

Research background

In 2020, Colorado experienced a severe wildfire season.

In 2020, there were several serious wildfires in Colorado. The size of these wildfires refreshes Colorado's wildfire history with wildfires like The Cameron Peak Fire.

Wildfires can maintain and stimulate forest ecosystems and promote biological diversity, but fires can also endanger the lives and property of surrounding residents. Over the past few



Figure 1. The photo was taken on the day the CalWood fire started from the peak to peak highway (2).

decades, many agencies in the United States have tried to reduce fire risk by reducing the accumulation of forest fuels. There are many types of pre-fire treatment and different types will be used in different areas. Our SUPER team studied the characteristics of different pre-fire treatment types.

Pre-fire treatments

There are three main types of pre-fire treatment applied to the CalWood Fire affected area.

The area I studied was the area affected by the CalWood Fire in Colorado 2020. The wildfire burned 10,106 acres after starting Oct. 17. It was the largest fire ever recorded in Boulder County (1). I found that the main pre-fire treatments were prescribed burning, thinning and wildfire. Dense forests can turn into fuel when a fire strikes.

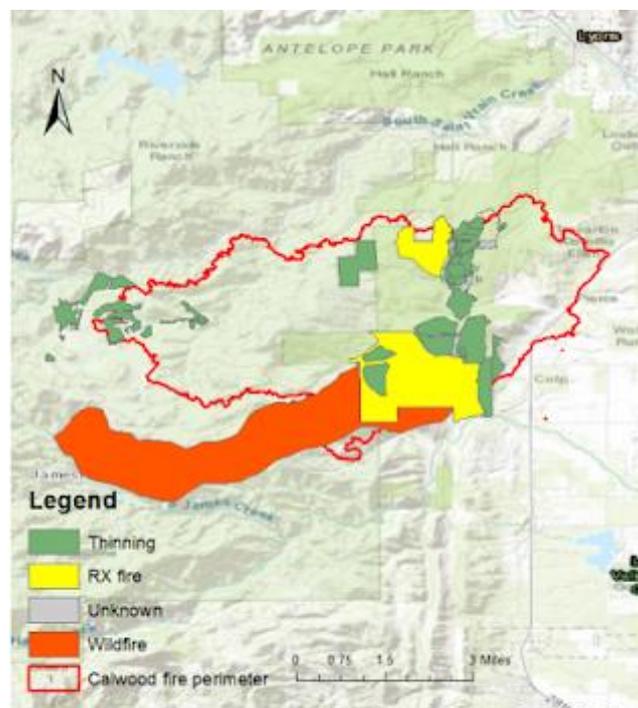


Figure 2. This map shows the area of the Calwood fire and the distribution of the types of pre-fire treatment.

Prescribed burn means the controlled use of fire by a team of experts under specified weather conditions. This can effectively reduce excess shrubs and trees.



Figure 3. Prescribed burning (4).

Thinning is the deliberate removal of some of the vegetation to reduce the fuel accumulation in the forest.



Figure 4. A Photo of thinning (5).

The wildfires in Figure 2 are fires that occurred before the CalWood Fire. One type of pre-fire treatment cannot be applied everywhere. For example, thinning is used more often in areas with a high density of trees. Pre-fire treatments reduce fuel accumulation in forest systems. The distribution of these fuels in the forest is linked to topography and climate conditions. After screening, I characterized treatment types by elevation, slope, aspect, vegetation density and vegetation type. These characteristics show that pre-fire treatment in

the affected area of CalWood Fire is mainly concentrated in the elevation range of 1900m-2300m and the area with high vegetation density. You can check out the detailed results of the study here: urs21-csu.ipostersessions.com/Default.aspx?s=5C-72-55-32-9F-21-7F-E3-A5-DA-39-28-80-CD-6F-42

Research experience

Difficulties in the process of research are future treasures



Figure 5. Thinking (3)

This is my first contact with a professional research project. I thought it was a wonderful experience. At the beginning, I was full of doubts about a lot of research contents. However, as the project progressed, I understood the research project more thoroughly. I met a lot of difficulties in the process of research. These difficulties often required me to spend a lot of time to overcome. But when I finished my research

and looked back on the whole process, I found that I had learned a lot. When you start a research project and work on overcoming a small obstacle, it's only a matter of time before the entire project is complete. When you run into difficulties, try to solve them yourself before turning to other resources. These resources can be solutions online, advice from a mentor or ideas from a teammate. The process of overcoming obstacles is a necessary part of growth.

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