

How Conflicting Policy Choices in Canada May Have Contributed to One of the Worst Catastrophes in Years: The Jasper Wildfire

By Aaron Yixuan Zhang

AUTHOR BIO

Aaron Zhang is a local high school student from Texas with a glowing passion for fishery conservation, environmental science, and forestry. As an avid fly fisherman, he hopes to pursue his dreams of cold water fishing conservation and to conduct more pivotal research on threats to fisheries and vulnerable areas in North America.

ABSTRACT

In recent years, global climate change and changing environmental policy in North America have put forests at an all-time risk for devastating wildfires. Specifically, in 2024, a megafire known officially as the Jasper Complex Fire devastated the town of Jasper and the surrounding national park. The fire burned around 95,000 acres and caused around one billion CAD in damages. This paper primarily focuses on the Jasper Megafire and its causes, specifically dealing with economic changes to Parks Canada. By using information and statistics from climate models in Jasper National Park, wildland policy changes to Parks Canada under the UCP, and residential concerns in the Jasper townsite, this paper analyzes the environmental and political causes of the Jasper Megafire through many years of global environmental change and budget cuts. Moreover, interviews with a resident revealed deep concerns with Parks Canada mentioning ineffective prevention strategies and buildup of fire fuel. The intent of this paper is to call for stronger fire management and policy to protect Canadian forests.

Keywords: *Jasper wildfire, Jasper National Park, Parks Canada, climate change, forests, wildfires, fire management, policy change, environmental change,*

WILDFIRES AND FIRE CYCLES

Wildfires occur in every single continent except Antarctica in various biomes such as grasslands to boreal forests (Team, 2025) . They are part of the fire cycle and play a vital role in ecosystem regeneration as they clear dead underbrush, making way for new growth. Wildfires also release nutrients from plant material, enriching the soil and paving way for a new generation of vegetation (Team, 2024b). As trees grow, they outcompete fire-dependent species causing flammable fuels to build up and cause destructive fires. As a result, they must be regularly treated through prescribed fires. Planned or prescribed fires are fires set to meet certain objectives such as safety, promoting plant growth, or curbing unwanted fires in the future (*Prescribed Fire*, 2016). Without these fires, vegetation would accumulate, and soil fertility would greatly decrease, leading to an ecosystem imbalance (Pereira et al., 2021). If this imbalance is not addressed, it may cause unwanted fires and megafires.

EMERGENCE OF MEGAFIRES

A megafire starts as several individual fire spots that, under favorable weather conditions, merge to create a single super front with extremely high, cohesive fire line intensity, causing a large, burned area (Vassiliadis & Maditinos, 2011). Furthermore, destructive fires have extremely high economic impacts. On average, wildfires cost the United States between 394-893 billion dollars per year (Committee, n.d.). That is around 3-4% of the total GDP. Many of the costs do not come from actual damage, instead it comes from diminished property value from the disturbed areas, highlighting the destructive, long-term power of wildfires (Committee, n.d.).

ANTHROPOGENIC ROLES ON FIRE SEVERITY

Recently, fires have been more destructive and costly, and its unusual severity raises potential concerns about anthropogenic roles in these events (Zhong, 2024). Recent budget cuts have slowly left Alberta more vulnerable to megafires, most suggest it is due to a loss of equipment and financial resources. For example, the Wildland Rappel Program, a specialized air firefighting program could extinguish small fires from the air before they merged and was largely successful until the UCP cut the program in 2019 (Weber, 2023); furthermore, from the same cut, Alberta ceased staffing between 15-30 of their 127 lookout towers and also reduced their air tanker program (Gabbert, 2019). This made Alberta more vulnerable than ever for a devastating fire.

ROLE OF CLIMATE CHANGE

Climate change plays a role in the increase of global temperatures. For example, when fossil fuels are used or when trees are cut down, the carbon that is stored in them is released into the atmosphere and carbon concentrations begin to build up (Konyn, 2021). When sunlight reaches the atmosphere, most is absorbed but some light is re-emitted back into space. At this point, heat interacts with CO₂ in a way that prevents it from escaping, trapping it and causing increased temperatures (*How Does Carbon Dioxide Increase Earth's Temperature?*, n.d.). These increased temperatures cause much more extreme fire risks, especially in forested areas (Son et al., 2021).

A LARGER GLOBAL CONTEXT

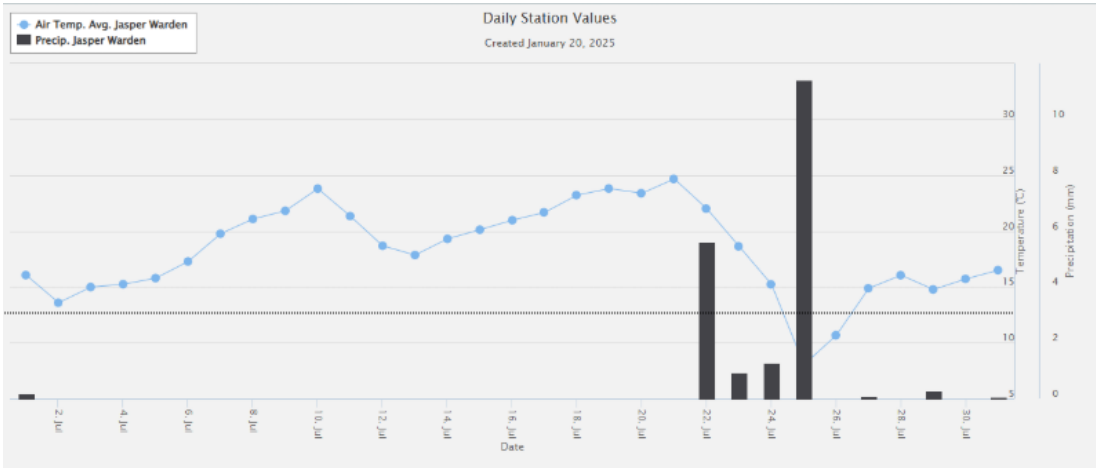
The Jasper Megafire was one of the most destructive fires in Canadian history, causing widespread environmental and economic damage. This topic was chosen due to the continued increase in number and magnitude of Canadian wildfires in recent years- a trend that cannot be solely blamed on natural factors. Understanding the causes that led to the fire is crucial for future fire mitigation and prevention strategies. Jasper is not alone, many other regions across the world are seeing record breaking devastation from wildfires such as California ([Walker, 2025](#)) and Australia ([Australia Fires, 2019](#)). For example, the current fires affecting Los Angeles have been largely attributed to having anthropogenic factors from budget cutting and disarray from a lack of leadership, aside from other environmental factors ([Ellis, 2025](#)). All these factors have aroused suspicion of the potential for anthropogenic roles to play a large role in the development of wildfires, specifically the Jasper Megafire. This research paper seeks to investigate the role that humans played in the development of the Jasper fire and how the outcome may have been affected if adequate resources were given to fire prevention efforts years before. By understanding the role of humans in devastating wildfires, we can shed light on preventive policies and fire management programs. As a result, these newfound understandings may prompt reform in the face of growing wildfire risks and can mitigate the effects of future wildfires.

ENVIRONMENTAL FACTORS TO THE JASPER MEGAFIRE

In July 2024 a megafire burned approximately one third of Jasper, Alberta, a bustling tourist town seated in the valley of the Canadian Rockies. The Jasper Fire burned a total of 32,722 hectares or about 81,000 acres (Parks Canada Agency, 2024). The location of Jasper does make it more susceptible to large fires. Jasper is in a deep valley at the convergence of several mountain peaks. In valleys, air is accelerated due to the rugged terrain like when water is sped up when entering a tunnel. As a result, it acts as a wind tunnel and creates gusty winds ([Valley Weather](#), n.d.). Additionally, wind provides additional oxygen to the fire, an element crucial to its spread. This increases the intensity of the fire while simultaneously increasing its overall speed, allowing it to move at extremely violent magnitudes in valleys ([NC State University, College of Natural Resources, 2025](#)) However, topography cannot solely take responsibility for the devastating fire. Instead, the town has had major impacts from climate change, seeing unprecedented high temperatures and dry periods throughout the past few years. For example, Figure 1 shows the temperature to precipitation distribution for the month of July, 2024. The average temperature in Jasper is 12.5C in July, represented by the dotted black line ([Jasper Climate: Weather Jasper & Temperature by Month](#), n.d.). On the days leading up to the fire, the average temperatures were anywhere between 18 and 25C, almost double the typical temperature. Jasper also had a dry stretch prior to the fire with only 0.2mm of rain on July 1st until going dry for 21 days straight ([Current and Historical Alberta Weather Station Data Viewer](#), n.d.). July is said to be Jasper's wet season with an average of 104mm of precipitation falling. However, only 20mm fell that month ([Jasper Climate: Weather Jasper & Temperature by Month](#), n.d.).

Figure 1

Jasper Temperature and Precipitation Map for July 1-31, 2024



Note. Adapted from *Current and Historical Alberta Weather Station Data Viewer* (n.d.), by Environment and Climate Change Canada. Copyright [n.d.] by the Government of Canada. Range: July 1-31, 2024, dashed line represents average temperature*

BUDGETING CONFLICTS IN CANADA

Alberta has been called on to restrain spending after experiencing numerous budget deficits, prompting budget cuts after COVID-19 skyrocketed inflation ([Alberta Government Must Further Restrain Spending to Stabilize Provincial Finances | Fraser Institute](#), n.d.). Between the years 2018-2024, the wildfire management expense section faced a close to 30 million dollars cut (Lambert, 2023a). According to the tables, in 2018, the wildfire management budget stood at close to 130 million CAD and experienced a decrease of 12.5 million in 2019 (table 1), and continued to decrease due to impacts of the pandemic, eventually falling to 100.4 million by the end of 2024. Similarly, the wildfire pre suppression and response expense budget stood at 192 million in 2018-2019 and was projected to hit a staggering 485 million between 2019-2020, however, after several intense cuts, it dropped to a meager 46 million between 2023-2024 (table 1). This is nearly a 450-million-dollar reduction.

Table 1
Parks Canada Budget Allocation for Wildfire Related Expenses (2018-2020) Estimate

Expense by program (in thousands)	2018-19 Budget	2018-19 Actual	2019-20 Estimate
6- Forests	--	--	--
6.1- Wildfire management	130,169	120,356	117,560
6.2- Wildfire Pre Suppression and Response	--	192,427	485,000
6.3 Forest Stewardship and Trade	55,072	52,670	56,656

Subtotal	185,241	365,453	659,216
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Note. (Adapted from *Budget 2019: Estimates, Government of Alberta 2019–20* (n.d.), by Government of Alberta. Copyright [n.d.] by the Government of Alberta. (certain sections have no data*)

Table 2

Parks Canada Budget Allocation for Wildfire Related Expenses (2023-2025) Estimate

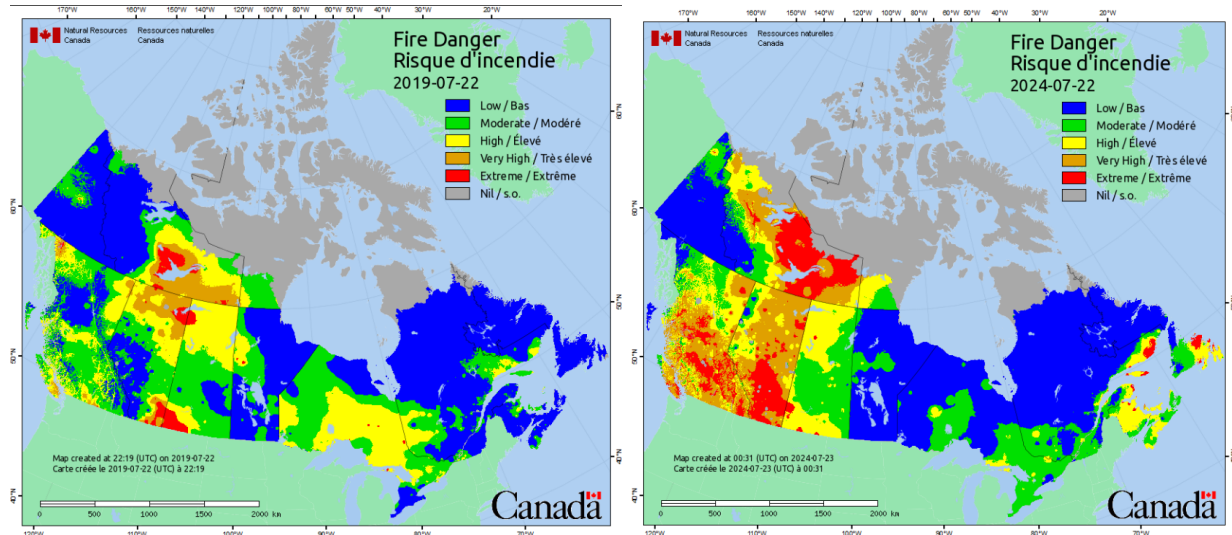
Expense by program (in thousands)	2023-24 Budget	2023-24 Forecast	2024-25 Estimate
2- Forests	--	--	--
2.1- Wildfire management	100,421	103,165	155,364
2.2- Wildfire Pre Suppression and Response	69,637	45,939	42,239
2.3- Forest Stewardship and Trade	--	45,973	--
Subtotal	170,058	195,077	197,603

Note. (Adapted from *Budget 2023: Estimates, Government of Alberta 2023-24* (n.d.), by Government of Alberta. Copyright [n.d.] by the Government of Alberta. (certain sections have no data*)

Coincidentally, the decrease in firefighting resources comes at a time where fires are increasing in number and severity, suggesting a potential relationship between these two ideas. In a map released by Parks Canada (figure 2 and 3), fire danger concentrated around the Canadian Rockies was generally “low” in 2019. However, on the same date in 2024, fire danger in the same area was characterized as being “very high” or “extreme” (Canada, n.d.). Although it is true that an increased fire risk can be associated with climate change ([Wildfire and Climate Change | U.S. Geological Survey, n.d.](#)), such drastic increases are mainly seen in British Columbia and Alberta only, raising questions on each province’s individual contributions to increased fire danger.

Figure 2 and 3

Parks Canada Released Map of Fire Danger Changes From 2019-2024



Note. (Canada, n.d.)

Note. (Canada, n.d.)

ALBERTA'S WILDLAND FIREFIGHTER RAPPEL PROGRAM

A potential explanation for increased fire danger can be found when investigating what areas of the firefighting department were affected. Specifically, in 2019, in response to a lowered budget, the United Conservative Party (UCP) prompted the shutdown of Alberta's Wildland Firefighter Rappel Program (WFRP) ([PressProgress, 2023](#)). The program consisted of a unit of more than 60 specially trained firefighters around the province. The firefighters were often seen rappelling from helicopters into the rugged Alberta wilderness (figure 4). The primary purpose of the WFRP was to intercept small, remote fires or to create access points for large fires which would then allow response crews to take over. ([Minimal Savings Found by Cutting Alberta's Wildfire Rappel Program, n.d.](#)). However, the cut that disassembled the program left many regions vulnerable to destructive fires because regular fire crews could not access them as easily as helicopters could. This comes after several destructive fires in Alberta such as the Fort McMurray Fire in 2016 ("Fort McMurray, One Year after the Massive Fire Known as 'The Beast,'" 2017) and the Verdant Fire in 2017, both destroying critical infrastructure and placing immense pressure on the already strained Alberta firefighting department.

Figure 4

Alberta Wildland Rappel Firefighter Descends into Remote Forest



Note. (a firefighter rappels from a helicopter to fight remote fires in Alberta's wilderness), taken by Jamie Parker, firefighter for Alberta Wildland and Environment

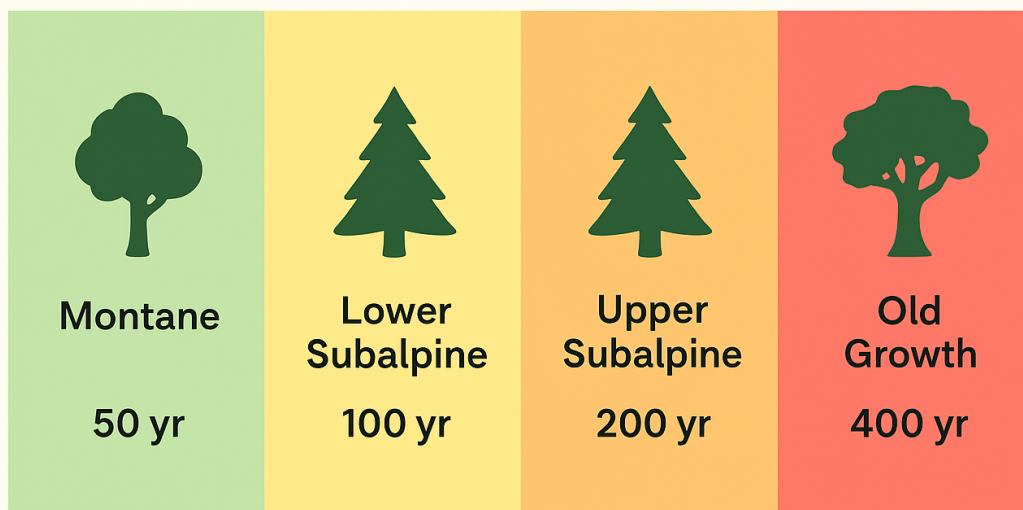
According to experts, Jasper itself has also been greatly affected by the expensive budget cuts including a 15 million dollar cut in 2016, causing firefighting funds to be pulled out of Alberta's emergency budget. (Lambert, 2023b).

PRESCRIBED FIRES IN JASPER NATIONAL PARK

Aside from budget cuts, Parks Canada's management plan has also raised some potential questions about the causes of the fire. In a Strategic Environmental Assessment of Jasper National Park Management Plan released by Parks Canada, there were potential flaws that may have indicated the eventual ignition of the fire, years in advance (Parks Canada Agency, 2022). For example, it was stated that since the establishment of Jasper National Park in 1907, there have been significant efforts to suppress wildfires, including natural ones. Only within the last 40 years did Parks Canada start to execute prescribed fires; however, these controlled fires have not compensated for removing Indigenous fire practices and WW2 fire suppression efforts. In other words, Jasper is not doing enough to make up for the heavy suppression of fires decades prior, leading to a great increase in fire danger (Parks Canada Agency, 2022).

Figure 5

Ideal Fire-Return Intervals by Fire Regime Zone — Jasper National Park

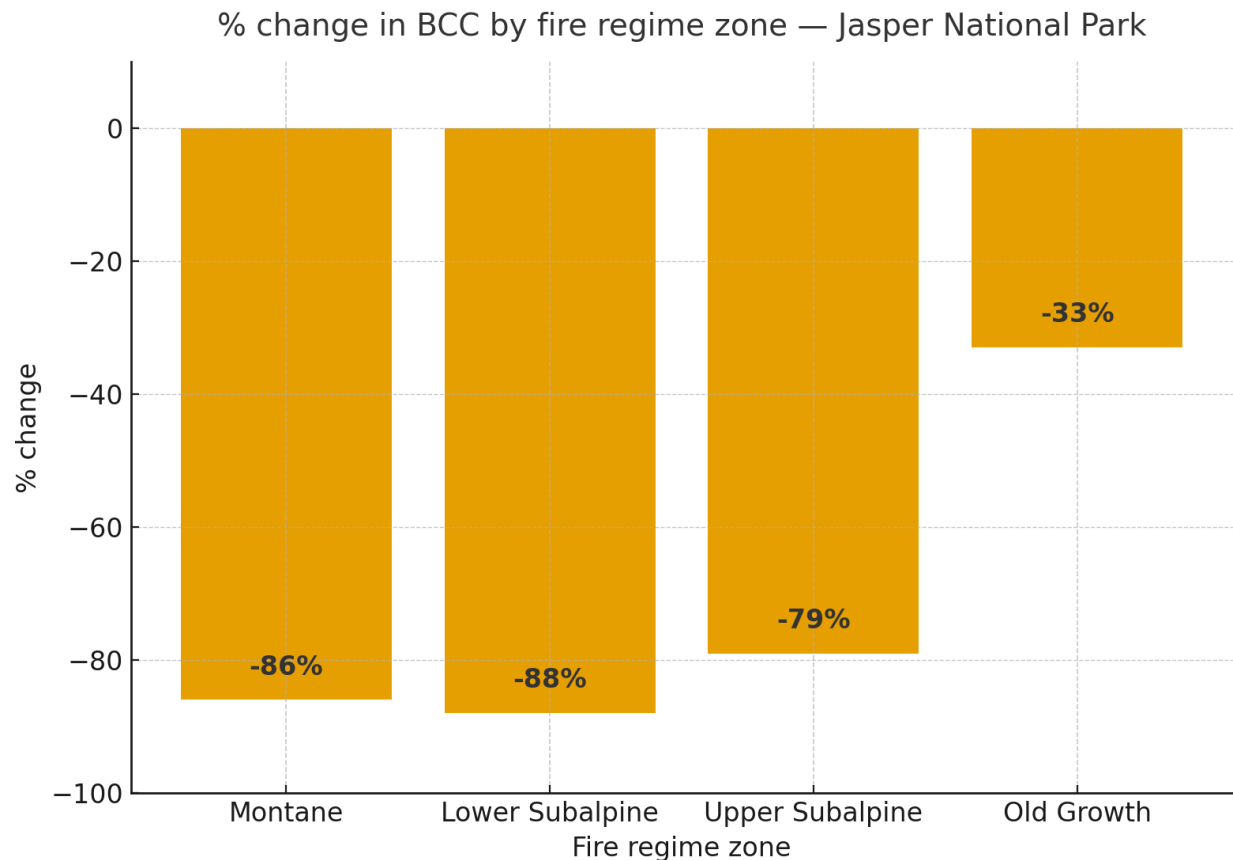


Note. Adapted from Parks Canada Agency (2022).

Note. Adapted from *Fire Management in Jasper National Park* (2022), by Parks Canada Agency. Copyright 2022 by Parks Canada Agency.

There are four fire regime regions in Jasper National Park: Montane, Lower Subalpine, Upper Subalpine, and Old Growth. Ideally, Montane regions should experience one fire cycle every 50 years, Lower Subalpine every 100 years, Upper every 200 years, and Old Growth every 400 years ([Parks Canada Agency, 2022](#)). However, Parks Canada states that these fire cycles have been heavily suppressed after they revealed that the area burned condition class (BCC) is poor. The BCC refers to how much fire has burned in the area compared with how much is needed to sustain ecosystem health and the poor rating states that there is an extreme deficit of natural fires.

Figure 6



Note. Adapted from Parks Canada Agency (2022). Copyright 2022 by Parks Canada Agency.

Note. Adapted from *Fire Management in Jasper National Park* (2022), by Parks Canada Agency. Copyright 2022 by Parks Canada Agency.

The Montane region has experienced -86% BCC, Lower has experienced -88%, Upper has experienced -79%, and Old Growth was the least affected with only -33% percent ([Parks Canada Agency, 2022](#)). This data indicates that Jasper National Park is extremely underburned with most regions being around 80% underburned. By intervening with the regular fire cycle of the ecosystem, officials are placing the park in a vulnerable spot. Eventually, it will restore environmental equilibrium by burning areas that have been disturbed to re-establish a healthy fire cycle.

RESIDENT CONCERN

These concerns have also been lingering among Canadian residents for years. A letter from 2018 written by foresters in British Columbia expressed concerns about Parks Canada's efforts to protect the town, citing that officials are not aware of the potential for a devastating fire down the road ([Letter, 2018](#)). Ken Hodges and Emile Begin criticized the inaction from Parks Canada, indicating that Jasper was a tinderbox. They blamed Parks Canada for creating unnatural forest conditions thus creating optimal

wildfire conditions. They even questioned park staff's understanding of ecological integrity and restoration, pointing out serious management flaws that made Jasper more fire-prone than ever ([Letter, 2018](#)). In the letter, it even states that a megafire in the area will likely take place between August and September, warning that with climate change, it may be even earlier. We now know the fire took place on July 22nd, almost a month before the expected time ([Letter, 2018](#)). A Jasper National Park spokesperson did respond to the allegations, stating that the park's management is based on several elements of fire planning: such as preparedness, risk reduction, and prescribed fires and that they are working on moving forward with a solid plan. He ended by promising for a forest thinning program where park officials will remove dead pine trees caused by the mountain pine beetle infestation in previous years, reducing the amount of fire-fuel in the park ([Foresters Alarmed at Jasper's 'Mega-Fire' Potential, 2018](#)).

EFFECTS OF MOUNTAIN PINE BEETLES ON JASPER FOREST HEALTH AND WILDFIRES

Jasper's mountain pine beetle infestation could have been a potential cause for greater fire risk. Mountain pine beetles devastate trees by burrowing into pine trees to lay their eggs. Then, once they hatch, they feed on the tree from the inside, destroying the tree's vital systems, killing it. When the trees die, they turn a rusty red color and become fuel for a megafire (Parks Canada Agency. (2021, March 4). *Racing the clock to stem the spread of the mountain pine beetle*. Government of Canada.) These pine beetles have devastated Jasper's forests and not enough is being done to combat its effects. With the death of around 94% of the park's pine beetles (as of 2023) from consecutive deep freezes, only around 95 hectares in Alberta remain beetle infested. Although the beetles may be gone, their effects were still visible with around 2.4 million hectares in Alberta being affected as of 2022. In some affected areas, all the trees have been killed ([Mountain Pine Beetle Population Decimated in Jasper National Park after Consecutive Deep Freezes | Globalnews.Ca, 2024](#)). As a result, millions of hectares have built up stagnant fire fuel for years. There have been efforts to combat the effects; Alberta has been collaborating with local communities to control beetle activities and harvest trees if necessary ([Mountain Pine Beetle Population Decimated in Jasper National Park after Consecutive Deep Freezes | Globalnews.Ca, n.d.](#)). In 2022, the government recorded the lowest number of infested trees per site analyzed with an average of 3 trees, much lower than the 18 average in 2009. Due to these efforts, it may be possible that the effects from the mountain pine beetle infestation on the fire were negligible, however, it is still unclear.

Figure 7

Effects of Mountain Pine Beetles in Jasper National Park



Note. (A telltale sign of a mountain beetle infestation: rusty colored trees in Jasper National Park)
Photograph from: (Zabjek, 2018)

COMBINATION OF NATURAL AND ANTHROPOGENIC FACTORS

Although there have been many anthropogenic factors that contributed to the buildup of the Jasper Complex fire, it is also important to explore how the environmental causes interacted with anthropogenic factors to create an event of this magnitude. One major environmental factor that may have contributed to more intense fires is the presence of dry lightning (Team, 2024a). Dry lightning is defined as cloud to ground lightning without any rainfall nearby. Dry lightning is seen as a significant threat that increases the chance of wildfire occurrences and is even more severe with the addition of pre-existing accumulated fuel sources (*Dry Lightning*, n.d.), like in Jasper. As a result, due to the prolonged duration of dry, hot weather in the Canadian Rockies at the time, Parks Canada blames dry lightning for the initial spark for the fire (Parks Canada Agency, 2025).

ROLE OF DRY LIGHTNING

However, the readily available fuel and the unique topography of Jasper turned the spark into the flames. As discussed before, Jasper's topography makes it susceptible to developing wildfires because the valley that it is situated in creates a wind tunnel, forcing winds to become stronger. Strong winds are the primary driver of wildfire movement because they provide extra oxygen to the fires, an essential element to keep a fire alive (*Ask the Scientist*, 2018). And with the buildup of years of wildfire fuel, it allowed the fire to reach unprecedented speeds and leave significant damage to the region's forests. Soon enough,

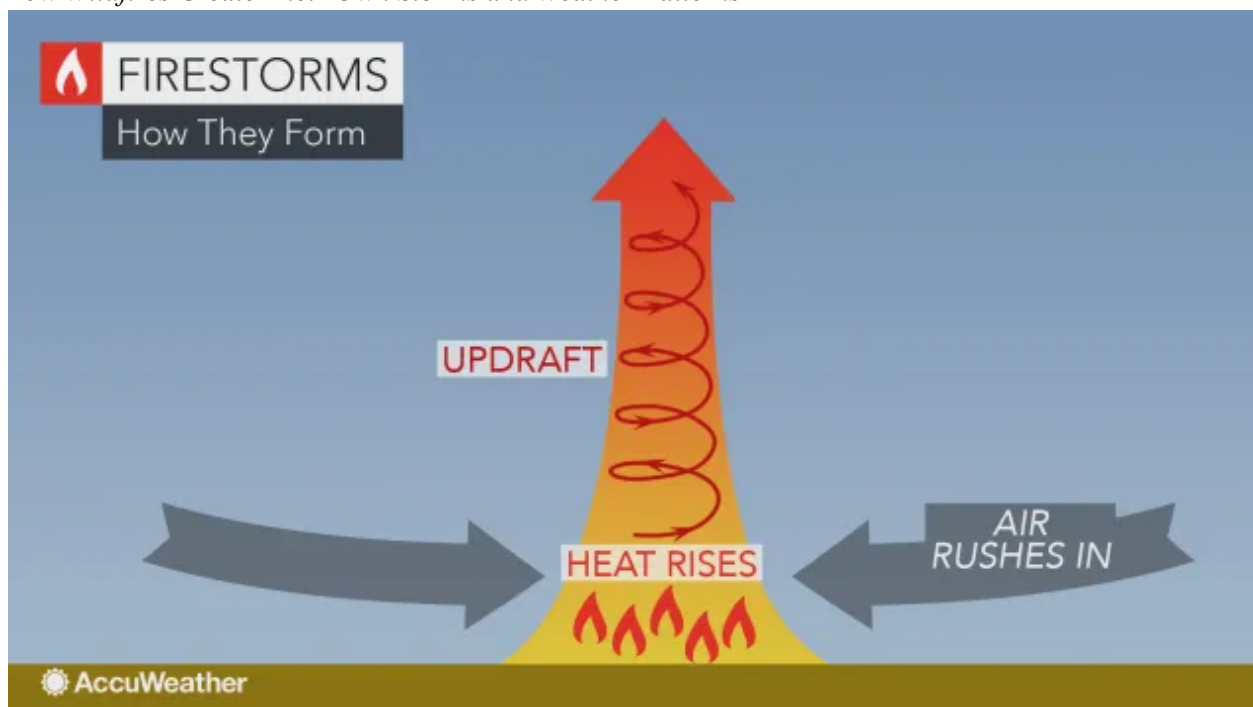
strong winds created a significant megafire with flames as much as 50 meters high (Parks Canada Agency, 2025), forcing many firefighters to retreat to other nearby towns.

HOW JASPER'S TOPOGRAPHY CONTRIBUTED TO ITS VULNERABILITY

It's also important to note that wildfires can create their own weather systems (Schmidt & writer, 2018). According to AccuWeather research, dry air and hot weather, both present at the time, allow fires to create their own weather like how thunderstorms develop (Schmidt & writer, 2018). In summary, hot air creates atmospheric instability and pushes even more air higher into the system, further increasing this instability. Soon, the hot air will rise and create an updraft which then condenses into tiny water droplets, creating a cloud. These clouds are called pyro cumulous clouds. However, if fires get big enough, they can develop into pyrocumulonimbus clouds which translates to “fire storm cloud.” These clouds form storms that create more dry lightning and create favorable conditions for the emergence of larger fires (Schmidt & writer, 2018). Wildfires also can create their own wind patterns by creating a vacuum that rapidly pulls air into the fire system as shown in figure 8 (Schmidt & writer, 2018). As a result, the interaction between favorable initial weather conditions, prolonged buildup of fuel, and the development of independent weather systems in fires allowed the Jasper Megafire to become so large and destructive.

Figure 8

How Wildfires Create Their Own Storms and Weather Patterns

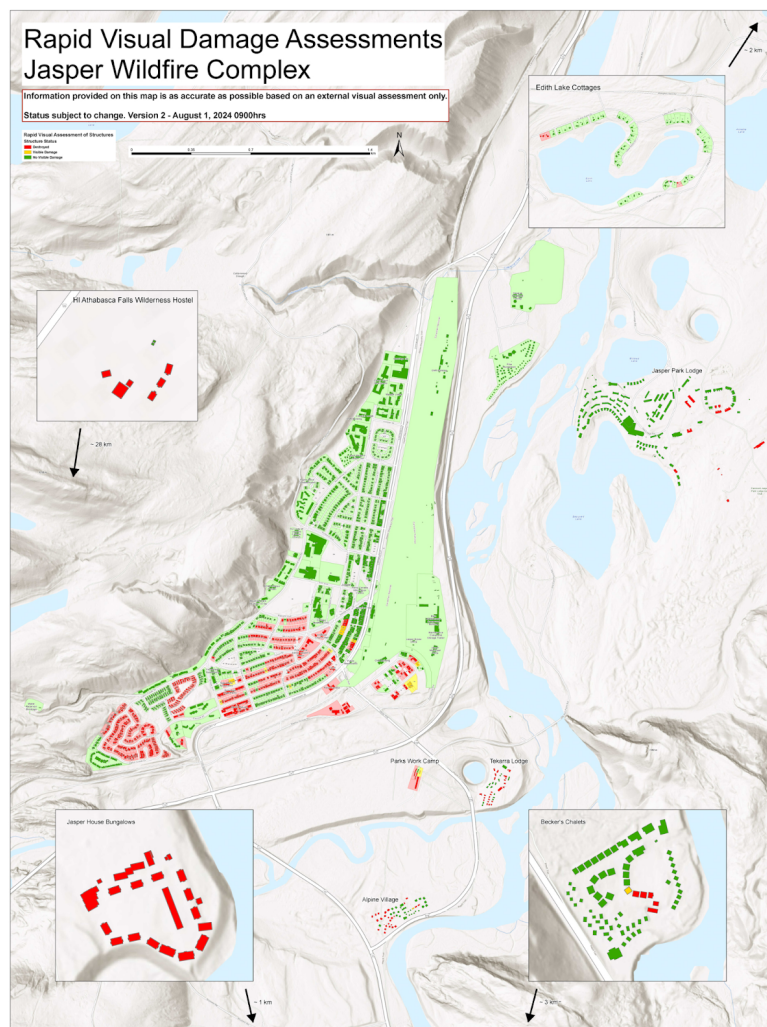


Note. Photograph from Accuweather: (Schmidt & writer, 2018)

IMPACT ON THE JASPER TOWNSITE

The impacts stretched much further than the environment; over 30% of the Jasper townsite was burned (figure 9), causing major economic setbacks. In fact, many of Jasper's popular resorts and cabins were destroyed from the fire, affecting tourism ([*Jasper Damage Map Released as Park's Largest Wildfire in 100 Years Rages* | Globalnews.Ca, n.d.](#)).

Figure 9
Wildfire Damage Within the Town of Jasper



Note. (a picture released by Parks Canada showing wildfire damage within the town) red buildings are destroyed* Map from: *Parks Canada* (2024), by Parks Canada Agency. Copyright 2024 by Parks Canada Agency

CONCLUSION

The Jasper Megafire serves as a stark reminder of the impacts anthropogenic factors may have on wildfire occurrence. Although, factors such as climate change and droughts create ideal conditions for destructive fires, fire cycle suppression, flawed land management practices and insufficient burn control also greatly amplify wildfire risk over time. In Jasper, a buildup and combination of these factors created a hazardous situation that eventually resulted in the uncontrolled burning of over 80,000 acres of protected forests, destroying many critical habitats and altering the natural landscape.

Given the recent increase in fires like these, it is imperative that governments take urgent action to mitigate human-induced risks. Policy reforms can take place and should prioritize careful forest management, increased focus in prevention strategies, and the continued support of firefighting units. By integrating these reforms into current standards, governments can enhance early detection systems and response, allowing for greater prevention ability. By acknowledging the role that anthropogenic factors have on wildfire risk and taking proactive measures in response, people can collectively work towards minimizing fire risk and preserving vital ecosystems not only in Jasper National Park, but across the world.

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