ABSTRACT

TITLE:	Climate Change And Forest Fires In The Western United States
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ABSTRACT: Forest fire suppression and climate change are directly changing the forest structure of western North America. Forest fires have virtually been eradicated from western ecosystems in the United States since the late nineteenth century, producing unusually dense forests. Additionally, the International Panel on Climate Change has forecast a warmer and drier climate for the Western United States. The increase in fuel loads paired with warmer and drier conditions have the potential to cause catastrophic wild fires. This is especially true for areas with an expanding wildland-urban interface such as communities in the foothills west of Denver, Colorado. A warmer, drier climate has profound effects on forest structure and species composition. Plant species are likely to move northward as well as rise in elevation, completely changing current ecosystems. Less precipitation also means that forests will become drier and more susceptible to insects and diseases such as the pine beetle and mistletoe. Forest overcrowding due to fire expulsion has already created a struggle for resources such as water, producing drier fuels and larger more intense fires. The 2011 wildland fire season in the western U.S. saw some of the largest fires in the histories of Arizona, New Mexico, and Texas. These Southwestern states are seeing the initial results of climate change in North America. Texas had one of its hottest summers on record as well as its worst drought since the 1950s. The fires in these states caused millions of dollars in damages and suppression costs, which could have avoided if proper forest management was upheld. Although it is unlikely to restore the historical fire regime, a selection of mitigation efforts can minimize the effects brought on by climate change and wild fire exclusion. These methods include reincorporating wildfires and controlled burns, emulation silviculture, and fire suppression. Each technique has its advantages and disadvantages but when used in combination they can help restore forests to healthy levels. Some federal policies make fire mitigation efforts difficult if not impossible, and some help these management options more available. Future laws should allow for less restriction on fire mitigation efforts and allow for more restoration funding. An increase in proper forest management will cost only a fraction of the suppression expenses of large destructive fires.