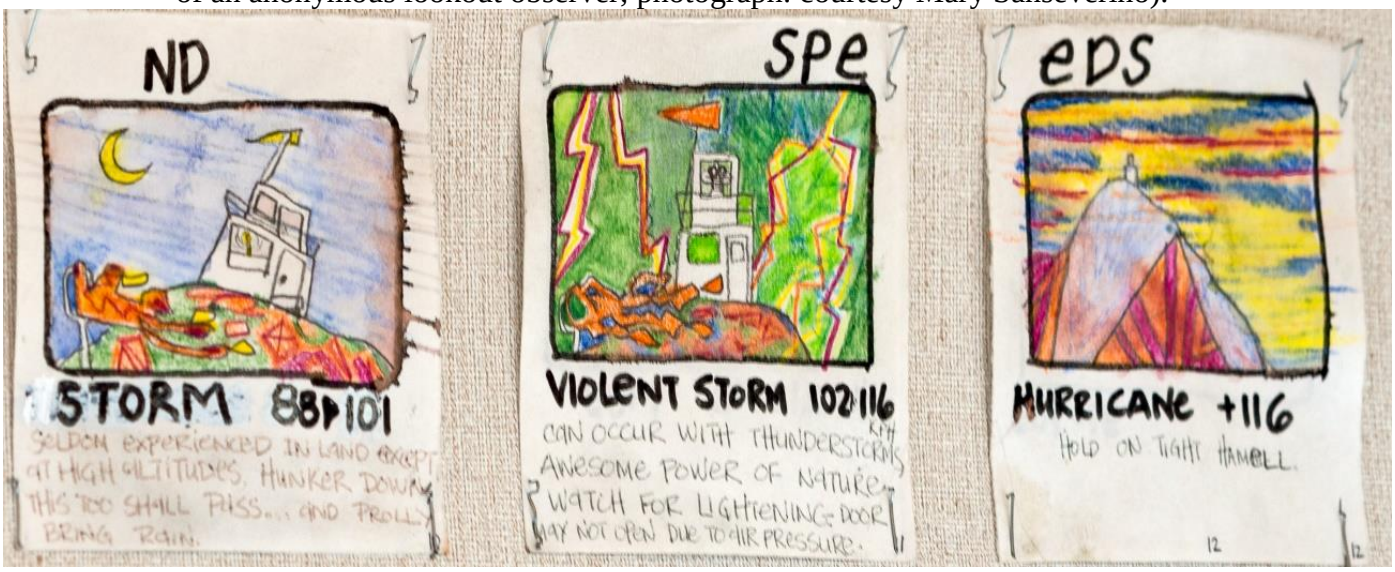


Figure 23. **Storm**: "Seldom experience inland except at HIGH altitudes. Hunker down, this too shall pass... And prol' bring rain." **Violent Storm**: "Can occur with thunderstorms. Awesome power of nature. Watch for lightning. The door may not open due to air pressure." **Hurricane**: "Hold on tight." (Drawings courtesy of an anonymous lookout observer; photograph: courtesy Mary Sanseverino).

The Beaufort scale depicted in figures 19-23 emphasizes more than just a visual assessment to gauge wind. It incorporates feeling the wind, sounds, how flora and fauna are moved by wind, how people move in it, and practical implications like opening doors or things being blown away. In short, it sheds light on that which is experienced beyond the wind data (speed and direction) taken in LOs twice a day weather observation relayed to Alberta Wildfire.

### 3.2 Fringe Benefits

LOs gave a variety of reasons for why they are drawn back to the job, season after season, many of which build on Abbey's "fringe benefits", in the chapter epigram above. As previously mentioned, most of the LOs I spoke with have been doing the job for over three decades, some returning to the very same place.

Some focussed on the actual job "I never found anything better"; or, "the only other thing I would like to do is be a sommelier"; while others saw it as a way of life. For example, LOs back in the late 70s and early 80s were from a transcendental meditation group. The mountain top, LOs explained, seemed like an ideal place to meditate and lead a peaceful lifestyle. Many of the LOs report that they were— and are— drawn to the different sense of time the lookout affords. As one LO aptly summarizes, "you're responsible for your time up here and how you manage it. Depending on fire danger levels, sometimes all you need to do is the weather twice a day and evening "sked", and the rest of the time is yours." Perhaps it is for this reason that the lookout has attracted a lot of artists (painters, writers, sewers, woodworkers, musicians, crafters) over the years. The lookout is indeed a space for creative processes, as we shall see later on.

Weather was another reason LOs were drawn back to the lookout job. The place and the tasks of the job afford them the opportunity to really "tune in" to weather. Another LO mentioned enjoying being "ruled by the ambiguousness of the weather"— there was fun to be had in having a more than human boss and it also led to greatly humbling circumstances.

Some, too, mentioned "the buzz" they would feel at the end of the season, referring to the time spent on the lookout as a "therapeutic addiction", a place where your

problems melted away— but also a place where problems could potentially grow should you bring them to the lookout.

Overall, compared to those who had been doing the job longer, novice LOs were able to more easily identify, how the job had changed them thus far. These transformations are also entwined in reasons for coming back to the job. For example, the simple life of the lookout inspired a LO to reduce everything he owned to fit inside a pick-up truck— although a veteran LO mentioned trimming his possessions down to seven apple boxes. Other novices spoke of how the job had slowed them down, caused them to be more attentive and aware, heightened their senses and made them feel serene.

**3.2.1 Flora and fauna.** Each lookout offers a different array of wild flora— wildflowers, trees of all shapes and sizes and lichens. Domestic plants are part of lookout place, too. Parsley, nasturtiums, geraniums, basil, and lettuce grown indoors, add greenery and life to sometimes barren, rocky places; and, as one LO jokingly put it, "something to add to rice if weathered out of a service" (Oatmeal LO), a reference to when the helicopter cannot land at the lookout to deliver supplies due to inclement weather that makes flying precarious (notably, strong winds).

A range of wildlife accompanies different lookout places as well: cougar, bears, mountain goats, moose, deer, wolves, marmots, weasels, golden mantles, resident and migrant birds— and, notably the much revered raven. One LO mentioned swapping lookouts with another because he wanted to see marmots, while others have swapped for a change of view, elevation or visitor dynamic. Some lookouts are located in, or near to, wildlife corridors— and observe animals passing through on a regular basis. Sometimes these interactions are traumatic: One LO (Botany LO) shared a story of a cougar appearing in the fog and quickly grabbing his small dog. He ran after the cougar with a stick, but caught inside wearing only his socks at the time could not move very fast on the scree in socked feet. Another LO (Sulfur LO) shared a story of a hawk swooping in and taking off with his daughter's kitten. In both cases, LOs were rather accepting of the situation— it was a risk one took bringing pets into these wild areas. Lookouts are not located in— nor do they look-out over "pristine wilderness", a North American myth debunked long ago (Cronon, 1995; Higgs 2003). Towns and cities, oil rigs, logged areas, mines, power

plants, quad trails, wind farms, burned swaths of forest, albeit small, still make up part of the view.

**3.2.2 Stories from the past.** Since the early days of the Alberta Forest Service (AFS), there has been no shortage of stories. Some of the "good" stories were told by several different tellers, circulating amongst LOs and the wider forestry community like informal lessons, often of what *not* to do. I was particularly interested in stories that involved encounters with the weather, like tales of the following lookout: Whistler lookout was renowned for its high winds and the injuries it caused LOs working there. One LO was hit in the side of the leg by a piece of plywood with such tremendous force that it severed muscles in his leg (Davis et al). He spent weeks in the hospital recovering. On another occasion, a lookout was blown off his doorstep and broke his collar bone (*ibid*) while another LO described being sucked out the door. The lookout closed in 1975 in large part due to winds: the door had been torn off in high winds, three windows blown out and the steep access road caved in (*ibid*). Rumors circulate about another long since shuttered high elevation and exposed lookout, Black Rock, where the LOs back in the 30s and 40s, without proper lightening protection, slept in steel-framed beds. Given the winds at Black Rock, it was impossible to have an outhouse and a wind break of rocks was built around a bench. Blackrock and Whistler are examples of lookouts in Alberta that were closed down in large part due to weather: visibility from the lookout was often poor (given their high elevations, clouds hung around them, socking the lookout in) or it was a challenge to keep the lookout staffed- given consistent inclement weather.

### 3.3 Fire Weather

In addition to observing weather, understanding fire weather is also crucial to the lookout observer role. In this section, I define what fire weather is and the role wind plays in wildfire processes.

LOs are particularly attentive to fire weather, described in the introduction as, "conditions that influence fire ignition, fire behavior or suppression" (Whiteman, 2000, p. 242). Wildfire season start and lookouts are opened up when fire weather season begin, usually in early spring. Recent research suggests that fire weather seasons have

lengthened 18.7% worldwide since 1979. (Jolly *et Al*, 2015). While this significance varies tremendously around the world (and within Canada), Many LOs spoke of wildfire seasons starting earlier. Meteorological phenomena that make up fire weather include wind, precipitation duration, past lightning activity, current minimum and maximum temperature values, relative humidity (Whiteman, 2000, p. 242). The following weather inputs have the most effect on fire behaviour: atmospheric humidity, temperature, wind, and atmospheric stability (*ibid*, p. 243). Weather conditions also influence smoke production and dispersion, key to how the fire is experienced beyond the site of the burn.

**3.3.1 Fire danger.** "At the end of a long hot, dry stretch, we're all doing rain dances, hoping for rain" (Grizzly LO). At lookouts below tree line[8] LOs calculate a fire weather index (FWI), a relative measure of potential fire intensity or energy available to be released that indicates overall fire danger to the Forestry Department and later issued to the general public. The fire danger rating system in turn determines how often and how long LOs are meant to spend per day looking for fire, known as "cupola occupancy rates." These cupola occupancy rates range from low (two morning observations with observations every two hours after afternoon weather) to extreme (continuous observations from 9 a.m. until 8 p.m., then hourly observations until dark). In this sense, weather really does, as many LOs have said, "rule their lives" in terms of how they spend their time, as we will see in the chapters to come.

**3.3.2 Wind and fire behaviour.** Wind is the main danger factor in fires, for firefighters, helicopter pilots and potential communities at risk. Frontal winds, foehn (chinook) winds, thunderstorm winds, whirlwinds, low-level jets and inversion break-up winds pose the most threat, given their unpredictability and capacity to dominate the fire environment (Whiteman 2000: 248-249). Nearly all LOs expressed this and for those

[8] Lookouts located above the tree line do not calculate a fire weather index (FWI), because the weather at the upper elevation weather stations does not reflect the weather and fire danger indices that exist at the lower elevations (where the fuels predominantly are). Lower elevations often have higher temperatures, less precipitation, lower relative humidity and different winds.

newer to the job who had not experienced wind in fire processes, they had heard stories, like the following LO shares about dangerous wind shifts,

> I've seen two really bad wind shifts. One they [Alberta Wildfire] expected and they asked us to let them know as soon as it happened. The wind was coming from the southeast and we were expecting a strong shift to the west. It was only like 15-20 km, and we were going to get this 100 km from the west. So they knew it was coming, and I was to the west of the fire. It was a big fire. And so they asked me to keep watch. And I phoned my neighbour in the next district (we didn't have the comms [communication technology] we have now) and I asked him to let me know, as he would get it a little before me. And he phoned the person who would be upwind from him. And when it happened, he phoned me and said [raises voice] "it's picking up handfuls of poplars and twisting them out of the ground." [Nervous laugh]. Holy macaroni! It was just this little 15 km from the East and then BAAAAAAM from the west. 100+, yeah, I think the official gusts were like 109 km or something like that. The really short term gusts were higher than that. Yeah, it was crazy. And I got on the radio and said "it's here, watch out." And they evacuated a few people, but mostly they just camped in the black. Do you know what the black is? It's already been burned. It's the safest place to be, right? Because it's already been burned. It's not fun to camp in the black… everything gets filthy, your tent, your clothes, you… (Cob LO)

Wind shifts are particularly dangerous when the winds are erratic or the shift is unexpected, as the following quote illustrates,

> Yeah, we've had other wind shifts. Early in my career they would tell us, let us know if you're near a fire and there's a wind shift. […] There was a big fire to my northwest, and I was the closest to it, so the first one to let them know. The wind was minor, from some other direction… And all of a sudden, big change, wind from the south east, so blowing towards the fire. So I was the one who would know about it first, so I got on the radio. I think I went direct to the fire boss […] and I said the wind's shifted lalllaaa [nervous laugh]. I was so excited I didn't even say it was coming from the south east… then I said "it's coming to the south east and blowing to the southwest and that's where *you* are!" I forgot all about radio talk. And they had twenty-six people on the ground, on the southwest side of the fire, so the wind was going to blow all the fire towards them. You know how they normally work the two flanks of the

> fire and then back? Well when the wind suddenly blows it sideways, all of a sudden these little nothing fires become really dangerous. So I think they had three helicopters on site, and were able to evacuate all twenty-six people. They were just moving them really fast, not taking them very far, just grabbing them and getting them out of there. So that was probably the most important day of work I've ever done. There's a lot of days when you don't do much out here… but yeah… [Nervous laugh] Peoples' lives are at stake. There's two ways fire fighters die, from helicopters and when the winds change…" (Cob LO, August 2015)

**3.3.3 Wind and the fire environment.** Wildfires are one context in which LOs observe wind — and a very important one to their job. Different types of fire behaviour lead to different types of fire. Weather, fuel and topography, also known as the *fire behaviour triangle* (Whiteman 2000, p. 240), determine fire behaviour. Wind is the most "critical factor affecting fire behaviour and is the most important element in wildfire and prescribed fire plans" (Whiteman 2000, p. 247). Some LOs spoke of the wind's ability to 'fan' but also 'feed' a fire. Wind provides oxygen to a fire— one of the three "main components" in the fire triangle alongside fuel and heat. Without all three ingredients, flames cannot persist and eventually subside. Metaphorically speaking, wind breathes life into a fire and in many cultures around the world wind and breath are the same word (Hsu and Low, 2008). While LOs are not fighting fires on the ground, they need to have a basic understanding of wildfire processes and how the weather component of the fire behaviour triangle may affect the ignition and spread of a fire. Most LOs are also attentive to fuel composition (what is burning in the fire), given the phenological stages of grass colour and tree foliage noted in their weather observations. They also have a sense of topography as well, understanding how it affects what they can see or using topographical features to mark distance from the lookout, as we saw earlier (figure 15). However, they are unlikely to have the intimate understanding of fuel and topography which is required of fire fighters on the ground or pilots flying directly over these areas.

Upon spotting a smoke, LOs immediately file a smoke report to local wildfire dispatch. They report on the colour of the smoke (indicative of fuels burning and sometimes—in conjuncture with other factors—the fire's intensity), the size of the

smoke's base which provides an indicator of the size of the fire (provided they can see the base), the distance, and its geographical bearing (confirmed by a *cross-shot* from a neighbouring lookout where possible). Importantly, LOs also report how the smoke is drifting in the air: *straight* (absence of surface wind, little spread), *low* (strong surface winds in a similar direction, low to moderate spread) or *high* (affected by winds aloft at a higher level in the air, indicative of instability and possibility of rapid spread). The latter could also be an indicator of how hot the fire is burning. Relaying all these elements of the smoke report to Alberta Wildfire officials helps prioritize how best to "action" the fire, that is, to assess the fire and decide the course of action—put it out or let it burn.

Weather is the most variable of these three components to the fire environment and the most difficult to predict. Topography (slope, aspect) can be studied and fuels can be managed or changed, through fuel reduction, grazing, and prescribed burns (helping to reduce fire hazard or fuel load). LOs play a key role as the data from their twice-daily weather observations contributes to regional forecasts (alongside data from automatic weather stations scattered throughout the province). LOs also provide up to date weather forecasts on the location of the fire, especially relaying any shift in wind speed or direction to firefighters on the ground, relayed in the above story. As one long time LO stresses, this is an important aspect to having staffed lookouts (beyond their first priority of detecting smokes),

> and that's the other part that really gives us [Alberta Wildfire] control is the fire and the weather- we have an intimate... ability at any site when there's a fire to have a weather recall right on it and— it's very important when you start doing the big fires. Which you know these other guys [from other provinces] are fighting fires but they don't have access to the detailed weather which is critical in a lot of cases. (Ranger LO)

When asked about the role of wind in wildfire processes, a lot of LOs spoke of how the wind exacerbates wildfire processes— as one LO playfully stated: "wind and fire are pals." LOs spoke of the wind's role in fire behaviour using a range of expressions, the wind might "fan it", "whip it up" (by creating more oxygen to feed the fire), "drive it" (through processes of spotting), "move things along at a pretty good clip" or "torch it—something you don't want to see" (referring to processes of torching and crowning). They

spoke of the wind's capacity to dry out fuel (in addition to the heat of the fire). LOs shared stories of fires taking off before their eyes, growing exponentially in size:

> I'm not a fire fighter, but when there was that big fire in Blairmore, in 2003, the Lost Creek fire, [the firefighters] thought that they had that fire almost being held, and the wind changed and took off in an entirely different direction and burnt up just as much area. And the same thing happened again this year over in Willmore. There was a fire that had been burning for three days, and the last day— before the rain came— the wind shifted and it went from 800 ha to 8000 ha in one day. In one day… like between 10 a.m. and 6 p.m. Ya ya wind. (Spinach LO)

But one LO (Snowy LO) astutely nuanced that "not all wind is bad." Wind can carry humidity, as well, which can put moisture back into the fuel and potentially help slow a fire. So, it is not as dangerous as the same velocity of wind that is dry. With an advancing cold front, wind direction and speed can change, ushering in the new air mass, which may be cooler and moist, but there is still a time lag for fine fuels to absorb the moisture from the air.

**3.3.4 Swapping fires for scenery?** Most LOs I spoke with had all "cut their teeth" up north— where novices often start to gain experience, given the much higher concentration of fire in the Boreal Forest, a fire dependent ecosystem designed to burn. LOs and wider Alberta Wildfire staff refer to down south as the "retirement district." As one LO jokingly described his transition south "I tell people I swapped fires for scenery" (Oatmeal LO).

That said, while there are fewer fires down south, there is the looming threat of a big fire, like the 2003 Lost Creek fire that burned 20 000 hectares in the Crowsnest Pass. LOs are aware of the fuel types that surround their lookouts and the hazard they pose. Cut-blocks, areas previously burned, blow down or wind-shear areas, and those affected by mountain pine beetle present significant fire risk with increased slash (debris) on the ground. In many places in the south, there is a risk of grassland fires in early spring (before "green-up" when the grass turns green) and in the fall when the grass "cures" to a dried state. Some of the danger also relates to the state of the forest fuels: "In an area in mine, where I haven't had a fire in a very long time, there's so much old

growth and stuff— because fire actually cleans stuff up: dead brush, snags— so if I did have a fire, it would be a huge fire" (Obscured LO). A few other LOs echoed this sentiment that it had been a long time since the forest burned in their areas (generally not since the 1920s-1930s) and the severity and intensity of such a fire, should one occur, would pose critical implications for watersheds, wildlife habitat, nearby communities, recreation areas etc. For this reason, reintroducing fire to the landscape, also known as prescribed burns, to mimic burning that occurred for thousands of years in this area by indigenous peoples inhabiting these areas, has been underway for a number of years with Alberta Wildfire, and is now a widely recognized form of responsible intervention in forested ecosystems adopted by parks and protected areas.[9]

The unprecedented 2016 Fort McMurray fire hit home the importance of preparing for wildfire and the likelihood of needing to co-exist with fire across the province, north or south, in times to come (as has always been the case historically). It also drew public awareness to the role of both climatic conditions (a winter with little precipitation) and weather (winds, temperature, precipitation) as key components to wildfire ignition, spread and suppression efforts.

### 3.4 Spooks and Smoke

To a lesser extent, environmental pollutants, such as pollen (from deciduous and coniferous leaf-out in the spring), road dust or industrial activities, patches of ground fog, swarms of insects, temporarily obstruct vision but also sometimes "fool the eyes"—or stimulate the imagination—and appear as false smoke. LOs refer to these as "spooks." Similar in color and appearance to a smoke, spooks (figure 24) pose challenges for novice lookouts, but will occasionally "get the heart going" of those LOs who have been on the job for a number of years. One LO explained that her tower buddy (LO working at the neighbouring lookout tower) spent a day diligently observing topography he had watched for many years because the condensation evaporating off a rock bluff looked just like a smoke: "Kinda funny, but you understand the torture of it, right?" (Obscured LO).

[9] For a successful case study, see the Evan-Thomas burn (Arthur 2013).

That said, many LOs expressed that as they learned the country in their area of responsibility, they learned to recognize spooks often come up in the same places (formed largely as a result of ground features). Spooks, LOs said, differ primarily in behavior from a smoke plume in the way they move through the air and speed at which they dissipate. With experience, LOs learn to discern them with ease—a learned skill—and don't feel the stress they may initially provoke for novice lookout observers:

> I know if you're new, they [spooks] can make you nervous because they look the same. But spooks move quickly and dissipate quickly, whereas smoke tends to just stay there. When I was up north, I would have binoculars on spooks all the time because they would make me nervous. Now I can just glance and tell the difference. They made [partner] nervous when she was up here— she said, 'is that a smoke?' Is that a smoke?' But she loved the name. (Oatmeal LO)

Completely new to lookouts, I also started seeing spooks everywhere, a source of amusement for LOs. In Victoria, BC, long after completing my fieldwork, I would often see what I could later clearly distinguish as spooks across the ocean in Port Angles, evaporating from the industrial area. The spooks looked very different in the changing light of day and the weather— definitely at times more spectral than others and these observations brought to life something many LOs expounded on throughout the summer: smoke, or features on the landscape, become visible or invisible in different light or backdrops, and this feeds into their view as ever-changing, as will be shown later.

Through LOs' descriptions of spooks, I learned the types of things they look for when assessing smoke behaviour and filing a smoke report. For example, smoke tends to rise in a column from its base. It is important to try always to look at the base of a smoke, because it indicates the exact position of the smoke, as well as the size of the fire. As we saw in the fire weather section above, smoke might drift as a result of wind. LOs note in their smoke reports if the smoke is drifting high, low or rising straight up in a column—and this drift does not tend to dissipate as fast as fog, road dust or spooky phenomena might.

Figure 24. Spook. Evaporating fog from an *indirectly visible* area that could appear as a smoke. (Courtesy: Stephen Davison).

While LOs need to be attentive to the behaviour of smoke, false smokes and fire, I noticed consistently throughout the summer that they were also attentive to the behaviour of things at a broader level: bugs, wildlife (particularly birds) and clouds. Experiencing how smoke moves also encourages LOs to closely observe movements of other things.

**3.4.1 Smoke signals.** That a smoke might signal something happening on the land is not a new idea. Smoke is one of the oldest forms of long distance visual communication used to transmit news, signal danger or gather people, used by indigenous peoples in the landscapes where this research was conducted (Alexie 1998) and by other peoples around the world and throughout history. LOs also read a form of communication in a smoke plume; smoke plumes signals that a fire is happening and sets LOs in motion to file a smoke report to Alberta Wildfire dispatch over the radio. LOs in this sense are

not looking out for fire, so much as looking for smoke plumes that communicate a fire has started. That said, some LOs how seen fire from their lookout, in the event of a fire close by.

But smoke may not signal a local fire response. As one LO commented about fires in Southern Alberta along the eastern slopes, "what you get here is smoke. If the rest of the world is burning down we get the smoke. Southern Alberta doesn't have many fires, we just get the smoke." (Powder LO). So while it is the job of the LO to always be on the lookout for potential smoke plumes, they are also looking *through* smoke in the air. LOs analyze what the smoke signals, ranging from being socked in by smoke to smoke "aloft" in the inversion layer (generally a temperature inversion, when heat rises with elevation trapping particles in the air below or within it). In the Northern Boreal, where many of the LOs I interviewed had worked previously, fires generally burn closer to lookouts and produce "thicker smoke." Smoke aloft is more common along the eastern slopes, where it tends to blend into the view. As shown in the next chapter, smoke is something that is smelled and tasted— a way of engaging with smoke that helps lookouts know if it is smoke they are seeing in the air— or simply odorless haze.

There are, however, times of thick smoke in Southern Alberta. While camping at a lookout in August 2015 during the participant observation phase of my research, one of the strangest weather events of the summer occurred. Lookouts were engulfed in smoke from large fires burning in Washington (USA) for five days, with 0-1 km visibility. An extreme weather event from the LO perspective, this was the longest recorded stretch of not being able to see out due to smoke (Walsh *et al.* forthcoming). LOs, as well as inhabitants of nearby valley communities, were advised to stay indoors and refrain from physical exercise out in the open that would tax the lungs (*ibid*). A retired Wildfire Prevention Officer said that on leaving his city home that morning it smelled like "Mop-up"- the stage that follows once a fire is controlled and when any lingering burning fuels or smoldering hotspots are extinguished (Rick Arthur, personal communication). Hiking up and down from the valley below allowed me to sense how the smoke felt on the mountain top and down in the valley. A certain anxiety resonated amongst LOs: the fire weather conditions indicated that it was high fire danger, and so, a high probability of a

fire ignition developing into a wildfire—but LOs could see little beyond the lookout itself—they were completely socked in by smoke (Fig. 20 a-c).

On the other hand, there are places in a LO's *area of responsibility* that are said to be "always smoking": industrial plants (especially pulp and paper mills or gas plant flare pits), recreation areas (i.e. campfires), places with special burning permits (First Nations reserves, residential areas, etc.). LOs must learn these areas— these false (but real) smokes— a different example of a spook. Temporary burning permits may also be issued and LOs are notified of their location on the landscape so they will not report the smoke.

Figure 25. Smoky view from lookout. One to two Kilometres visibility. (Courtesy: Author).

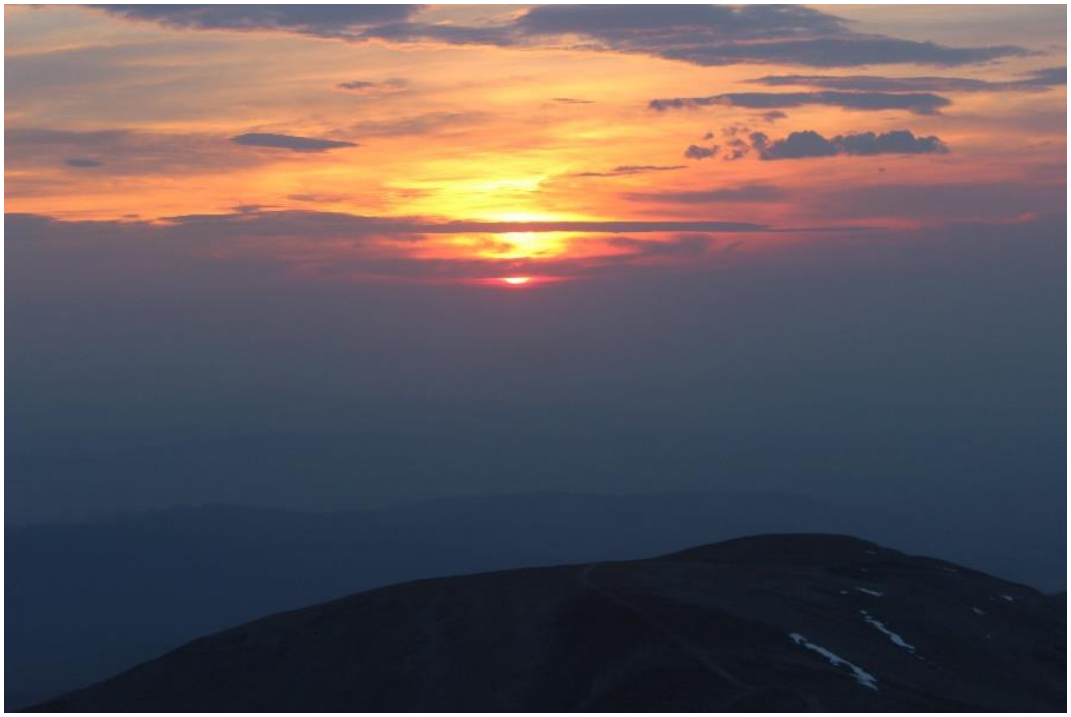

Figure 26. Smoky Sunrise from Lookout. (Courtesy: Author)

Figure 27. Wind blowing smoke away. Day four of being socked in by smoke.

### 3.5 Visibility Vantage Points

Each lookout, given its elevation and placement in the mountains, as we explored in the introduction, offers a different vantage point on the intermingling of land and sky. If topography shapes weather, in so much as we can speak of "mountain weather", weather also shapes topography: windswept ridges, flooded river beds, sunburned trees, hoodoos. Visibility (how far a LO can see out), as we explored above, is a great lens through which to understand how weather and topography come together to enhance or hamper the LO's view. One LO explained that the shadows a summer sun may cast in the course of a single day can cause a LO to constantly see something different or not see something at all— and then suddenly what you were trying to see pops out because the light shifts, "without even having to move a step" (Snowy LO).

Neighbouring LOs, in some cases, will see different cloud types and cloud coverage. "It's deceptive", one LO explained, "you'd think we'd all have the same view of the sky, but once you're up high, it's kind of like a spider looking down from its web in the corner of the ceiling" (Powder LO)— it changes your perspective on the web if you are the one looking from it. Another LO, in her photography practice on the lookout, also describes a shift in perspective,

> photography is the capture of light, after all. I was surprised, usually when you think of photography or your ability to see, most people would think perfect visibility is the best, but I've been finding that, no, it's good, but there's some incredible opportunities in everything else, too. The fogged-in so thick you can barely see the shed—you can create some awesome photographs… or when you've got that layer of fog cloud and you go down into the valley and look—or look down into it. Sunsets and coloured light, all that kind of stuff. So [pause], visibility doesn't have to be perfect all the time. (Snowy LO)

In fact, the changing view can be one of its greatest charms:

> This [view] changes daily, where to most people this is just one look and it's gone. Where every day here the sunlight makes it different— like she was trying to take pictures, Mary— that difference is in our mindset. So the appreciation of the change, like the lake here, if you stay, is going to go to silver [...] the sunset is going to sit on it and turn it red. And so all of this, your sunsets and your sunrises, your storms and your wind

> appreciation—especially for the clouds [...] I still enjoy the intrigue… of being here. (Ranger LO)

Visibility is forever changing on the lookout and LOs are constantly adapting in their work and their everyday life to different visibility.

### 3.6 Colours and Change: Shades of Weathered and Human-altered Landscapes

As I found in my interviews, colour in the atmosphere holds particular interest to LOs. They are attentive to colour— images of waking up with the rising sun, taking in sunsets, rainbows or the aurora borealis, make up both ordinary and extraordinary moments imbued with a palette of colours. But lookouts also, in a significant way, engage with colour brought about by different weather, noticed in their weather observations and while looking for fire. When reporting a smoke, for example, they discern and relay to wildfire dispatchers the smoke's colour, likely indicative of what kind of fuels are burning and at what speed. Depending on the smoke's thickness, LOs may or may not be able to see behind the smoke. As one LO summarizes, "smoke colour changes with time of day, angle of the sun, moisture content. […] Smoke can be dark grey, medium grey, light grey, white. All different colours" (Grizzly LO). Another explained that "dark" smoke generally means conifers are burning: "In my experience, really dark, almost black smoke was almost always spruce" (Snowy LO). The LO also described "dirty" smoke:

> It's a lot of brown. A lot of times that's from cut blocks, where you've got a real mixture of slash on the ground, trees still standing, ground, grass—just everything. Then you can get smoke from a big fire, where you get areas of dark, areas of light, and then all of a sudden you see this big mound of dark coming up and all of a sudden its hit some spruce.

So, colour may also inform LOs (and people relying on this information) about the types of fuels burning, initially when the fire first starts, how it progresses, and how it might be burning in different areas of the fire.

Beyond changes in smoke, colour may also inform other dynamics. While I found few LOs spoke explicitly about landscape changes in the area surrounding their lookouts,

cautious to falsely attribute something to climate change or perhaps unaware of land use changes in their area, many LOs did talk a lot about how the changing light with the time of day, weather and the seasons would render different colours visible (i.e. the many shades of limestone in rain versus long sun, or how smoke is conspicuous during twilight hours, just after dawn or before dusk). Different light might also render things invisible. Some LOs spoke of "blinding" light when needing to do scans facing into the sun or the difficulty of discerning a smoke when its colour is all too similar with the backdrop of weather and light. Colour, here, becomes synonymous with light— and similar to light, becomes all-encompassing of weather at that particular moment in time; the grey light with certain types of rain, dark clouds and shadows with building storm clouds. Similarly, colour comes to emphasize shifts in weather, time of day, and season.

Different forms of change can be understood when LOs talk through the lens of colour: land-use change, seasonal change, and environmental change. With land-use change, for example, three LOs mentioned more or less green on the current landscape (referring either to their view or the repeated MLP colour images) compared to the historical survey images. LOs identified areas that had either been logged in the past or recently. One LO in the north, where significantly more logging takes place, referred to her area as a "patchwork" of green shades. Looking around, it did look as if a quilt blanketed the surrounding hills and flats. Down south, two LOs mentioned more green on the landscape in general, greener on upslopes and in avalanche chutes, or in one case, green that had filled in areas that suggested evidence of fire in the historic images (Oatmeal LO). Some LOs mentioned more colour in the darkness of the night, light pollution from expanding city limits. But for most in the south, many respondents said the landscape had not changed very much and instead pointed out things that remained the same, for example a sparse group of trees growing on a windswept ridge, as we can see in the photo below. As the LO explained when he shared this photo (fig. 31), the wind "allows" the three trees to grow on the saddle of an otherwise treeless ridge.


Figure 28. Two trees growing on a windswept ridge (Courtesy: Anonymous Lookout Observer).

Most LOs have a great deal of phenological knowledge (the influence of seasons on phenomena). They are attentive to phenological indicators that signal fire hazard. In their spring weather observations, they note *green up*, when more than fifty percent of their area has green grass. They also note when coniferous and deciduous open-bud and leaf-out occur in the same percentages. In such times, LOs spoke of yellow pollen clouds in the air. Some LOs refer to these clouds being so prominent they should be considered an obstruction to vision while others notice their accumulation on top of the water in rain barrels or in the little water tray kept inside the Stevenson screen, a small wooden box where weather instrumentation is stored. Every morning lookouts dip the wick of the thermometer into this small tray of water, allowing them indirectly to note pollen accumulation— or not— in their daily activities. Two LOs also spoke about purple fireweed seeds releasing into the wind signaling the end of the summer in reference to

local Blackfoot traditional ecological knowledge (TEK).[10] Other LOs mentioned—but also photographed and painted—the bloom and fade of wildflowers as they gradually moved up slope in the spring. LOs would anticipate where wildflowers bloomed on their surrounding slopes.

Figure 29. Flush of wildflowers on the slope. (Courtesy: Stephen Davison).

Finally, colours on the landscape may also be indicative of environmental changes. LOs spoke of "red belts"—large swaths of stressed or damaged trees. In recent ecology literature (Nealis and Cook 2014, and for a long time recognized amongst forest managers, red belts are commonly associated with pine beetle kills, but they may also signify trees affected by strong winter chinook winds, where trees produce sap in the

[10] While the scope of this research project does not extend to include indigenous perspectives, accounts of wind feature prominently in Blackfoot mythology (Duvell and Whistler 1995), like among other Algonquin speaking groups such as the Navajo creation myth (McNeley 1981). For an excellent example of wind in healing practices among the indigenous peoples of the Kalahari Desert, see Low 2008.

warmth of the winds and then quickly freeze again after the chinook has passed. Other forms of weathering (the sun's strong glare reflecting off the snow or lightning strikes) may similarly lend to a rusty colour in trees. In contrast with chinook winds where red belts are mostly visible on the lee side of slopes or in valley bottoms, a rusty, reddish-brown, tinge to the vegetation is often observed at higher elevations, although not exclusively. One retired LO reminisces about the pine beetle attack in the 1980s, which severely affected Southern Alberta,

> A few summers, on the east slopes, we used to try and catch pine beetles on sticky window screen "nets" that were mounted near the cabins. We had a bottle with a [pine] beetle in it and had to go out to inspect them occasionally. The screen was covered with some kind of pheromone that was thought to attract them. We watched the green forest turn red as they began to kill the trees around us. Early 80's then- helicopters and crews were flying all day and marking trees to be hauled out and burned to attempt to stop the beetle. (Botany LO)

In this example, and in the case of another LO watching a cloud of pine beetles fly the day before our interview (Patchwork LO), LOs are seeing both the beetles close up and the change they introduce, largely visible to the eye through colour, in surrounding forests.

### 3.7 Looking Closer

While only some LOs explicitly expressed how the nature of their job encouraged them to "look more closely at things", I noticed in my conversations and through spending time on lookouts that this was implicit to all LOs; in other words, perhaps too obvious to mention in conversation. Discerning smokes from "spooks", virga from rain, and open-bud to leaf-out stages of trees in the spring time are a few examples I witnessed. Looking closer is an attunement I found developed in the LOs that extends beyond job responsibilities on the lookout. For example, I witnessed it in the contact zone of listening and learning, what Donna Haraway (2008) proposes as "becoming with", as the following LO describes by positioning her body, lying down in the grass to better engage with flying insects:

> I think it's really neat to lie down in the grass, in the middle of summer, and listen to the traffic… it's like zooooooo, zweeeeee, zoooo, zwing, zoooo, [...] it's organized chaos, right? They don't have traffic lights or rules, it's spatial awareness, right? And it's all interconnected [pause] and so neat to observe. (Reflection LO)

In a similar vein, another LO, after relishing the joys of smelling wildflowers mere inches off the ground, explained "you've gotta crouch down to see up here" (Snowy LO). The same can be said for observing morning dew or frost glinting on the grass, a fading grizzly track in sandy earth, or scat of various animals— including the pack rat, notorious for leaving "gifts" at the entrance to the lookout.

Close observations also provoked musings about messages LOs found in the More-than-Human-World. LOs shared photographs and stories (figure 30) of being regaled by clouds forming pictographs (a crocodile, a saint, a penis), a snow cornice melting into a monster's head, golden mantles stretching after a snooze (figure 31), ravens playing in the winds along certain ridges.

Figure 30. Crocodile cloud. (Courtesy Andries Van Pelt).

Figure 31. Capturing a golden mantle stretch, post nap (Courtesy: Stephen Davison).

One LO describes wildlife around his lookout with similar amusement:

> Occasionally we'll get a muley [mountain goat] tippy-toeing through the yard, trying to be invisible. Bobcats, have a real funny face on them— like everything is amusing. Marmots have set up under the helicopter pad or on the heli [helicopter] pad, sun tanning or doing their yoga… boxing. (Grizzly LO)

Shedding light on how lookouts *look closer* is another way of examining what is left out of formal weather observations or other official tasks.

### 3.8 Inspired Looking

Creative activity is another way to explore how doing the lookout job and life on the lookout are deeply entwined. It also provides an additional way of understanding, seeing beyond required discerning and detecting for their lookout work. LOs engage in a gamut of creative activity about wind and weather on the lookout. Initially it surprised me that so many people were involved in creative projects, only to learn throughout the course of my research that 75% of LOs in the 70s and 80s were artists, although now more come from a "mixed bag" of backgrounds (Cougar LO). Yet because a lot of the LOs I interviewed started in this era, art continues to be a significant part of their lives on

the lookout. Others new to the job explained that the lookout place also gave them the space to explore creative pastimes that the regular bustle of life away from the lookout does not allow time for.

I learned about these activities primarily through visiting the lookout (some had easels set up or cameras in hand) — and through conversations with LOs about how they spend their free time. As many of them explained in one way or another, everyone needs something to pass the time— and creative projects are an important part of sitting out the low fire danger weather that affords this relatively free time. One LO shared a story of hearing another, early in his lookout career, pleading on the radio for books and asking all the other LOs if they had anything to share. He had brought along the complete works of Shakespeare—and by mid-season was desperate to read anything *but* Shakespeare. A "variety of spice" the LO telling the story explained. He had learned early on in his lookout career how important it is to have a variety of things to do, to move from one thing to the next before boredom sets in.

Creative pastimes, for *all* the LOs I spoke with, offered significant "varieties of spice." LOs captured various surroundings from their lookout in their photography, painting, and writing where encounters with weather, flora and fauna figured prominently. Their creative works encompassed more than wind, to include all sorts of spectacular and mundane events, but given my research interests, LOs also shared with me art work that was specifically inspired by, or had the theme of, wind. For instance, one of them shared the images below capturing his experiences feeling the wind in his hair (figure 32) and air currents around the lookout (figure 33).

Figure 32. Feeling the wind painting (Courtesy Andries Van Pelt). Other LOs also mentioned adjusting to this feeling—wearing a headband, putting on a tuque.

Figure 33. Air currents over the mountain and lookout painting (Courtesy Andries Van Pelt).

But given the wind's invisibility, it is sometimes hard to capture. One LO explained how, out of frustration with not being able to visually represent with his camera just how windy it was at the lookout, turned on his camera and made a video solely to record the sound, later sharing that he used the same technique to capture sounds on his recent travels in Europe. Other LOs wrote poems and stories explaining the wind's effect on their moods.

Other LOs shared examples of working creatively with rock: large rock walls that created windbreaks or rock work that gave an aesthetic charm to the lookout. These included pathways, stairs, cairns and impressive mosaics. Many of the rock projects had been worked on for years, gradually built upon each day with great care, as a devoted gardener might tend to plants or weed a cherished labyrinth.

Figure 34. Rock Mosaic. Upon being asked many years ago to spray paint a helicopter landing area, this lookout observer thought he could do better. The rock art landing pad has been a project ever since. (Courtesy: Mary Sanseverino)

LOs also engage in handy work or what one LO called "creative improvisations" to adapt to windy weather conditions, something Ingold (2013) frames as learning in

practice or “reading creativity forwards.” A few examples include tying a snow shovel to one’s wrist to stop it from blowing away, having a rope on the inside of the door (of the outhouse, for example) to pull the door in should it get caught in the wind, building up rock walls around the lookouts to provide a bit of break from the wind, weighing down rain barrels with large rocks— and also tying them down. One LO in the 1980s, devised a creative way to let helicopter pilots know, from a distance, the wind’s direction, as in strong winds pilots sometimes had difficulty landing at this particular lookout. The LO devised a pulley system up a tall rod. Attached to the rod was a yogurt cup, and inside a 30 foot long piece of bright seismic tape that was released by tugging on one of the pulleys once it reached the top of the rod. The seismic tape would float in the wind, indicating its direction, like a long colourful windsock higher in the sky.

But in some conditions— you just cannot work until the wind subsides. LOs spoke of wind putting a stop to cutting trees around the lookout (that were obstructing their view) or the challenge of doing repairs around the lookout: hammering nails (and not one’s finger) or paint trays being blown away in sudden gusts painting a helicopter pad. One LO (Powder LO) had a paint sprayer that he used for painting the shed and helicopter pad— an activity that he avoided entirely with any kind of wind.

I found the relationship between the LOs and the wind was expressed in more than one register. Observing wind and recording it with scientific instruments are a part of the lookout job, but these measurements reflect short intervals in time. Many LOs spoke of experiencing incredibly strong winds all night long and when morning weather rolled around, all they had to report was a light breeze. The winds had suddenly subsided and 4 km/h from the northeast became the number that poorly represented what the winds had been like. Creative activities, in addition to being an important pastime, were also significant to capture and relay wind experience in alternative registers. These alternative registers (painting, making photographs, sound recordings, creative improvisation and storytelling) are perhaps more representative of their experience. And while creativity can help LOs mitigate or adapt to wind through improvisations, there are also fleeting situations when a LO might not be able to capture or improvise. These might be shared instead as stories or left unregistered in the realm of things seen but left untold.

### 3.9 Summary

In this chapter I discussed different ways of looking involved in the LO job (watching for fire, tracking and understanding weather, discerning smoke from spooks) and how LOs trained vision—or quality of attentive observation—extends to other areas on the lookout: observing change through colours, looking closer at things (animal behaviour around the lookout, pictographs in the clouds, the traffic of insects in the air) and engaging creatively with wind, both in response and in anticipation.

In the next chapter, I explore how the wind is sensed in the broader backdrop of the observer job we have just explored.

# Chapter 4: Sensing Wind and Weather

"*It sounded like a freight train coming through... just howls like a spooky movie...it whistles... it rattles... it vibrates...it swooshes.. it makes that sowing sound... the drone of the wind is what really gets tiresome after a while."*
*-various LOs*

## Introduction

While the lookout observer job is grounded in attentive observation (discussed in chapter three), their skilled visions are entwined with other sensory ways of knowing. Wind, largely elusive to the eye, brings this multisensory engagement to the fore. In this chapter I present how LOs describe sensing wind—and in some cases weather more broadly. The subsections are themes that emerged from interviews. Although perception is inherently multi-sensory, pinpointing a specific sense was an easier way for LOs to "talk about" how they come to know the weather through the senses.

## 4.1. Sound

As we have explored previously, the sheer force of wind moves things or moves through them, producing a range of sounds. Other forms of moving weather on the land can similarly be tuned into through listening: rain falling on the water, hail on a tin roof, snow melting off tree branches in the hot afternoon sun. In this section, I explore how LOs tune in to weather through sound.

**4.1.1 Sound mimicry.** "It's not simply wind in the trees", many LOs insisted, even laughing with astonishment on one occasion when this phrase was used. I used wind in the trees as a naïve example, romanticising about sounds the wind might make at the lookout, thinking it might even be therapeutic. Although the swooshing or rustling of wind in the trees is a common sound at lookouts located below the treeline, one LO remarked on the slight nuance between the sound of deciduous trees and coniferous trees (Sulfur LO). In daily life on the lookout wind is a lot more complex, less romantic and as depicted in the quote above, far from therapeutic.

When describing the wind, LOs commonly explained the wind *sounded like* something and would mimic the sound, in the way an avid birder might mimic the call of

a bird they study or admire. These sounds struck me early on in the interview process—they enlivened the interview at the time and also later, when listening to interview recordings - but were challenging to transcribe phonetically.

These sounds were almost exclusively described using something one might hear in the city, something that does not exist at the lookouts or anywhere nearby. For one LO the wind sounded like a train coming through a tunnel (an idea people who have experienced hurricanes also express), whereas another LO, below, refers to the motor of an all-terrain vehicle or quad,

> this building shakes, it rocks, and of course it gets noisy because the shutters rattle… it's noisy. Wind is noisy. There's screens on the outside of the window and they rattle and it sounds just like a motor… so many times I have gotten up wondering who the hell is up here in their quad! (Spinach LO)

Or at another lookout,

> one morning I woke up and heard vrrrrrr....*vrrrrrooo...vrrrroooooom* and I was like is someone driving up my road? Are they right there? And what had happened was the wind was taking the straps on the water tank and making it sound like a car… the wind will catch things and make some noises that will definitely make you curious— like what the heck is that? […] And you know I am very aware of noises here too, right? If I hear a noise I am not familiar with, it makes me wonder what is going on, right? (Reflection LO)

While the wind creates unexpected sounds that fuel the imagination, it also creates familiar noises, like the *baabaababa* of laundry flapping. If there is one benefit to wind (in addition to keeping bugs at bay), a LO commented, it is that wind speeds up the drying process, provided you've secured your linens!

The wind also makes different noises depending on the structures or topography around the lookout and how they might block or channel local winds to the lookout. It might "whistle" (Rooibos LO) or "howl" (Sulfur LO) through the radio mast, depending on the wind's direction and speed, "rattle" shutters, or "buzz" the kitchen window when the wind speed reaches 120 km. Another LO (Rooibos LO), rather evocatively explained

one day hearing what sounded like a long drawn out fart, only to discover the roof of the engine (utilities) shed slowly being ripped off in the wind. The installation of shutters at a particularly windy lookout made one LO (Snowy LO) quite apprehensive:

> I question how they're going to hold up in winds or what kind of sounds they're going to make, because you're adding something to the side of the building that wasn't there before, it's not as aerodynamic as the building was, it's not going to take a whole lot of wind to create noises, to create howls.

LOs commonly spoke of hearing and feeling vibrations in the movement of the wind which often permeated sleep at night.

The lookout site itself (the structure, surrounding buildings and topography) contributes largely to the variety of sounds. One LO (Obscured LO) referred to her lookout as a "natural amphitheatre" in which she was able to hear a small car driving in the valley or a helicopter miles away.

**4.1.2 Sound masking.** These noises made by the wind, especially when extended for long periods of time, mask out other sounds: dispatch on the radio, people arriving at the lookout, wildlife calls. On a particularly windy day, one LO did not hear loggers arriving. Not alerted to their activity ahead of time, she was horrified to turn around and discover large swaths of felled trees.

There are periods, especially at certain lookouts, where the winds will be strong for days on end. The noise of these continuous winds was described by one LO (Crumsby LO) as "white noise magnified by a thousand." Over the course of several days, the "white noise turned up to that degree would become like black noise. It would become solid and dense. Ya… so it would take up space in a different way. Hmmph [chuckles to herself]." For most LOs it was the noise of these winds, the steady roar, the drone or vibration of the cabin accompanying such winds that wore them down. Simply put: "You're glad when it's done" (Powder LO).

In order to mitigate the sound of the wind some LOs hiked down to a lower elevation (this could be a matter of meters) or to another location on the lookout. The ability to identify "hideouts" from the wind through knowing where the wind blows with more or less force around the lookout, similar to discerning spooks from smoke by the

way they move, highlights the LOs attentive study of movement and patterns in meteorological phenomena. As one LO (Powder LO) described his hideout from the wind,

> Here I just head for the shed, been here [the shed] since the 50s… wind blows over top there. Stacked wood there and wood stayed there for ten years. One year I stacked wood in another spot and it all scattered around from a big wind.

Like observing the woodpile, LOs mentioned knowing where it was less windy around the lookout based on how vegetation grows, erect or with a slant, where their pet chose to lie down or where small wildlife would gather. Alternatively, to escape insects or heat, there are moments when animals (and LOs) might want to be in the wind. Other techniques used to mitigate the sound of the wind included turning up the radio to block out the noise, wearing ear plugs (although exceptionally rare) or "just allowing your brain to filter it out."

***4.1.2.1 Stillness.*** And then there are moments when the wind stops; sometimes it comes in the eye of a storm:

> There are holes in the wind—these gaps— the absolute eye of the storm. It would be the middle of the night, three days of poow wowowo woow. And then, all of a sudden, still. And then, pkkkkkk […] it literally would be like a truck hitting the building because the building would be impacted by it. It's not just the wind outside blowing in the trees, right? (Crumsby LO)

Figure 35. Morning stillness (Courtesy: Author).

Other LOs mentioned that waking up to silence, when it has been really windy, brings about a slightly eerie feeling— making it almost harder, once you have become accustomed to the sound of the wind, to go back to sleep in the silence.

The absence of the wind, in other contexts, allows for hearing things that are otherwise masked out: a CBC radio show, birdsong, mosquitoes, or the buzzing of bumblebees along the footpath to the weather station in the morning. One LO was able to note the unusual absence of bees in 2015, at a time when the mornings were so calm one could tune in to smaller, softer sounds. LOs describe these moments of stillness, which are few and far between, as “psychologically awesome” or, “impeccably rare.” For most, they are a big draw in returning to the job. Not everyone, however, can handle the silence. A story, often cited throughout the summer, referred to a young LO who was flown in to a remote lookout tower in the Northern Boreal. Twenty minutes after the

*whuding*[11] helicopter left, he called it back to pick him up. He was unable to handle the silence—the silence is all he heard.

Many LOs first learned what "true silence" or "stillness" really means when on the lookout and found it challenging, or in the very least a shock to the senses, after experiencing such stillness, to readjust to traffic noises and city bustle at the end of the lookout season.

**4.1.3 Indicative sounds.** LOs listen attentively and learn to recognize different sounds as they move about the building, inside or outside. Combined with other senses, these sounds are another significant way of learning about the wind on the lookout and may be important for determining wind speed and direction:

> You become acutely aware of those [sounds]. Like the wind will hit about 120-130 km/h and there's a buzz in the kitchen window downstairs I just can't get rid of […]. It just buzzes, makes the sound *zzzz brrzzzzzzzzz,* like this. You can get rid of a lot by locking the windows, but not in the kitchen. So you learn inside the building— oh it must be going 130 km/h now because the kitchen window is buzzing. (Powder LO)

Wind speed and direction, depending on the lookout, will make different noises. Light winds, similar to extended winds explored above, also make sounds, the hum from catching a railing a certain way (Cob LO) or making the wind sock (in need of oil) squeak (Beet, Powder, Rooibos LOs).

Sounds can be important for understanding if a wind is escalating or not, and the necessary course of action that may need to be taken:

> You live with that [sound] but I guess you don't express it in the fact that don't really hear the wind, but as it picks up, then you get that little whistle and then you know, when it picks up to a roar, and you see the moving. Okay, now your senses were hearing, but now your eye senses when you see that tree arching six or eight feet, now you're into safety thought pattern. Where is it going? Because you don't know. Is it going to break or fly off? So, mentally you're preparing yourself. I guess because we've lived with it, that thought pattern is automatically part of your lifestyle. (Ranger LO)

[11] LOs, and Alberta Wildfire more broadly, commonly speak of "whudding" helicopters, given the *whud whud whud* sound their rotor blades make, particularly when taking off.

Many LOs spoke of a similar "thought pattern" or mindset that referred directly to a capacity to respond to shifting weather tactfully and with finesse. At lookouts where the wind is very erratic, where the wind can change velocity in a matter of minutes, tuning in to sounds around can be extremely important for personal safety: "when you hear the roar, you're automatically on the upscale of preparation. A lot of our senses are auditory, and then you check out visually" (Ranger LO).

In addition to wind, LOs spoke of weather sounds, like those of the 2013 floods that were described as a "real auditory event"[12] or the sudden crashing of thunder that can "really jolt the hell out of you, when you're not expecting it" (Sulfur LO). Lookouts are also attentive to a wide variety of non-weather related sounds. Given the research objectives, I was curious about sound as a manifestation of wind, but LOs, like people everywhere, are accustomed to responding to other non-wind related sounds that may indicate an important message: an ambulance siren, a fire alarm, the dinner bell. Most lookouts are equipped with intruder alarms that indicate the presence of incoming people, but also, given the sensitivity of the alarms, wildlife as small as a chipmunk. As one LO jokingly said of his intruder alarm, "if I'm having a bath, it gives me a minute to get some clothes on!" (Grizzly LO). At another lookout, we could hear some rocks moving below the cabin during our interview. The LO (Snowy LO) explained the sound of rocks moving is often how she knows small wildlife (marmots, squirrels, packrats) are present, as they walk around under the cabin or on rock walls surrounding the cabin. This differs from the whistle of marmots that indicate the presence of large wildlife (described in section 2.3.1.2). Sounds matter in many different ways.

I remember quite vividly being up on a lookout for an interview and hearing what I thought was a quad. Quads (all-terrain vehicles) were allowed in this part of southern

[12] For more information about LOs experiencing the 2013 flood event, see Walsh et al (forthcoming). For an interesting example of rain and sound, Random International's *Rain Room*, currently exhibiting at MoMA, allows people to experience rain without getting wet, emphasizing the rain's auditory affect, similar perhaps to being inside a lookout cabin. Along similar lines and towards a shift in experiential art, Anthropologists Dominic Boyer and Cymene Howe and experimental art/anthropology *Ethnographic Terminalia* built a wind room at the Denver Art Museum, where visitors could immerse themselves in two kinds of wind (i.e. feel it blowing in their hair, against the skin), as part of the exhibition "Aeolian politics", drawing attention to wind politics in Mexico (Trudi Lynn Smith, personal communication, 2016).

Alberta and a common phenomenon on the roads surrounding this particular lookout at a certain time of year. The LO was quick—albeit very politely—to correct me: it was not a quad I was hearing, but a dirt bike that had a subtly "higher pitch." LOs spoke about "pitch" in other contexts too: the high pitched noise of wind coming through a window in contrast with the impossible to block out drone of extended winds explored earlier.

So, it is a combination of both LOs attending to *all* sounds on the lookout and the wind's tremendous capacity to make sound that hearing can be understood as an important way of knowing about the wind.

### 4.2. Olfactory

Perhaps in a less explicit way, LOs also engage with wind (and weather) through the olfactory sense. When discussing the olfactory sense, I have regrouped LOs insights into four categories where patterns emerged in interviews and things I occasionally observed—well, smelled—on the lookout. They are: smells of place, anticipatory smells, avoiding smells and the blurring of smells and taste.

**4.2.1 Smells of place.** Just as some lookouts are more conducive to sounds than others, others *afford*[13] different smells, depending on what is in the vicinity. According to one retired LO:

> When I think of the lookout, I think of the wind and the smell of the air [...] You get helicoptered up, you get in, you get away from all the jet engine fuel, everybody leaves and all of sudden you go [LO inhales deeply]—It smells like a lookout. You know, and you can hear the stove, it goes shhhhhhhhhhptch and shuts off, goes ping ping ping... ping. And the winds go shhhhwooooooshhhh— the air— like I can just smell it or taste it now. It's like—that's the lookout. [...] Just amazing. So that always stuck with me, that always blew me away to go there and smell that. (Botany LO)

[13] Here and in other areas of the thesis, I use the term "affordance": action possibilities in a given environment following James Gibson (1977, 1979).

Some LOs at higher elevation lookouts spoke of being “above the smell line” (Cob and Sulfur LO), where the “wind was cleaner” (Ranger LO). Another LO described the lookout smelling clean, “usually it just smells clean: no pollen, no road dust, no bog smell that you get at lower elevations” (Obscured LO). On the other hand, some LOs working at these higher elevation lookouts missed smells that could be found below the tree line: the smell of pines in the hot sun or on a windy day, “O.D.ing” (overdosing) on the perfume of wildflowers or the ‘earthy smell’ of precipitation evaporating off the ground after a rain.” For one LO (Beet), missing these smells was entwined with a feeling of “longing to have botany around the lookout”, to work at a lookout that afforded such smells.

**4.2.2 Anticipatory smells.** Other smells are more specifically related to knowing weather. Some of these weather smells were anticipatory— they indicate a change in the weather. LOs gave examples of being able to smell a cold front coming in, smelling the rain or incoming humidity— and how these differ from the smell of snow.

Smelling smoke is an effective way to distinguish it from haze or city smog. I remember one LO, during her morning weather observation, sticking her nose out the door to check if there was smoke in the air. A few LOs said they could only smell smoke from fires close by, whereas the majority claimed they could smell smoke from fires burning far away in another province or in the United States. To my astonishment, one LO (Rooibos LO), once called in a fire that he could not see (it was in a *blind* area) but could smell. Sure enough, Alberta Wildfire dispatched a helicopter patrol and they quickly found the smoke in the approximate location he had given.

One LO claimed that her senses had become so heightened over the summer at the lookout (and particularly her sense of smell) that she could smell people coming before they reached her cabin. Other LOs commented on how the lookout setting, “sensitizes the senses”, whereas the city “numbs” (Sulfur LO), explaining that we become accustomed to certain smells of the city after living there for extended periods of time and. One can imagine the shock upon re-entering the city after being isolated from those kinds of sensory inputs for five or six months, as one might similarly recognize the invasive florescent lights in a grocery story after a day hiking in soft light of a wooded canopy.

Many LOs commented on the smell of Calgary, generally the first city they would travel through, hitting them like a wall, notably the exhaust from cars.[14]

As with sounds, LOs become very familiar with smells around the lookout and pay attention to any that are unfamiliar: incoming people and precipitation mentioned above, a rat dying in the rain barrel or a sour gas leak.

**4.2.3 Avoiding smells.** Smells can be brought in on the wind: smoke, pollen, pollution from a nearby power plant, or carried out as the scent of the LO, their pet or smells made on the lookout. For this reason, some LOs are advised to take extra precaution when dealing with waste. Garbage is stored in the engine shed (with closed windows and locked doors).


Figure 36. Bears and smells. (Courtesy: Alberta Agriculture and Forestry).

[14] While my research does not explore the transition back to life off the lookout, many LOs referred to going back as a shocking encounter. One LO sharing that after his first season on a lookout he waited in the parking lot of a gas station until all the cars were left before proceeding to fill up: he was scared of being next to people, it had been so long. Years later he says the transition is seamless. Many LOs who have done the job for decades similarly describe being happy to come to the lookout and happy to leave at the end of the year.

Food waste is not the only source of smell on the lookout. Food production (cooking) also produces odours that, especially in a wind, can quickly waft to hungry wildlife, nearby or at a distance. One LO shared a story of a friend who had hiked up to visit and brought along a freshly caught fish— an exceptional treat in between the three week services when lookouts are resupplied! The LO proceeded to fry the fish for supper that evening, with the windows open to let the cooking vapor escape the cabin. A bear was rather curious about the whole process, and the LO had to bang pots with a wood spoon a number of times to finally incite the bear to leave. It is not uncommon for bears and other animals to attempt climbing through an open kitchen window when something of interest is being cooked, especially in the Northern Boreal setting, as many LOs shared. For this reason, some LOs take more precautions than others to avoid making smells, to the extent that one LO stored her dirty dishes in the fridge. Ironically, all the lookouts were equipped with barbeques in the early 2000s, a gesture made by Alberta Wildfire to upgrade quality of life on the lookout. Some LOs would never consider using them for the reason of smells traveling in the air— and most lookouts above the tree line simply cannot use them, because of uncertainty when the wind might pick up.

**4.2.4 Blurring of smells and taste.** While smoke, pollen, dust and various forms of precipitation (rain, snow, hail and fog) are important obstructions to vision and can be smelled, some LOs also spoke of tasting these phenomena. For example, when a fire is burning close by, and the smoke is very thick (to the extent that visibility may be reduced to a kilometer or less) LOs refer to “choking on smoke”, blurring barriers between smell and taste. They also mentioned air quality, that accompanies different weather, as the following retired LO remarks on past experiences,

> I drank the rain water, I drank the weather. […] I think these are the memories and feelings that stick with me - being right in the sky- seeing the hugeness of it, being in its flow around the globe, bathing, breathing, drinking dust from distant deserts, volcanoes, nuclear disasters, pollen clouds swirling in the heat. (Botany LO)

Being right in the sky at the lookout, as the LO so aptly puts it, LOs are immersed in the air, carrying things from other places. Weather is, by extension, taken into the

body. While LOs no longer drink the rain water, it is still used for bathing, washing dishes, watering plants— or given to dogs that come to visit the lookout with hikers. In early spring, LOs shovel snow into their rain barrels and melt it to supplement rain water. LO veterans who had been around for the 1980 Mount Saint Helens eruption recounted the ash cloud drifting north, traveling some 800 km the way the crow flies. One LO describes how the ash got into everything,

> when Mount Saint Helens blew up, you had to dust off your fire finder every morning. They [Alberta Wildfire] were on the radio saying don't go outside… but I live outside. Outside and inside are kinda the same thing on the lookout as far as air quality is concerned. Even these newer lookouts, they ain't that air tight. (Powder LO)

LOs spoke of many other instances of the weather coming indoors: blowing snow and rain, pollen, dust, and ball lighting (a rare and little known kind of lightning) bouncing around the inside of the lookout. An array of wildlife, from small (insects, rats, ground mantels) to significantly larger animals, like the example of bears climbing through an open window, are a further extension of the outdoors coming inside. After a few days of participant observation, I remember accepting that if I wanted to eat outside, I had to consume flying ants and other insects drawn to the smell of a delicious lentil stew the LO had cooked for us.

### 4.3 Feeling in the Wind, Part One

In this next section, I explore how winds are felt. In part one, I describe LOs' haptic perception of winds, and how winds are experienced through the touch sense. In the second section, I explore how inquiring about feeling gives rise to the affective quality of wind and weather.

**4.3.1 Rocks in your pockets?** "It's not windy if you're still standing" explained Rob Watt, a long-time research associate and historian with the Mountain Legacy Project, and resident of windswept Pincher Creek, Alberta. LOs commonly spoke about an array of walking techniques for moving around in windy weather. They do, after all, need to be able to go out to the Stevenson's screen and rain gauge to do their weather readings, go to

the shed to get food, use the outhouse facilities, or go out onto the catwalk to gather water, make observations and collect weather readings. At the windier lookouts, I noticed the Stevenson's screen was fixed to the railing of the catwalk and as a result LOs would not have to go very far. Even so, one LO told me he had once, in very gusty winds, tied himself to the railing to take the few steps down to the Stevenson Screen. Alternatively, at lookouts where it is a little less windy, the Stevenson screen can be located as far as a few hundred meters from the cabin (and often the case with the rain gauge at all lookouts, so the lookout building does not alter accumulation of precipitation in the gauge. What LOs need to survive is not contained within the lookout (although these things can be brought inside in preparation for an incoming storm), so knowing how to walk in these conditions and not simply putting "rocks in your pockets" — a common joke amongst LOs and Alberta Wildfire—is important. The wind can and has blown LOs over and nearly blown people off the mountains. One LO shared the following story of a previous LO's close call at the lookout where he worked:

> He came out one morning to do the weather and, being a smart ass with his new cowboy boots on, just about went over the edge there. The wind came around the building and caught him. He was just about over the edge and couldn't grab any purchase because he had these high-heeled foothill riding boots on [laughs]. Yup, he had company coming up and just about ended up meeting them half way down! (Powder LO)

Another LO (Oatmeal LO), who said he was still "green on mountains" at the time of being blown over coming around the corner of the lookout building, equated the experience to knock down gusts in sailing that push the vessel over on its side.

Crawling was described as a commonly used technique: "I know how to get around the cupola if I have to, just stick to the wall and crawl and don't try to breathe in, ya know, because it will just suck the wind right out of you" (Powder LO). Some lookouts mentioned having to crawl out to the rain gauge in windy conditions, while another described tying himself to the lookout building's exterior to take weather measurements (Ranger LO). These are, of course, extreme conditions, when the wind is above 90 km. Opinions varied on when it became difficult to walk outside, a lot depending on whether the wind is gusting or steady, what kind of precipitation is mixed

in, and perhaps the strength or weight of the person walking in the winds. But, there was general consensus that it became difficult to walk around 90 km/h. The Beaufort scale indicates that resistance is felt when walking against the wind in a moderate gale, 50-61 km/h.

Not only does wind change the posture and stance of LOs as they walk, it also changes *where* they walk. As mentioned earlier, many lookouts spoke of using hideouts or taking refuge at slightly lower elevations. Sometimes LOs were simply unable to reach certain places, as described in the following quote: “And even for my exercise, it’s dependent on the wind. If it’s really windy, I won’t go to the end of the butte, my favourite place to go” (Spinach LO).

The wind also affected LOs ability to climb towers (in the case of fire tower LOs) or to urinate outdoors—one of the number one lookout rules— do not pee into the wind. LOs would take alternate routes to the outhouse, engine shed, Stevenson’s Screen or rain gauge, if the wind had blown snow into drifts. In some cases, these drifts were blown into the door, blocking the LO’s exit. A few LOs have learned to bring a shovel indoors, in the event of a snow storm— and also stock supplies in the event that they cannot get out: water, food (if stored in the shed), or a bucket in which to urinate. They might also prepare in advance, changing the oil in the generator, to avoid going outside in strong winds. Some preventive measures are taken at the beginning of season, like securing rain barrels with weights and ties.

Figure 37. Rain barrels weighted down. This helps to avoid lids and barrels blowing away. (Courtesy: Author).

**4.3.2 Skin and apparent temperature.** As we explored in the fire weather section in chapter three, LOs, like firefighters, are particular sensitive to crossover conditions, when the relative humidity dips below the ambient air temperature (in Celsius) — essentially hot and dry weather. Many LOs spoke of different ways of engaging with humidity: smelling it, seeing dryness or wetness in the landscape, but especially feeling dryness or wetness on their skin, particularly the palm of their hand. As we saw in our fire weather section, LOs are attentive to fuel moisture content (FMC), essentially humidity in the wood, and it is interesting that they should lend credence to it on their skin.

The heat index or what the National Oceanic and Atmospheric Association (NOAA) define as “what the temperature feels like to your body”, speaks to the felt

experience of temperature. For example, a day that is 30º C with a relative humidity of 90%, feels like 40.7 º C.[15]

Wind chill is another felt body experience of temperature linked with wind. While some people might tend to scoff at wind chill temperatures as exaggerating the "actual temperature", wind chills at lookouts can be very different from the valleys below and quite significant, with lower temperatures and stronger wind velocity. For example, if the air temperature is -10 ºC and the wind 50 km/h, it feels like -21.7 ºC, or if the temperature is -20 ºC and the wind speed 50 km, it feels like -34.7 º C. Many LOs spoke about always wearing clothing that covered the skin, as the wind would quickly "suck" the heat from their bodies. Some mentioned how hikers were often ill-prepared in their choice of clothing for spending time on the lookout because of wind speeds. In the valley below, it might be as much as ten degrees warmer. In Victoria, a coastal city in the western Canada where I reside, the temperature is often five degrees colder closer to the ocean, in large part due to sea breezes and a difference in humidity.

**4.3.3 Pressure.** LOs felt the force of the wind in various ways, while walking as explored above, and against the lookout building. It was common in winds over 80 km for LOs to sense the building vibrating, for instance, by placing a hand on the wall. Shutters might also rattle. Of course wind gusts would have an even stronger vibrational affect. Some LOs said windows bounced in winds over 90 km. One LO (Rooibos LO) mentioned this is visually more dramatic at night, with the light from inside the cabin bouncing in its reflection. Pressure could also be felt with opening and closing doors. One LO (Spinach LO) said she would always look outside at the windsock before opening the door, to "know how hard she needed to hang on [to the door.]." On her second day at the lookout, a really windy day, she recalled winds so strong against the door they created a pressure lock that felt as though the dead bolt had been set. She remembered examining the door several times to make sure it was indeed unlocked.

[15] On the NOAA website, you can calculate such indices: http://www.srh.noaa.gov/epz/?n=wxcalc_heatindex).

**4.3.4 Caution with the doors.** Many LOs had stories to share about wind experiences that involved doors. One LO (Rooibos LO), caught in a gust of wind, was trapped between the door frame and the door, and only the padding of his thick parka saved him from being squashed. Another occasion saw an arm broken in an outhouse door. A general fear was expressed by most LOs about the consequences of a door being blown off its hinges, and how that situation, similar to a window being blown out, could quickly escalate, with the wind wreaking havoc inside the building. For this reason, most LOs are extremely cautious with doors— suggesting that two hands should always be used or waiting until a gust has subsided. This approach is not always possible at lookouts where the winds are erratic or if the wind has changed. A few LOs (Grizzly, Sulfur and Cob LOs) noticed in 2015 that the normally prevailing westerly winds had shifted to the east in the spring. For one LO (Cob LO) this shift in winds had practical implications— especially with doors. He had been slammed by the same door that in normal prevailing winds would open into the wind. Ironically, I slammed my arm in the door at this very same lookout, carrying in water jugs from a helicopter service. The doors are heavy (to prevent them from easily blowing off their hinges) and it is wise to proceed with caution around them! Proceeding with caution around doors, a LO (Rooibos LO) explained when re-reading this passage, "becomes like second nature, until you forget about it. Luckily, this doesn't happen too often!"

**4.3.5 Hair on end.** Wind, in its role in shaping and moving weather, brings a range of different events and experiences. Lightning and thunder are particularly dramatic phenomena. Here, of the many different kinds of weather subject to felt experience (blizzards, rain, hail), because of its prominence in interviews, I focus on lightning. Given how dangerous lightning can be on the lookout, should one be "caught outside" this focus is not surprising. While described as beautiful and fascinating to watch, it was also described as humbling: makes one "feel small", "catches you off-guard", "reminds you who is boss", or "we're guests in these mountains." As the following LO describes,

> I was on Mayburn in 1987 on the edge of the Edmonton tornado and it was going down… like the cabin— the cupola was struck three hundred times that afternoon. I was stuck… so yeah, I've had some

> extreme weather at mountains, like blizzards, but blizzards I mean they're not a big deal [laughs]. (Patchwork LO)

LOs are particularly attentive to lightning because of the role it plays in starting fires. As we saw with fire weather, lightning strikes can create holdovers that are extremely dangerous in combination with gusty winds.

Some lookouts are more prone to lightning than others, if they are more exposed at the top of a mountain, located along a body of water or situated in a mountain range where storms track through. There are also different stages to experiencing the static electricity that accompanies lightning. Many LOs spoke of feeling a tension in the air as a storm was building, and then a sudden release of tension with the first strike. A few LOs explained that this had to do with ionization. Positive ions build prior to a lightning storm and a surge of negative charge is released with a lightning strike. Another LO would always feel sleepy before a lightning storm, as if she was ready to topple over, but the feeling would pass instantly with the first lightning strike. Having worked at four different lookouts, she explained she only felt this at a particular lookout that was a "real well of lightning activity." This differed from a few other LOs saying they could sense a storm coming by the incoming humid air (generally riding upsloping winds). "It just felt like something was gonna happen" (Cougar LO). Another LO (Rooibus LO) felt static in the metal heel of his boot, as he ran back from the rain gauge. He thought he had calculated enough time to get ahead of the lightning. Since then, if lightning is within a kilometer of the lookout, he does not venture outside—doing weather observations can wait. Other LOs have similarly described being "caught outside" when they really should not have been (Beet, Obscured, Grizzly, Porcupine LOs), with their hair standing on end (Sulfur LO), and the metal zipper of their jacket buzzing (Ranger LO) or burning their wrist talking on the radio (Patchwork LO). Lightning, like a sudden downpour of golf-ball sized hail moves LOs around in quite a hurry.

Lightning strikes also offer fleeting moments of awe which LOs have been caught outdoors trying to capture on camera. Many have expressed the camera's inability to capture these moments. Most LOs I spoke with had, over the course of their careers, received many direct hits on the lookout cabin or tower, and some, multiple times already

that year. While lookout cabins are now securely grounded with copper wire running down the hill from the lookout to "pitch the charge", direct hits can still wreak havoc at the lookout by blowing out a generator, a furnace—or the anemometer. Direct hits also generate considerable electromagnetic forces. One LO's independent, battery operated alarm clock jumped ahead two hours, while at the same lookout, LOs who had worked there previously reported seeing St. Elmo's fire[16] bridging between the radio mast and the shed's roof. LOs who had been around for over three decades shared stories of closer calls with lightning, back when the cabins were not as well grounded. In one case, ball lightning had entered the cabin and darted around the building (the LO instinctively dove for the propane tank, to shut it off). For another, the fire finder glowed red on the inside of the building. And for another, lightning entered through the chimney of the stove, blew the LO across the room and piled him into the corner. As a result this LO permanently lost hearing on the side he was hit. The strike also knocked the lids off the pots on the stove. At one point in time, the legs of the LOs' chair used to be grounded on four glass stubs.

### 4.4 Feeling in the Wind *and* Weather, Part Two

In this next section, I explore the LOs emotional engagement with wind and weather, as another form of experience, often entwined with the sensorial perceptions of wind that we have explored thus far. My intention was to see if any emotive qualities to weather can be attributed to the lookout job— that is, if the job shapes to any extent how LOs might emotionally engage with weather and wind in particular.

LOs referred to a range of emotions and qualities related to weather:

> Adrenaline rush, anxiety, fear, awe, peace, ease, solitude, restful, amped-up, thrill, excitement, survival instinct, supported, eerie, sleepy, tense, stranded, awesome, wonder, acceptance, tired, worn down, hope, desire, dangerous, anticipation, funny, relaxed, humbling, magical, spiritual, deceptive, risky, tough on the mind, day dreamy, intriguing, sickening, spooky, introversion, desolate, alone, blowin' like stink, just screaming above, blowin' like a banshee, erratic, inquisitive, being high (altitude), patience, feeling contained, and sets up your imaging for the day.

[16] A weather phenomena involving a gap in electrical charge similar to lightning, but not quite, sometimes mistaken for ball lightning or fire. It produces torch like flames.

Yet beyond experiencing feelings and sensations in their own bodies, LOs are also attentive to how animals respond to what is happening and may indicate change— or consistency— in the weather, often through their behaviour or movement. One LO (Beet) explained that marmots, ravens and insects "know something is going to happen", well before a storm arrives, and another (Cougar LO), sensed that the weather was going to shift if birds and small animals were nowhere to be seen around the lookout. Interestingly, the LO (Cougar) explained that birds and small animals would react the same way if there was a large animal in the area, or, potentially untrustworthy visitors—something that she paid much credence to, should the situation arise. In addition to shifting weather, the movement of birds in migration, along with the succession of wildflower blooms and different stages of grass (explored in the previous chapter), may signal transitions in the seasonal cycle. LOs with pets as companions observed changes in their behaviour prior to a storm (Powder, Patchwork, Beet, Grizzly LOs). One said that his dog "got all shivery and trembling" (Patchwork LO), sensing an incoming storm. He and his dog were the exact opposite in their enjoyment of weather. While he enjoyed the adrenaline rush of storms, the dog hated them and quickly sought the quietest spot with the most light inside the lookout (which happened to be up in the cupola).

Following are some weather situations common to the lookout job that indirectly involve wind.

**4.4.1 Views and no views.** As I spoke with LOs from almost exclusively mountain fire lookouts, these places were, given their high elevation—as one LO put it—"often in the clouds." Here, "being in the clouds" refers to being socked in, either in fog, smoke, a blizzard, or heavy rain (if it's real downpour). While one might think this experience of no view would bring about the same feeling regardless of weather, it was apparent in the answers of LOs that type and duration of weather weigh into the emotive experience of being socked in. Most LOs expressed enjoyment at being socked in, especially after being on high hazard alert, continuously scanning their areas for smoke during a long stretch of hot, dry weather. Socked in by fog, like rain, provided a rest day, a relief for the eyes and from responsibility. After all, the weather does not work on a 9-5

schedule, five days a week. Being socked in is like “having a weekend”, “your own private island in the sky”, “an invitation to introversion” or “encouraging of afternoon naps.” A story shared by one LO about another in the early days of the profession (when regulations were a bit looser and LOs could occasionally leave the lookout) illustrates this connection between fog and rest.

> Once a lookout […] went down to the Ranger Station for a party- drank a lot, fell asleep …in the morning woke up and opened his eyes to see nothing but white-out. Went back to sleep. Woke later to realize he was looking at the wall in the bunkhouse. (Botany LO)

Here, “nothing but white-out” is equated to being socked in. This story arose in conversation about fog, although the same could be said of a blizzard or heavy rain.

Fog can also “stir” feelings of restlessness. A few lookouts expressed how tiresome it became to be socked in by fog for two days or more (some reported being socked in for a week to ten days). As one lookout (Rooibos LO) put it, “You want to see something other than your feet”, echoed by others going further to claim they were up on lookouts for the view. Others mentioned that the world seemed “smaller” when socked in compared to clear-cut visibility when “the world seems so much bigger.” Other LOs described the world still “being there”, all one had to do was take a walk and try not to get lost! If you’re lucky, you may hear birds, or even see them. So experiences of being socked in by fog lend to a variety of experiences.

Socked in by smoke brought about different qualities than being socked in by fog. LOs referred to the conditions as adding “stress”, “worry” or “anxiety” to their day. In such conditions, the fire hazard is probably high and LOs are responsible to look for smoke in an area they are unable to clearly observe. They must spend more time scrutinizing with binoculars to discern whether or not it is a smoke plume. Looking for “grey on grey”—a potential smoke plume in a backdrop of smoke— was described by LOs as something to be tough on the eyes and hard on the mind.

Figure 38. Socked in by fog hiking up to the lookout. (Courtesy: Mary Sanseverino).

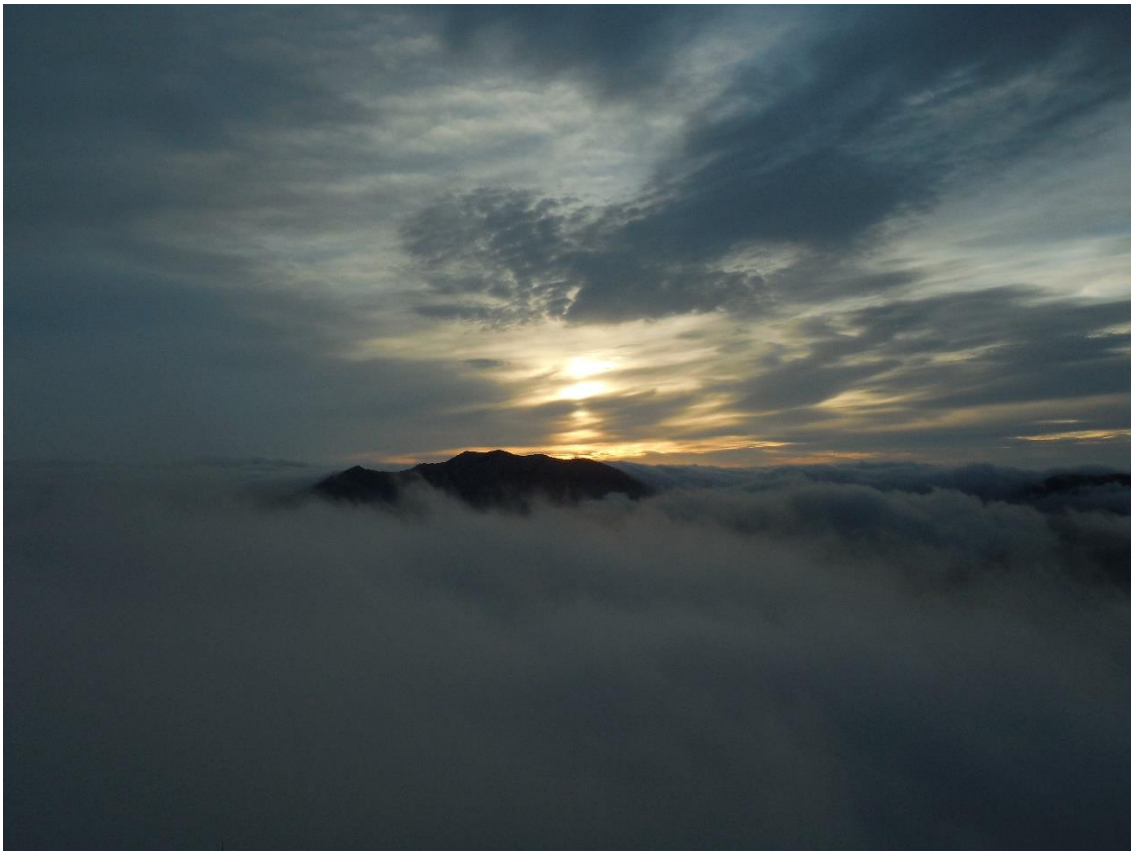

Figure 39. Looking out in undercast conditions. (Courtesy: Steve Davison).

A day socked in by rain, however, would bring about different feelings. Many LOs explained through the lookout job they had cultivated an appreciation for rain. Rain puts out fires, puts moisture back in the soil and forest fuels. It also means fewer people

are out in recreation areas potentially starting fires and fewer hikers, as they rarely go up to lookouts if there is no view.

**4.4.2 Ominous weather**. In periods of high or extreme fire danger, lookouts referred to a heightened sense of responsibility, and for some, anxiety. These conditions, as we saw in the fire weather section are hot, dry weather with gusty winds. Weekends or holidays, where an area might see an increase in recreational use (hikers, quad riders, campers) might exacerbate this feeling. LOs report spending more time observing in these high fire danger conditions.

Figure 39. Lightning, as seen from the lookout catwalk. (Courtesy: Andries Van Pelt).

With exception to the pleasure drawn from wind keeping bugs at bay or as a cool gentle breeze on a hot day, most LOs found the wind to be tiring, either from being difficult to work in outside or from disturbed sleep. It was also described as irritating—"that West wind really does a number on me", "the wind makes me grumpy", makes some feel anxious (in high fire danger) or unsettling, "your whole psychological day balance is hinged on the winds."

One LO for whom the wind made her feel "amped-up" (as in full of energy) found it more difficult to sleep. Another LO highlighted an important nuance,

> I think wind and weather can indeed bring out the full gamut of emotions in a single person in different contexts. What emotion might depend on

> physical, mental, emotional, or spiritual factors that are playing in one's life at any given moment. And then, whether one chooses to act (or react) instinctively or consciously, and in a positive or negative way. (Snowy LO)

And of course, so much depends on the context of wind as well— speed, direction, duration and what it is carrying: snow, rain, pollen, dust or smoke.

Not only are moods and senses intertwined, but moods, in rare cases may reflect (or be a reaction) to the weather currently unfolding, or signal weather about to unfold. As one LO told me, "there are lots of times you just know something should be happening— a fire, a storm— because then [after words] you feel 'haaaaaaaah, ok that's happened" (Cougar LO). So while someone might feel a certain way in different kinds of weather, feeling might also gesture to weather about to unfold.

**4.4.3 Acceptance: managing moods**. While the weather does tease out a range of emotions and influence different moods, as we saw in the above section above, if LOs reacted— or clung to their reactions to every passing bit of weather— it would be a long 35 years on the job. As one LO (Rooibos) stated: "At some point you realize when bad weather is coming and you either accept it or grumble."

Most LOs, in one way or another, expressed the idea of accepting the weather as something very important to the job, and this can be understood as a way of transcending strong (or subtle) emotions that might arise with different weather events. One LO described how the winds inflamed her sinuses and made going outside in such winds less alluring, but something she attempts to push beyond.

> You can acknowledge that this [the wind] is not fun at all, but make a conscious choice to FIND some fun in it. Like how the wind helps to move your legs as you tiredly walk up a big hill and you say thanks for the help. Or you watch how the wind moves the forest of trees, grasses, or doesn't move a marmot standing up to see what is making a noise - and you take solace in the wonders of nature. (Snowy LO, e-mail correspondence)

Many LOs echoed this idea that wind and weather (as we saw earlier with lightning) are humbling. They also readily remarked on the importance of all sorts of

weather for the environmental health of the area surrounding their lookouts, particularly when it came to the importance of rain in managing fires.

> It's funny how people in our society complain about the slightest thing that is uncomfortable for them. […] Each is a piece of a larger puzzle and to disregard the rain and the hail, or disregard the sun—we need each thing to have that balance. (Reflection LO)

Other lookouts gestured to the rhythm of the observer job and the passing of weather in the mountains as something that was constantly changing:

> I basically like weather, of any kind. […] The mood that comes with fog is wonderful, the sound of rain on the roof is wonderful, I like them all [chuckles], probably most of us do. It's all part of the rhythm, even being on extreme [fire danger], it's all just part of the game, the rhythm of life. Like that for a while, we feel important, then get fogged in and we don't have to do anything for a while. (Cob LO)

So, accepting different weather may imply accepting the different work pace (or cupola occupancy rates, as we saw in chapter three). But according to another LO, "different lookouts test a lookout person's weathering durability" (Sulfur LO). Some lookout places are more prone to lightning (as we saw above), precipitation—or wind. Some of these lookouts, in conducive conditions, are subject to extreme winds— what LOs often referred to as "wind events." A LO shared the following about one such event,

> when you've got something that extreme [referring to 200 km/h wind gusts], for me, there's something like a line of trust, that they [Alberta Wildfire] made this building well enough that it's going to hold up to whatever weather's thrown at you or that it's anchored into the ground that it's not going to go tumbling down the ridge… and… if something crosses that line of security, that's when the fear starts, you know [neighbouring LO] crawls under the bed or whatever… That plays a part in how well you weather— what the outside is throwing at ya'— whether it's wind, whether it's storm, it's lightning that's hitting right on top of you—it doesn't matter. (Snowy LO)

For this LO, as other LOs also mentioned, not succumbing to fear is a way of weathering in a positive way. In a similar vein, the LO in the next quote expresses how accepting the wind, allows her to keep a positive mental state:

> The wind brings things, it's ever changing. I just accept it. I don't complain about the wind because it doesn't change it one little bit—part of my personal philosophy— I'm not going to let the wind ruin my whole day. (Spinach LO)

**4.5. Summary**

As we've explored in this chapter, wind *moves*: birds, plants, trees, objects around the lookout, particles in the air, even LOs. The movements of these things are experienced through multi-sensorial engagements: by the sound the wind generates (a rattling shutter, flapping laundry), the smells the wind transports (smoke, cooking odors)—and may consequentially avoid being made—or in felt embodied practices walking around outdoors or as the wind pushes against things, like a door. Throughout, LOs are using their eyes and observing the winds effects (as we saw in chapter three). In stronger winds, sensorial engagement may become heightened: trees swaying, windows bouncing, howling and high pitches, the need to move by crawling. Not only are the senses entwined with one another, but also with feelings and moods.

While many LOs referred to the wind as being their least favourite weather phenomena— the scariest, due to its sheer force (can blow a person off mountain or significantly damage things) and the noise (like hail) it orchestrates. The wind has a plethora of practical implications: opening and closing doors, blowing things away, moving people around that calls for "thinking on your feet", in the moment. Working outside in such conditions can bring about irritability and fatigue—from hammering your thumb instead of the nail or leave one's ears aching, sinuses inflamed or lungs irritated. Fear, worry or anxiety might arise in hot, dry conditions, wondering how the wind may ignite a fire, change its behaviour or endanger the lives of fire fighters. Yet such emotions can be surpassed by "choosing not to react." LOs described doing so by "filtering emotions about the wind and weather out of one's mind" or alternatively "trying to have some fun with it", "watching with curiosity", or "taking solace in the wonders of nature." In the next chapter, I discuss these findings, and how they link to the wider literature.

# Chapter 5 Weather consciousness: awareness, encounter, wonder

*At present people see fogs, not because there are fogs, but because poets and painters have taught them the mysterious loveliness of such effects. There may have been fogs for centuries in London. I dare say there were. But no one saw them, and so we know nothing about them. They did not exist until Art had invented them. Now, it must be admitted, fogs are carried to excess.*

-Oscar Wilde, The Decay of Lying—An Observation

## Introduction

The central question of this research is: *How is wind experienced in lookout observers' daily practices, and what role does it play in the experience of related weather processes*? I have found that a wide variety of winds are a significant part of most LO's experience of their lookout place—wind is massive for LOs—and led to an overarching theme of weather consciousness. One LO's simple remark "we are weather conscious" (Grizzly LO), and the chuckle following the remark, drew my attention to the idea. A multi-sensory engagement with wind heightens LOs' *awareness* opening them to *encounters* with the more-than-human-world that instill a *sense of wonder*. In this final chapter, I explore each of these themes, drawing from chapters 3 and 4 and situating these findings in relation to what others have written. I end with suggestions for future work, an acknowledgement of research limitations and brief concluding remarks.

## 5.1 Awareness

The idea of awareness arose when trying to think of a way to group the range of ways LOs know and feel wind through their senses (chapter 4) and also recognizing their diligence in looking for fire and reporting on the sky and weather (chapter 3). According to the Oxford English Dictionary, awareness implies knowledge gained by means of outside information or through one's own perceptions. In different terms, awareness is both knowing, and a way of knowing. This need to be *aware* to do the lookout job, was

so regularly referenced, it was completely embedded in the conversations and experience of being LOs, and became almost invisible. Terms such as local awareness, environmental awareness and increasingly, public awareness of climate change, figure prominently in government reports (climate-ADAPT Europe, IPCC 2015, UNESCO: Changing Minds not the Climate) and gesture to awareness as knowledge gained by means of outside information (knowing). LOs' personal accounts of wind, on the other hand, speak of awareness gained through perceptions (a way of knowing).

In chapter three I explored different ways of seeing and the central role visibility plays in scanning for smoke and observing the sky. Noting obstructions to vision, LOs are highly attentive to the qualities of the weather that surrounds them. This aligns with Tim Ingold following James Gibson's (1979), approach to the visual perception of the weather: weather is first and foremost an experience of light (2005), and by extension something not that we see, but that we see in (Ingold 2010, 2011, 2015). However, while the weather's light influences looking for a smoke, so do particles in the air— or obstructions to vision. Through paying attention to wind in the processes of moving in or dispersing obstructions, LOs tease out the texture of the air: 'cleansed', 'thickened', 'moist' or 'dry'. Visibility, for LOs, is not only contingent on the weather; in a sense *weather is visibility,* and something the LOs are always talking about. Strauss and Orlove suggest "human responses to weather and climate rest on talking" (2003, p.6). If we extend this idea of talking to communication more broadly (and communication beyond words), LOs art work, as we saw in section 3.8, can be considered a way of expressing experiences of visibility on the lookout. The work of Thornes & Metherill (2003) and Thornes (2008) suggests that such is the case with Claude Monet's paintings of fog in the London series: "For me, a landscape does not exist in its own right, since its appearance changes at every moment; but the surrounding atmosphere brings it to life, the air and the light, which vary continually for me, it is only the surrounding atmosphere that gives subjects their true value" (House 1986, p. 221 in Thornes 2008, p.397).

In May 2015, I presented at the Thinking Mountains conference in Jasper, Canada. A panel on "immersive mountains" started me thinking about the immersive quality of the lookout setting early on in my research, even prior to beginning fieldwork. The dynamic weather pockets where lookouts are situated are constantly changing and

require continual attention. Mike Harris uses the phrase “ways of knowing” to draw our attention to knowledge that is “inevitably situated in a particular place or moment; that it is inhabited by individual knowers and that it is always changing and emergent” (2007, p. 4). LOs, as we explored in section 3.1, must learn the country around their respective lookouts and be able to recognize landscape features in different conditions— as views emerge or disappear, watching storms as they track through or are chased inside by a chilling wind, hot beating sun, sleet or a sudden down burst. Their experience of wind and weather are inherently emergent, as wind and weather pass through the lookout place. Smith (2014) notes the capacity of the wind to move survey photographers around. Taking a photograph requires waiting for holes in the wind, as LOs might also wait to open a door in gusty conditions or move from being stuck between the door frame and the weight of the door, pressing against a thick parka.

In chapter three, we learned that LOs are constantly attending to fleeting moments in the atmosphere; their views are ever-changing while hikers or other visitors to the lookout might think of it as fixed, as if “it’s just one view.” In addition to fleeting views, LOs are attentive to movement, change and consistency in the landscape and sky. They distinguish a spook from a smoke plume by its movement or behavior, and similarly observe the behaviour of other things: animals, especially the movement of birds in thermal currents or the updrafts along certain ridges or the presence of bugs around the lookout depending on how the wind is blowing and where one is situated.

Skilled vision (Grasseni 2004) is honed through diligent practices, discerning and detecting smoke and observing the sky. LOs descriptions of the *way* they look, scanning, zooming in with the binoculars or glimpsing a smoke out of the corner of their eye while doing something else further supports this quality of awareness. Greg Downey’s study of the sideways glance in Brazilian Capoeira illustrates that the ability to shift one’s vision around, and if developed correctly, “even see behind himself” (2007: pp. 224-227) Alain Berthoz (1997) affirms that perception is “simulated action” wherein anticipation “is an essential characteristic of the functioning of sensory systems” (in Howes 2009, p. 40). The very ability to describe the sound of the wind— to mimic it— and also draw parallels to it sounding like something else demonstrates an attunement or awareness to sound, as Low notes about Khoisan hunters awareness to the smell of wind and their  own scents on

the wind (2008: 68-70). Similar to sound, the ability to describe smells and felt experience moving in the wind also attests to LOs' heightened attention to wind, how they come to know about it and its effects (for example in being aware of how it affects their mood *and* knowing how to move beyond it). Studies in human biometeorology, the study of how weather influences biological processes, go further to explore how certain winds, such as foehns, cause headaches amongst some people (Strauss, 2008). But this is beyond the scope of my research.

LOs also need to pay more attention at certain times, for instance when the fire danger is high or in threatening weather conditions such as high winds. Cupola occupancy rates (the amount of time LOs are required to spend looking for fire each day) institutionalize, in the way that road signs remind the driver to proceed with caution on icy winter roads, how attentive LOs *ought* to be versus their own intuitive sense of how attentive they feel they need to be. This was a theme that repeatedly came up with veteran LOs, some mentioning that they did not need to be told how attentive they should be. They also commented that sometimes there are fires on "low" fire danger days, one LO (cougar) expressing "low doesn't mean no" and that being told discourages "thinking outside the box." As we have heard throughout the thesis, the weather doesn't work on a 9-5 schedule and demands a degree of flexibility.

For Ingold, such attention involves *waiting* on the world, drawing on the French word *attendre*, to distinguish it from suddenly focusing in on something (2015, p. 136). As described in chapter three, LOs do zoom in on a potential smoke, but this action punctuates a larger time period spent watching the skies unfold, wondering how long before the ground fog evaporates or where a smoke might emerge from the forest below. A LO spoke of continuing to see the landscape after he closed his eyes at night, others spoke of observations entering their dreams. Both of these examples speak to waiting on a world where attention is never really turned off, unless weather conditions make it impossible to see.

## 5.2 Encounters

Where and how do human wind encounters occur? Higgs' below comment on wildlands— and the relations that open up in them— provoked reflection on relations to winds in wildlands.

> I am not alone in recommending the abandonment of the term wilderness and replacing it with more precise and less loaded phrases. Wildness is the condition of being unconstrained and unconventional, perhaps wayward. One does not easily predict wildness. To be part of it, one must engage in reciprocal relations, giving as much as one takes, listening as much as talking. It requires what Gary Snyder terms "the etiquette of freedom." Wildlands are those where such relations take place. (Higgs 2003, p. 58)

What is unique about windy encounters in wildlands? To encounter, according to the Oxford English Dictionary, "is to meet or experience someone or something, often unexpectedly." Given the unpredictability of sudden gusts, especially in varied mountain terrain, as I have presented throughout the thesis, the unexpected nature of encountering wind seemed to fit well.

One encounters the weather in everyday life, in activities (i.e. hiking), commuting to work (i.e. walking, biking), or at work (i.e. farmers, fisherman). Some pay more attention and encounter weather more often, given the lives they lead and how daily activities are bound up in the weather. For LOs, weather encounters are such a large part of everyday life that it is perhaps more fitting to speak of one continuous encounter—one that continues beyond the lookout place. Dispersed throughout this all-encompassing weather encounter, are encounters with wind.

As presented in chapter 4, lookouts largely encounter wind through their senses. For Ingold (2005), weather and wind are "mediums of perception", something that we experience in and this is how I have come to position encounters with wind as encounters in wind. Thinking about wind this way allows an understanding of how birds or smoke might be observed differently in different weather, just as one might hear differently in stillness or in the drone of extended winds. The sound of the wind might be so strong that LOs seek out 'hideouts', in the shed, down a ridge, in a different part of the lookout building, in their mind. Wind encounters may differ depending on the wind speed and direction, sometimes blowing the wind sock in rapid circles, blowing it taut or leaving it

to flit in the air like a passing bird. Particles accompanying wind: precipitation (snow, rain, hail), pollen or other allergens, smoke, fog, add texture to the encounter. But at some lookout places, it is impossible (or very challenging) to leave the lookout and escape to a hideout at a lower elevation with winds too strong for walking around. The Beaufort scale would suggest discomfort walking at 90km/h, but LOs reported walking about at much higher wind speeds. Such bodily skill, learned from experience living in windy environments, aligns with Marcel Mauss' *techniques du corps* or "bodily techniques", the ways in which people from one society to the next know how to use their bodies differently (1934).

Encounters might also arise between what novelist Barry Lopez (1984) refers to as our "inner and outer landscape". Higgs describes this distinction as a powerful way of thinking about relationships between what is in us and out there in the world (Higgs 2003, pp. 149-150). Furthering his discussion of landscape and the imagination, Lopez (1986) describes the physical landscape as "baffling in its ability to transcend whatever we want to make of it. It is as subtle in its expression as turns of the mind, and larger than our grasp; and yet it is still knowable" (xxii). The desire to know the landscape and the *acuity* of the senses brings about noticing things that others may overlook (272), as we saw throughout chapter three with different ways of seeing.

**5.2.1 Cabin: inside outside encounters.** Lookout cabins offer shelter from the storm, a place for sitting and resting— or occasionally one of confinement in inclement weather. Certain weather, but wind in particular, confines, one LO using the term "incarcerates", LOs indoors. As we explored in chapter 4, the door to the cabin (or trailer, depending on the lookout) might not physically open if pressure locked or blown snow has drifted in front of the door. The cabins are exposed to weather to a higher degree than a temperature and light regulated city home. They can get very cold in the spring and fall, accentuated by stronger winds in these seasons. LOs feel changes in temperature and humidity inside the cabin, just as they also observe changes in light and visibility out the windows that cover a good part, if not all, of the cabin's walls. LOs hear wind sounds on the inside of the building or as the force of the wind hits things on the exterior of the building; feeling walls vibrate; watching windows bounce. Dominique Bachelart suggests

that cabins broadly offer experiencing a “different way of life”, to “inhabit nature” and the ‘big sky’; he suggests it challenges contemporary ways of living (2011).

Novelist Edward Abbey describes the following colourful encounter with the rising sun from his fire lookout, “the sun is not yet in sight but signs of the advent are plain to see. Lavender clouds sail like a fleet of ships across the pale green dawn; each cloud, planed flat on the wind, has a base of fiery gold. […] The air is dry and clear as well as cold; the last fog banks leftover from last night’s storm are scudding away like ghosts, fading into nothing before the wind and the sunrise” (Abbey, 1968, p.4). Endless were LOs descriptive encounters with the angle of the sun: at dawn and dusk, sun rise and sun-up from inside the warmth of one’s bed (depending on the time of year) or outside on the catwalk with a cup of coffee.

**5.2.2 Encounters with flora and fauna.** Encounters is another way to conceptualize the detailed observations LOs made of the *more-than-human-world*. As Sara Asu Schroer (2014) has shown in exploring the relationship between birds of prey and falconers, the attention of LOs, like those of falconers, is guided upwards, as ravens play in the wind or other birds in thermals. In addition to birds, LOs observed animals coming up to higher elevations to escape the bugs, lying in windy places where bugs would keep away, while pet dogs may seek out the least windy spots on the lookout. Through watching these animal behaviors, LOs come to know a little more about wind around the lookout, where it is windier or less windy, where thermals occur, where the updrafts are located.

LOs similarly describe wind meeting vegetation and causing trees that normally stand tall at lower elevations to “grow like carpets”, while other trees might grow bent to one side, depending on the prevailing winds. Such descriptions shed light on knowledge about wind direction, speed and presence in the surrounding environment. One LO described the impossibility of being able to grow lettuce at a mountain lookout (compared to her previous fire lookout tower) as it would get “abused.” When we talked about shutters for lookout cabins, another LO said she would like some for her plants. These encounters align with Donna Haraway’s idea of “becoming with” through

observing vegetation and animals, noticing the winds effects. How might wind be incorporated into discussions of more-than-human relationality?

Smith (2014) draws our attention to the absence of wind encounters in a normally windy place along the shores of Waterton Lake (Waterton Lake National Park, Canada). She suggests the wind "contributes to the world's becoming—found not only in the aesthetic charm of wind-shaped trees that huddle the shoreline, but also in the absence of the wind that provides an opening to a photographable moment" (Smith 2014, p. 124). Like survey photographers who avoided taking a photograph of Waterton Lake in any kind of wind, LOs may avoid doing things in certain winds: making smells that might attract animals (big or small); or, doing repair work: painting, hammering nails, cutting trees. And so while the wind can lend to a multitude of encounters, it also may lend to none, should it be possible to avoid them, or anticipating when they might emerge.

### 5.3 Wonder

Ideas of emergence, of different weather unfolding and also LOs anticipation of smokes or preparedness for storms and other forms of weather led me to think about wonder. It was also the expression on LOs faces, as they observed the sky and landscape around the lookout that, in retrospect, I feel is best described as a *wondrous* gaze.

From Socrates to Dr. Seuss, wonder has been subject to much philosophical curiosity and debate about how best to define it. I draw on Sheets-Johnstone who describes wonder as a state of slowness and reflection that requires us to "live with the feeling long enough to feel its character and demands. Genuine wonder is in this sense time-consuming, and, for this very reason, contrary to late twentieth century western life" (1999, p. 336). Coleman, in a study on free-skiing in the Rocky Mountains, notes that the act of "pausing and gazing" (2012, p. 195) creates the possibility to feel a sense of wonder: "it connects [him] with receptive passivity rather than pervasive action" (2012, p. 95). Scanning the country (and skies) around the lookout is constant opportunity for LOs to pause and gaze. Depending on fire danger, LOs might spend their entire day doing this very thing. Following the previous night's lightning storm, LOs might wonder

whether there are holdovers (fires, as we saw, that can smoulder underground for days, even months) in the landscape, waiting to pick up in gusty afternoon winds.

Philosopher and phenomenologist Max Van Mannen (2007) maintains that wonder must be evoked; it cannot be willed. Socked in by a storm or caught up in the drone of extended winds a LO may wonder when the weather will shift. Along similar lines as Van Manen, Philosopher of Religion Mary Jane Rubenstein furthers that wonder responds to a "destabilizing and unassimilable interruption in the ordinary course of things, an uncanny opening, rift or wound in the everyday" (2008, p.10). Spooks, as we saw in section 3.4, may also evoke wonder about whether or not what is moving in the air is a plume of smoke. One LO, for example, spent a good part of the day watching condensation evaporate off a rock bluff and visitors to the lookout (including myself) may initially see spooks everywhere. While these moments were described as "torturous" or a "source of anxiety", they start in wonder, not knowing if something is a smoke or not. Similarly, in section 4.1.1, we saw that spooks also come in the way of noise. One LO, upon hearing the straps hitting against her water tank, "*wondered* who was driving up to the lookout", while at another lookout it was the screens rattling like a motor that caused her to wake up in the morning "*wondering* who the hell is up here in their quad!" In all these instances, sight and sounds evoke wonder. Through the lens of wonder, attention is drawn to the feeling of unknowing.

Rubenstein lobbies for a broad definition of wonder, "contrived to include awe, marvel, astonishment, shock, dread, amazement and horror" (Rubenstein 2008, p. 9 in Scott, 2016). Rubenstein's broadening definition encompasses many of the LOs nuanced emotions expressed about different weather and wind; the complexity of feeling scared and awed in the same lightning strike; shocked by a sudden gust of wind, but amazed by its force to have blown you over. Clouds of pine beetles flying through the air, or, the wind blowing away objects or ripping the roof of the utility shed off in a fart-like sound, were described with shock and astonishment.

Perhaps, most of all, LOs were constantly marvelling at the beauty of the lookout surroundings, in awe, for example, of the perpetually changing view as light moved on mountains. Sources of beauty might be far away or close by: fog dancing in the wind over mountain ridges or wildflowers blooming mere inches off the ground beside the

outhouse. Activist, Scientist and writer Rachel Carson (1962), in her less known book *The Sense of Wonder* describes this ability of children to notice and delight in the small and the beautiful:

> A child's world is fresh and new and beautiful; full of wonder and excitement. It's our misfortune that for most of us that clear-eyed vision, that true instinct for what is beautiful and awe-inspiring is dimmed—and even lost—before we reach adulthood. If I had influence with the good fairy who is supposed to reside over the christening of all children, I should ask that her gift to each child in the world be a sense of wonder so indestructible that it would last throughout life as an unfailing antidote against the boredom and disenchantment of later years, the sterile preoccupation with things that are artificial, the alienation from the sources of our strength.

Rachel Carson's words resonate strongly with what I have learned from LOs, not only as a testament to their clear-eyed vision, seeing things that another might too hastily overlook, but in how LOs open up and feel the weather-world more broadly. For example, one LO observed how the wind would bend trees and grass, but not budge the marmots popping up to check out the sound of the wind, another, in section 4.4.3, describes such observations as "taking solace in the *wonders* of nature."

Wind and weather were often a muse for creative projects. What role might a sense of wonder have in these projects? And how might a different sense of time on the lookout help cultivate a sense of wonder?

### 5.5 Conclusion

How then can we come to think about awareness, encounter and wonder? Through considering weather consciousness, I understand these three themes as entwined. The lookout observer job requires—and cultivates—an awareness of wind and weather. Awareness also has important practical implications from living safely in arduous, yet spectacular, mountain weather. Lookout places are unique contact zones for weather encounters, given all the mountain lookout setting affords *and* LO's abilities to open up to feeling such encounters with something greater than themselves through their senses and emotions, as seen in processes of *becoming with*. Opening up through

awareness also extends to a sense of wonder that has potentially important ripple effects on creative engagements with weather and the world.

### 5.5 Future Research

To study the relationship between everyday life and the weather, has led me to consider questions such as, given increased fire intensity and severity in Canada's Northern Boreal Forest (and around the world), what potential role might LOs, through sharing their awareness of wind and fire weather, play in public awareness initiatives, such as Alberta Wildfire's Fire Smart Program that aims to support forest communities living with the threat of wildfires? Alternatively, what wider public education role do LOs play in interacting with recreationists, the wider Alberta Wildfire network or others visiting lookouts, especially when visitors become stranded at lookouts due to inclement weather? In these situations and others, how might weather strike up or end conversations?

When it comes to sensing wind, does the wind engage certain senses more than others? Is there a distinction to be made between *noise*, what Whitehouse describes in his study of birds as a "conflict" (2015, p. 58), and the *sound* of wind? While this distinction was something that I was often curious about during the research, only some LOs used terms to differentiate the two while others used it interchangeably. How might these questions of noise and wind, and findings from section 4.1 (sound), extend to communities living within the vicinity of wind farms? Is there common ground in inhabiting windy environments where the sounds made passing through structures (i.e. buildings, repeater towers, etc.) might also extend to wind farms?

How does the LO experience bring up a tension between science and other ways of knowing, between divergent ways of thinking about forecasting (formal forecasts versus personal ways of knowing), changing technology and honing weather related skills? What kinds of implications does this have for climate change knowledge?

### 5.6 Significance of the Research

Not unlike lighthouses or back-country warden cabins in national parks (Eckert-Lyngstad 2013), lookouts have been shuttered across Canada and around the world. In

the United States for instance, some lookouts are staffed on a voluntary basis, with people rotating throughout the peak fire season, while others are rented out as inexpensive accommodation. While the province of Alberta maintains the lookout observer job will not become obsolete, this research is a modest interdisciplinary attempt at highlighting the significance of this way of life and its pertinence to fields such as mountain meteorology, anthropology, fire ecology, and phenomenology. Lookout Observers wander a path between science and other ways of knowing; I've tried in this thesis to present this nuanced wayfaring.

This study holds benefits perhaps for other regions, mountain environments where extreme weather events are predicted to pose increasing threats (Kohler and Masseli 2009) or places of similarly erratic and challenging weather; or, where human observatories for the purpose of systematic observation mirrors the lived experience of lookout observers. While increasingly sophisticated remotely sensed data provides valuable data from a distance, it sometimes overshadows, in the rush to acquire ever larger amounts of distant data, the up-close, attentive observations by people able to detect subtle patterns. As Debarbarbieux and Rudaz (2015) note the received view of mountain peoples has been subject to much change throughout different historic contexts. While mountain inhabitants were marginalized and once cast as poorly adapted to society, today the reverse is true: acuity, common sense and adaptability in mountain dwellings are sought after components to resilient responses to a changing world; co-existing with weather is brought to the fore.

While the research does not address climate change, it was conducted in an era when climate change and socio-ecological futures increasingly occupy public attention and lend to many ways of knowing and interpretations, what Kirsten Hastrup, refers to as "analytical human endeavours" (2016, p. 37). Hastrup contends such endeavours rest on *discrete* phenomena. Such discrete phenomena, in the case of most LOs might rest on longer wildfire seasons with lookouts opening earlier; wildfires burning with increased frequency and intensity, experienced through being socked in by smoke for record periods of time; different rain patterns; or weather anomalies such as the unprecedented September snowstorm (2014), severe flooding (2013), or increased tornadoes and wind events. These extreme weather events draw attention to climate change. However, they

are dispersed amongst everyday weather, a place of discrete changes, but also the forefront of our immediate experience with the more-than-human-world, and allow LO's to share in the contestation that there's no (or less) of a seasonal pattern to weather than there used to be. Change in weather is hard to see, especially in places where changing weather is the norm, but a shift to Jancovic (2008) refers to as "lived weathers and climate" addresses the scale in atmospheric sciences.

Ingold calls for closing the widening gap that exists currently between the "experienced environment of our everyday lives— that is, the world around us— and the projected environment of science and policy discourse" (2014, p. 235). One way of closing this gap may be to emphasize weather consciousness that merges two kinds of awareness, identified above: awareness gained from outside information (i.e. public awareness about extreme wind events) and awareness gathered from personal perceptions going about daily life (i.e. awareness of wind in and around our homes by the sound it makes and its significance for understanding escalating winds in risk perception and preparedness for such events). With little to no background in meteorology, one can learn about the weather *from* the weather through an acuity of the senses, meeting such encounters perhaps with a sense of wonder about a world much greater than ourselves.

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# Appendix A: Information Letter

Weathered by Wind: Experiencing Place in the Rocky Mountains
Information Letter
Kristen Walsh, M.A. Student, Environmental Studies
University of Victoria
walshk@uvic.ca

This research program draws together environmental studies and anthropology to investigate perceptions of weather by people who inhabit remote mountain environments. The purpose of this ethnographic research is to better understand how the phenomenon of the wind is experienced in mountain weather processes.

My research objectives are twofold:

1. I seek to understand how experiences of the wind and its role in larger weather processes affect lookout observers in their daily practices at fire lookout towers.
2. How does the wind contribute, or not, to lookout observers' anticipation and reaction to wildfire processes, and do lookout observers understand these processes to be changing?

This research strategy is a way to discover and unfold multiple narratives connecting lookout observers and their relationship to the lookout place through mountain weather experience. The outcome of the interviews and photo elicitation, in addition to the researcher's observations of the lookout place, will lead to a M.A thesis and the anticipated publication of academic papers.

This research will contribute to existing literature about peoples' relationships to place by challenging assumptions that do not fully acknowledge the weather as a part of this process. Specifically, this research recognizes that lookout observers provide an interesting perspective into understanding how weather processes play out, both in their everyday lived experiences at lookout towers and in the landscapes they observe—and indirectly manage for wildfire processes.

All participants in this research project are fire lookout observers currently employed (or recently retired) by the Alberta Sustainable Resources and Development (ESRD) who inhabit high elevation lookouts for five to six months of the year and, in most cases, have been doing this job for 15 years or more. Lookouts new to the job or recently retired also provide interesting perspectives, so I am hoping to conduct a few interviews with them as well. The focus of this research is to generate new accounts. As such, interviews will be open-ended conversations about wind, weather and the lookout observer role in understanding and managing for wildfires. These interviews will take place at respective fire lookout towers where lookout observers live. All interviews will be recorded by audio equipment and field notes, and some photography will be used, if lookout

observers are willing. Thank you kindly for considering—please contact me as soon as possible if you are interested in participating in the research or have any questions or concerns.

# Appendix B: Participant Consent Form



University of Victoria

**Weathered by Wind: Experiencing Place in the Canadian Rocky Mountains**

You are invited to participate in a study entitled Weathered by Wind: Experiencing Place in the Canadian Rocky Mountains that is being conducted by Kristen Walsh. I am a graduate student in the department of Environmental Studies at the University of Victoria and you may contact me if you have further questions by e-mail walshk@uvic.ca.

As a graduate student, I am required to conduct research as part of the requirements for a degree in Environmental Studies. It is being conducted under the supervision of Dr. Eric Higgs. You may contact my supervisor at ehiggs@uvic.ca.

This research is being funded by the Social Science and Humanities Research Council and the Alpine Club of Canada Vancouver Island Section.

**Purpose and Objectives**
This research program draws together environmental studies and anthropology to investigate perceptions of weather by people who inhabit remote mountain environments. The purpose of this ethnographic research is to better understand how the wind is experienced in mountain weather processes. My research objectives are twofold: First, I seek to understand how experiences of the wind affect lookout observers in their daily weather recording and observational practices at fire lookout towers. Second, how does the wind contribute, or not, to lookout observers' anticipation and reaction to wildfire processes, and do lookout observers understand these processes to be changing?

**Importance of this Research**
Research of this type is important because little has been written about what it means to live in windy and fast changing weather. Climate change studies in mountain ecosystems signal that wildfires are increasing worldwide. What role does this wind play in this increase? This research will contribute to the recently emerging scholarly literature around wind and resource management and human experience of fast-changing weather.

**Participants Selection**
You are being asked to participate in this study because you live, or have recently lived, for five to six months of the year in windy environments and fast changing weather. As lookout veterans, you also have a longstanding residency of the same or several lookout places and will understand potential changes underway in the landscapes you observe and the weather patterns you experience. If you are a newcomer to the lookout job, you offer fresh eyes on these processes. You were recommended by the Alberta Environment and Sustainable Resource Development as good candidates for this research.

**What is involved**
If you agree to voluntarily participate in this research, your participation will include open-ended interviews and photo elicitation. These conversations will be about wind and weather, how they affect your lookout observer role and how you understand fire processes. I will talk to you about historic survey photos taken from your lookout or nearby, and ask your insights on how the landscape may have changed. These interviews will take place at the fire lookout tower where you are working. All interviews will be recorded by audio equipment and a transcription will be made. I will shoot panoramic photographs (360 degree view) from lookout towers for analysis and I will make observations and take notes. I will take photos of you only if you are willing. In all, this will require an hour of your time for the interview and about three more hours of my presence at the lookout. I understand entirely if you have to work during this time and do not expect you to stop your regular observations and other lookout responsibilities. Upon leaving, I will leave a blank journal with you, in case you have any remaining thoughts or observations that you would like to track over the remainder of your season. This is completely voluntary.

**Inconvenience**
Participation in this study may cause some inconvenience to you in the form of time. You will have to make time to meet for an interview but you can decide your level of involvement and the time that you have to commit. The anticipated time I will spend at your lookout tower is four hours. The interview will take approximately one hour.

**Risks**
There are no known or anticipated risks to you by participating in this research. Any information disclosed in interviews or observations that could impact your job security in any way will be systematically discluded in the writing of the research results.

**Benefits**
The potential benefits of your participation in this research include: a means by which you can contribute to understanding how wind and wildfire processes may be changing in mountain environments and the important role fire lookout observers have- and continue to play—in understanding these processes. Your perspectives will also benefit the state of knowledge by drawing attention to how weather contributes to the connections people make to the places where they work and live.

**Voluntary Participation**
Your participation in this research must be completely voluntary. If you do decide to participate, you may withdraw at any time without any consequences or any explanation. If you do withdraw from the study your data will be used only if you agree.

**On-going Consent**
To make sure that you continue to consent to participate in this research. If you are willing to have me return for a second interview, or to spend a few nights camping at the lookout to partake in participant observation, I will discuss your participation again. If

you are unwilling or unable to continue, withdrawal from the project at any time is possible. You will have the right to take any information given during the interview process with you upon withdrawal from the project.

**Anonymity**
I will do my best to ensure anonymity, but there is a chance, given the small community of lookout observers that some information may be recognizable by others. Your personal names will not be published in the dissemination of results, unless you wish to be recognized by name or by photograph by indicating so on this consent form. If you choose to remain fully anonymous, I will endeavour to make you as anonymous as possible in the dissemination of my results.

**Confidentiality**
Due to the small size of the community, the targeted nature of my research, and the fact that you were recommended for this study, there can be no guarantees of confidentiality. After your interview is transcribed, you will have the opportunity to review the transcript and make any alterations prior to data being made final. Until then, interview data will be stored on an encrypted computer or in a secure location.

**Dissemination of Results**
As stated, the data will be used as research for my M.A. thesis. It is anticipated that the results of this study will be used as data for participation in conferences (e.g. Mountains of our Future Earth Conference) and potential publications as academic papers. The data will be protected within digital research files. Digital files will be archived by myself and are available upon request. The information will be housed in the Environmental Studies Department's Visual lab (under my guidance). The data may be used in the future research, if you grant me permission to do so. In this case, I will provide you with an information letter about the way it is to be used, and I will require verbal or written permission from you.

**Disposal of Data**
Data from this study will be stored on a secure server at the University of Victoria. Additional material that is generated from this research, such as journals and photos, will be stored at the University of Victoria as long as relevant research in the region is being pursued, and may be used for future research. I will anonymize the data to ensure that it will not be used in a way that compromises the integrity of participants, I cannot ensure your complete anonymity as stated above, and given the small lookout community it may be possible for some to recognize you.

**Contacts**
Individuals that may be contacted regarding this study include Dr. Eric Higgs or myself at the phone number at the beginning of this consent form. In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

Your signature below indicates that you understand the above conditions of participation in this study, that you have had the opportunity to have your questions answered by the researchers, and that you consent to participate in this research project.

| *Name of Participant* | *Signature* | *Date* |
|---|---|---|

**Visually Recorded Images/Data** Participant provide initials, *only if you consent*:

- Photos may be taken of me for: Analysis _____ Dissemination* _____

*Even if no names are used, you may be recognizable if visual images are shown in the results.

I consent to be identified by name / credited in the results of the study: _____ (Participant to provide initials)

I consent to have my responses attributed to me by name in the results: _____ (Participant to provide initials)

**Future Use of Data**

I consent to the use of my data in future research: _____ (Participant to provide initials)

I consent to be contacted in the event my data is requested for future research: _____ (Participant to provide initials)

***A copy of this consent will be left with you, and a copy will be taken by the researcher.***

# Appendix C: Interview Questions

Interview Questions (re-worked slightly in the field, after two pilot interviews). The initial question was asked to start a conversation and subsequent prompts (bullet points) were used.

1. Can you tell me about your experience/background doing the lookout job?

    - How many years have you been doing the job?
    - What lookouts have you worked at?
    - What were the cabin types?
    - What is your favourite lookout?
    - Do you have a preference for high or low elevation lookouts?
    - Do you have pets/family/friends who accompany you in your lookout work?
    - Do a lot of visitors come to the lookout (recreationists, forestry employees, family and friends)?

2. How does the weather effect your ability to observe?

    - Is there a link between wind and visibility, or seasons and visibility?
    - Does light play out differently on the land at different times of day/season/weather?
    - Do clouds play an important role in predicting weather?
    - Are there things you find visually entertaining up here and if so, has this led to any creative projects?
    - Does your 'Seen Area' change in different weather and if so, how?

3. Do sounds and/or smells animate your understanding of wind and weather, or overall experience on the lookout?

    - Do sounds affect your sleep or daily routines on the lookout
    - Do you recognize pressure or temperature changes or wind chill
    - Does the weather affect the amount of time you spend indoors or outdoors
    - Are there visual/auditory/olfactory things that you need to be more attentive to for the lookout job or for understanding weather
    - Are there sights/sounds/smells/feelings that "matter"
    - Do you observe things moving in the wind

4. Do the photographs I am showing you help to think about the relationship between wind and wildfire processes or changes in the landscape over the years?

- Do you notice any changes in the landscape between the historic and the repeat images?
- Is there any recent wind throw in your area or red belts from chinook winds, if so, can these areas be seen in the photos?
- Do you notice a change in the weather in the past ten years (or longer, if you have been here longer)?
- Do you notice a change in wildfire processes in the past ten years (or longer, if you have been around longer)?
- What role does wind play in wildfire process (fire weather and fire behaviour)?

5. Local Winds

    - Can you speak of local winds at your lookout?
    - What are your prevailing winds here?
    - Where do storms come in and do these change over the course of the season?
    - Have the helicopter pilots ever talked to you about winds up here?
    - Have you heard any stories about winter winds or found evidence of them in the spring time?
    - Can you describe the winds up here in a single word?
    - Do you notice a difference in wind patterns this year or over the past ten years?
    - Do you put up shutters in high winds and if so, at what speeds?

6. Emotions and Feelings to winds (or weather more broadly)

    - Have you noticed anything about your feelings and winds or how the presence/absence of winds (or different types of weather) might affect feelings or moods?
    - Have you dreamed about the wind/weather/lookout job?
    - Does the wind affect your comfort zone/feeling secure?
    - What does it feel like to be socked in or stuck inside in high winds Do you walk outside in rough weather?
    - What is it like when there are no winds? Does this ever happen?
    - How does the sound of wind play on your emotions or relate to your other senses?

7. Do you find the lookout job has changed the way you observe, engage with or know about weather? If so, does this extend beyond the lookout place as well?

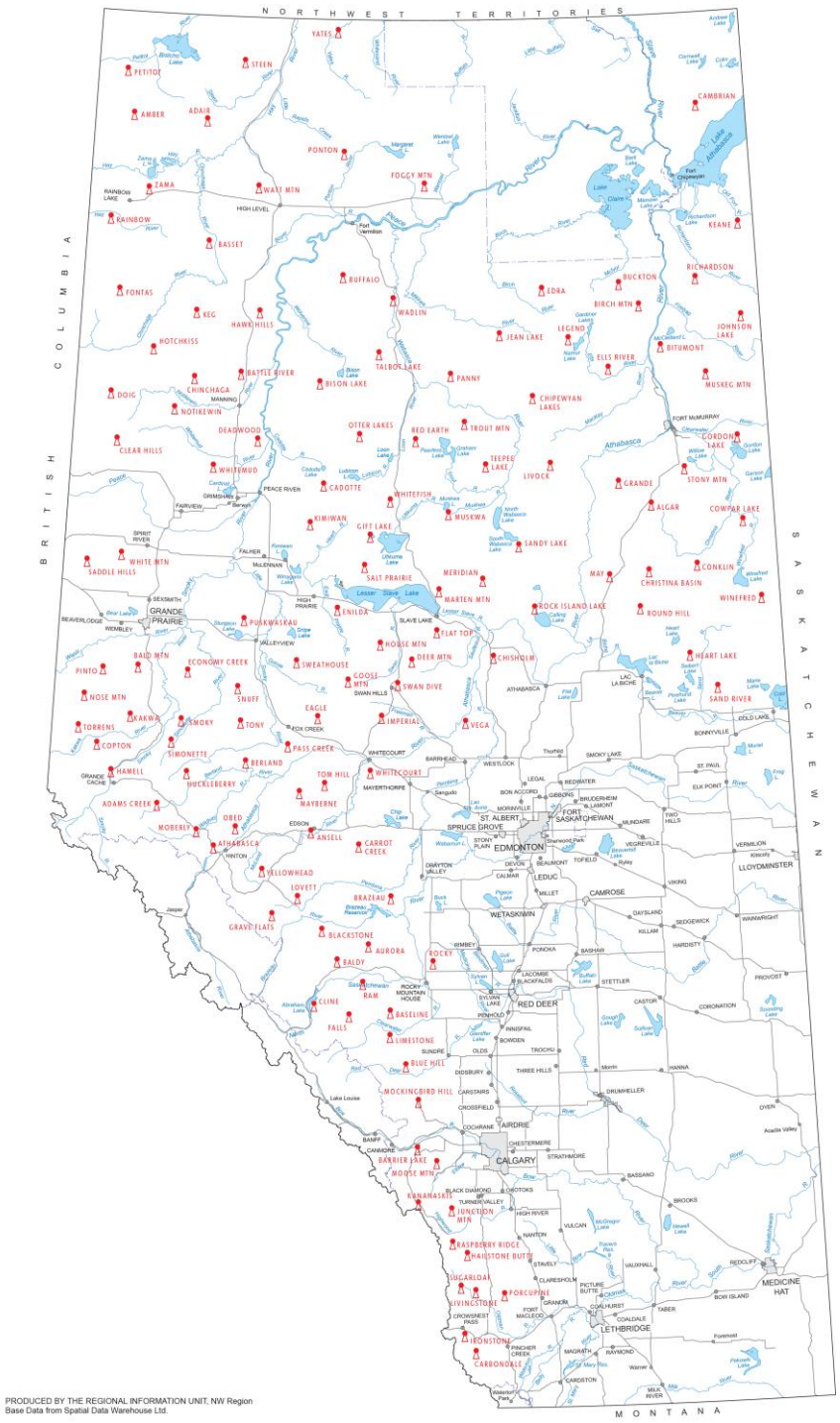
    - What weather conditions do you prefer on the lookout?

- Do you have a favourite season on the lookout?
- What is it like to arrive here in spring and to leave in the autumn?
- Do you observe vegetation change throughout the passing seasons?
- Do you follow forestry or other weather forecasts or other digital forms of monitoring weather?
- Do you feel the lookout job has changed you as a person?

Further questions if times permits

- Can you share a story of your most vivid encounter with the wind?
- What are some of your daily activities on the lookout How does the wind/weather affect these activities?
- Have you ever lost objects or had something broken in the wind?
- Does the wind/weather affect the amount of time spent on the radio?
- Do you have any stories about lightning or other extreme weather or storm events?
- How do frontal passages affect you/your visibility/fire processes?
- Why did you first start the lookout job?
- What draws you back to the lookout job?
- What do you do in the off-season?
- What is it like to leave the lookout and transition back into life at lower elevations?

# Appendix D Map of Alberta Fire Lookouts[17]




[17] This map is meant to give a sense of the dispersion of fire lookouts dispersed across the province of Alberta. Location names are purposefully blurred protect anonymity.