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A Glimpse at What Climate Change Will Look Like for Summit County

Climate change will affect our lives in many unexpected ways

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With only a few short months between ski seasons this year, climate change isn't necessarily a forethought for most Summit County residents. Though we aren't located near a coast, haven't experienced extreme weather events, or felt severe temperature increases, climate change remains a threat to our community.

The ramifications of releasing carbon emissions are vast and varying, and that means we will experience more impacts than just losing a few "pow" days per year. Our infrastructure, livelihoods, and health are increasingly at risk as the world continues to burn fossil fuels for energy. So, what do climate change impacts look like for the ski towns of the Rockies? Fluctuations in avalanche patterns, increases in disease-carrying insect populations, and changes in a facet of the largest industry in Summit, foodservice.

DOING A DISSERVICE TO FOODSERVICE

Climate change entails much more than temperature increases. A warmer atmosphere is also a wetter atmosphere; climate change will affect precipitation patterns and trigger more extreme weather events. National trends are already showing shifts in when and how rain is falling, with drought and heavy precipitation events becoming more prevalent (Union of Concerned Scientists, 2019). Arid conditions paired with warming temperatures create conditions conducive for wildfire activity, which can wipe out entire crops. Increased number of precipitation days, as well as heavy precipitation events increase the risk for flooding which can also be detrimental to crops. Adding more pressure to the national agriculture industry, areas where we are currently producing will experience climate shifts that will impair growing conditions. Although new pockets of ideal atmospheric conditions will develop, many of these areas are in the northwest corner of the country and are already developed or being used for other resources (Yamal, 2018).

Extreme weather events, wildfires, and variations in temperature and precipitation patterns have the capability to damage crops on their own, but are not the only factors plaguing our future agricultural yields. Industrial processes like



Photo courtesy of Kelli DeThomas, Frisco, CO, April 4, 2019

monoculture, where one type of crop is grown en masse, and controlled burns are draining soil of vital nutrients and leaving much of our agricultural land vulnerable. On its own, land degradation is harmful to production, but the risk to crops on unhealthy land is exacerbated under the unpredictability of climate change impacts (Gowda et al., 2018).

You might be wondering what this has to do with Summit County. The answer is, a lot. Climate change will alter the way we produce, ship, and, even the way we, consume food. The Union of Concerned Scientists predict that, "reductions to agricultural productivity or sudden losses of crops or livestock will likely have ripple effects, including increased food prices and greater food insecurity (2019)." This translates into issues for the foodservice industry which, combined with entertainment, recreation, and lodging, make up the top industry in the county. Employing 27% of the area's workforce, the next largest are retail and the health, education, and social assistance industries which hire 15.4% and 10.4% of the workforce, respectively (U.S. Census Bureau, n.d.). Food-centric businesses and their employees will not be exclusively affected, as an integral part of the flourishing tourism sector, many other hospitality-based businesses will be impacted.

BUGGING OUT

The shorter winters induced by climate change may be conducive to an active outdoor lifestyle, but they will also create ideal conditions for disease-carrying insects. One of these insects already occurring in our area are ticks. These vectors typically search for hosts between snow melt in spring and the first snowfall in autumn, retreating to

woodlands for cover during periods of extreme temperatures and precipitation. Milder winters and earlier spring conditions brought on by climate change will lead to ramped up development and lifecycle for ticks in the area, as their ideal air temperature for activity is 39-50°F. Combined with widespread movement of their animal hosts, this increase in development will lead to higher rates of tick activity and spreading populations. According to the Canada Communicable Disease Report, rising temperatures are the leading climate driver in the spread of ticks and tick-borne diseases that have already been seen in the Canadian Rockies (Bouchard, 2019).

There are currently 27 species of tick occurring in Colorado, with the Rocky Mountain wood tick being the most common. The Rocky Mountain wood tick is responsible for most of the tick-borne diseases (TBD) that are reported in the state. These diseases include Rocky Mountain spotted fever, Tularemia, and Colorado tick fever. The latter is the most frequently occurring. Symptoms for Colorado tick fever include headache, fever, and fatigue with a period of recovery, followed by a reoccurrence of symptoms lasting a few days to weeks. In rare cases the virus can become serious and spread to the central nervous system. Though these TBDs are alarming, Coloradans do not have to fear being infected with Lyme disease, as there are currently no tick species carrying the disease in the state (Cranshaw, 2019).

An active outdoor lifestyle is a staple of life in Colorado, especially in Summit County. Unfortunately, this will lead to increased vulnerability to tick exposure and TBDs. Along with the active, young and elderly populations, as well as those living in close proximity

MORE AVALANCHE EVENTS - WE AREN'T TALKING HOCKEY

Mountains are our natural water reservoirs, forming snowpack during winter and melting to feed rivers, streams, and aquifers in the springtime. The composition of the snowpack is contingent on the atmospheric moisture content in the area (The Importance of Mountain Snowpack to Water Resources, 2018). In the Rocky Mountains the dry air makes for loose, powder snow, but that may be changing as atmospheric temperatures increase.

Climate change is triggering hydrological changes, meaning changes in our environmental water systems. These hydrological changes will exacerbate the frequency and damage of avalanche episodes. There are several ways that climate will impact our snowpack composition: more moisture in the air will make for larger snowstorms, higher temperatures will melt layers causing them to collapse and slide, and precipitation falling as rain instead of snow will decrease the structural integrity of snowpack (Berwyn, 2019). These rain-on-snow events are referred to as snow droughts and will become increasingly problematic as temperatures continue to rise (The Importance of Mountain Snowpack, 2018).

2019 has been no stranger to the destruction of avalanche events in the area, with 346 reported over the course of just one week

in early March, leaving two dead. While the transportation department tries to get ahead of these events, closing roads or forcing slides, this year has seen unpredictability in patterns and prediction. The geographic layout of our towns leads to catastrophic impacts when these slides happen unexpectedly. Transportation and supply chain efforts are disrupted, resources are cut off, and citizens are threatened. The frequency and intensity of these slides are only predicted to get worse. A 2008 report estimates that warming winter and spring seasons will lead to slow-moving, wet avalanche activity in Aspen up to 27 days earlier in the season by 2100. These wet avalanches are more dangerous because they bring sand, mud, and rocks down with the snow (Berwyn, 2019). Looking ahead, infrastructural mitigation will become a necessity. Higher walls or even tunnels may be the answer along the I-70 mountain corridor, the main artery to Denver.

DON'T BRUSH IT OFF

Thinking about the effects of climate change that we may be facing can be terrifying. It is far easier to think, "it won't happen here," or, "it won't happen in my lifetime," but the truth of the matter is that they are very real, and not that far off (if not already occurring). There will be many indirect impacts, like losses in the foodservice industry, illnesses, and avalanche threats. These are only a few of the many issues that will plague our towns. Having the forethought to address these issues will put Summit County in a much better position as our global climate continues to be altered by greenhouse gases.