

The Story of Wildfire Will
Burning out of Control.....?



source-www.medialibrary.climatecentral.org

This is a story about Will, a wildfire that has started to burn out of control due to changes in our climate.

1) Start by matching up the keywords to the definitions:

Ignition Source	These are giant trees found in California, that have lived with fire for thousands of years. Their thick, spongy bark will insulate them from heat injury, and the branches grow high enough to avoid the flames of most fires.
Pyrophytic Vegetation	A natural or human source of a wildfire being set alight, for example lightning or agricultural fires becoming out of control.
Retardants	Refers to 'remaining', or 'after'. An example is pine cones staying on a tree after maturity, and only opening to release seeds after exposure to certain conditions, especially heat from a fire.
Wildfire	Plants adapted to tolerate fire through methods such as thick bark, tissue with high moisture content, seeds spread by fire and underground nutrition storage.
Serotinous	A destructive fire, often on a large scale, that spreads quickly over woodland or brush (often referred to as bushfires in Australia and North America).
Sequoia Trees	The process of fires spreading from the forest floor to the tree canopies.
Ladder Effect	Chemicals sprayed on wildfires in order to slow them down, made from nitrates, ammonia, phosphates, sulphates and thickening agents.

Read through the information below, highlight/underline links to human activity in pink and natural factors in green. Also, think about what examples of positive and negative feedback you can find in the story:

Will was a wildfire, at first he lit his flames only when natural conditions favoured, as nature had always intended. Fire's like Will are a naturally occurring phenomenon, and to burn he needs a supply of fuel (usually dry vegetation), favourable climatic conditions and an ignition source. Sometimes, Will was started by humans, either by campfires that are not put out properly, or perhaps cigarettes carelessly tossed out of a car window. Ecosystems in these environments depend on periodic fires for lots of reasons. Will helped clear out the dead organic material littering the forest floor, which were preventing organisms (and some animals) within the soil accessing nutrients, and allowed the growth of smaller or new plants once he was extinguished. Will burning allowed the layer of decay to burn in a controlled manner, and, as such, healthier parts of the ecosystem could then thrive, all thanks to Will! Will released nutrients with his flames, returning them much more quickly to the soil than if they had slowly decayed over time. He was an expert at increasing soil fertility, and he made local farmers very happy, and ensured that the ground was clear of fuel for fires that were a lot bigger than Will....

Several plant species also loved Will, like the huge sequoia trees, which require fire to reproduce. Will helped them release their seeds (enclosed in pine cones that are covered in pitch, which must be melted by fire for the seeds to be released).

Will also helped animals too. He burned for the Karner blue butterfly caterpillar, which eats a plant called wild lupine. Without burning Will, the lupines could not grow, and so the caterpillars would not be able to consume enough food to turn into beautiful butterflies. Also, Will helped animals that use pine trees for their homes, and rid the ecosystem of any invasive species.



- 2) Look at the picture below. **Label** these to show how they have adapted to wildfires like Will, and **annotate** on some of the reasons why natural burns are important. Use the links here to help:

<https://candidegardening.com/US/stories/bdc01f42-0974-44d9-8bd5-b15bfa88fc1a>



source-www.istockphoto.com

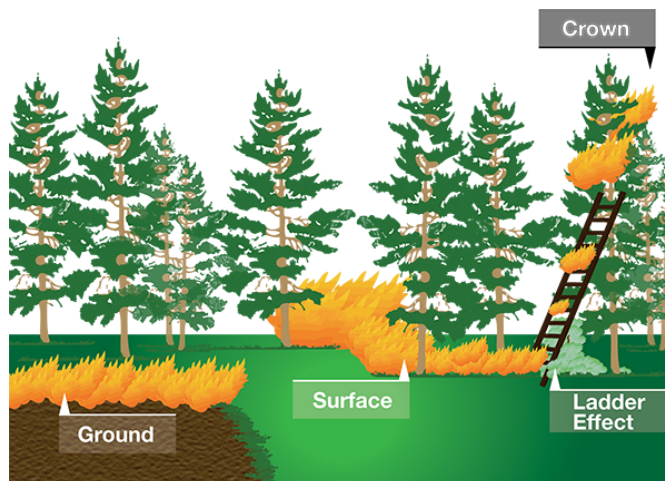


source-<https://blog.nature.org/>

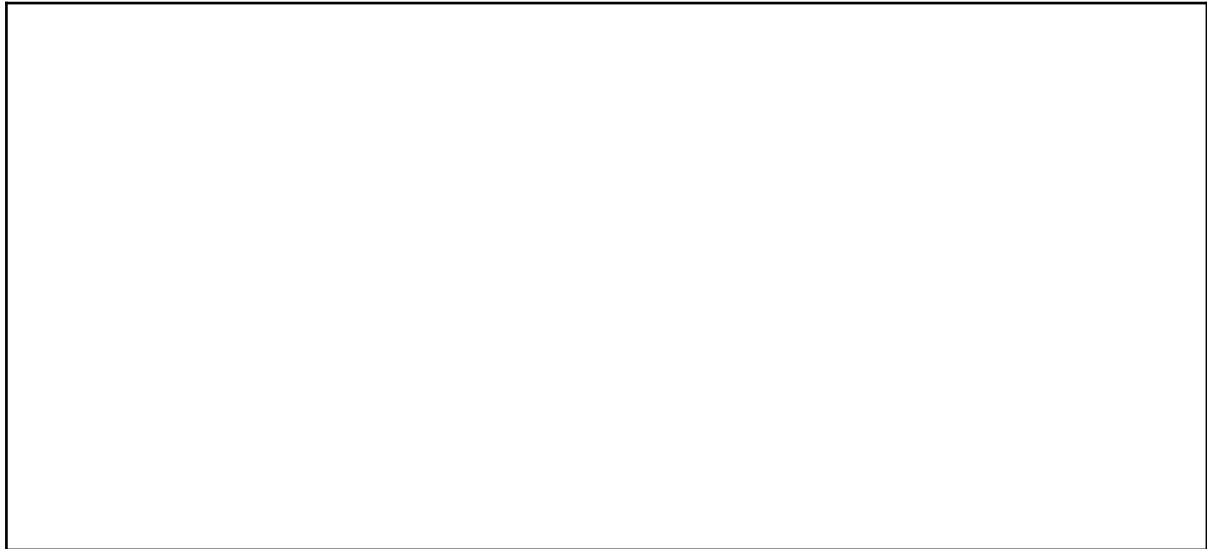


source-www.thespruce.com

Will burned in many different ways, as a crown fire, spreading across the treetops, as a surface fire, burning vegetation on the surface of the ground, or, if he was feeling in a deeper mood, as a ground fire burning beneath the ground surface in the layers of dry organic peat. Use the diagram below to explain the different ways that wildfires can spread:



source-www.toppr.com



Recently, Will had to visit the doctor. The doctor *prescribed* burning for him, which confused him a lot! He was used to burning how and when he liked. Humans were beginning to play a role. With populations growing, and encroaching into areas that have always burned naturally over time, Will's risk of impacting people as well as nature was increasing. If Will burned in a more controlled way, this could prevent more devastating naturally occurring fires. The buildup of decaying organic matter on the ground is fuel for wildfires. Without periodic fire to clear this out, a naturally occurring fire may grow and move quickly, doing much more damage than a 'prescribed burn'. Moreover, due to climate change, Will found himself burning a lot more frequently than he was used to, and for a lot longer.

- 3) Analyse the data (6 marks, AO3) below to help you to understand how wildfire damage is impacting California and surrounding areas:

Acres Burned by Wildfires 2011-2020

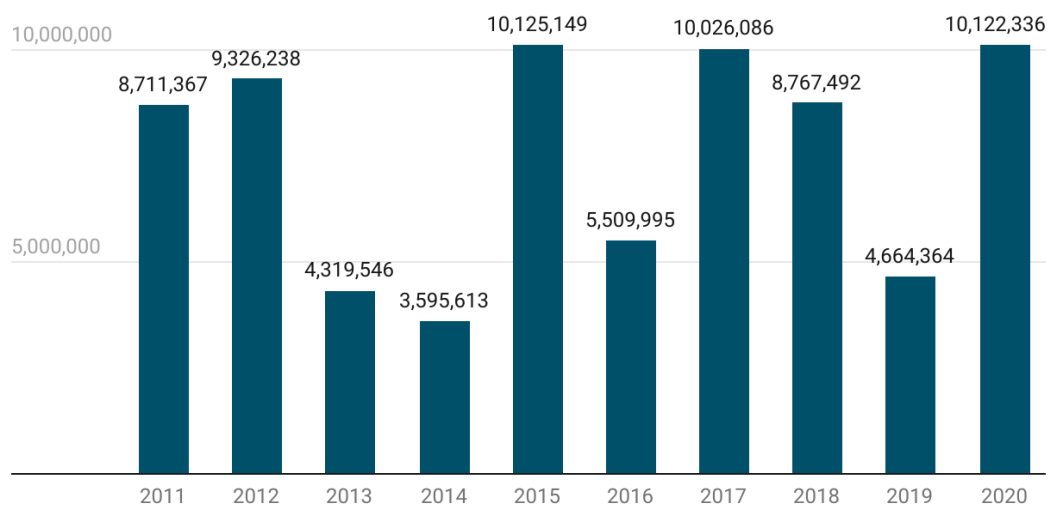
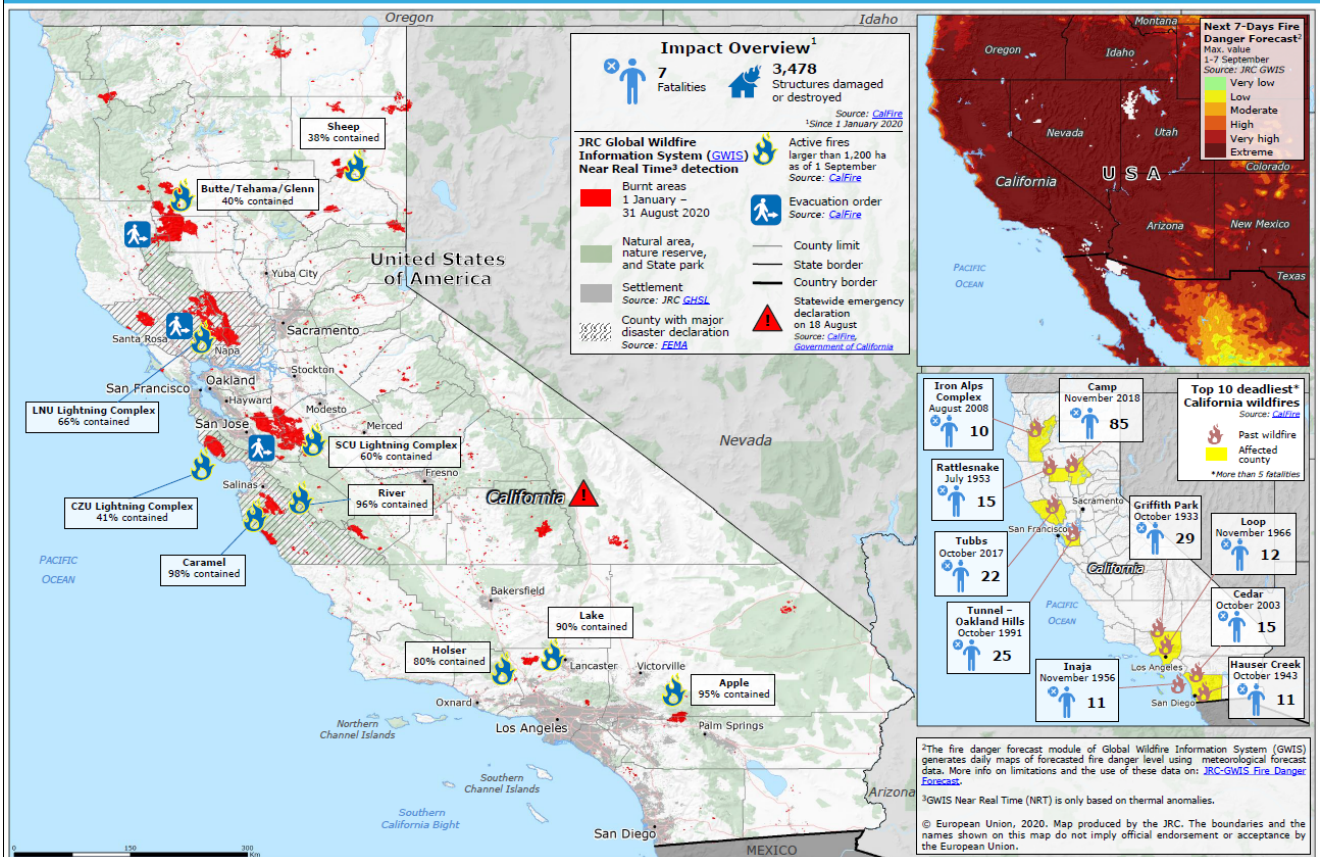


Chart: Forbes Advisor • Source: National Interagency Fire Center • Created with Datawrapper



source-<https://gwis.jrc.ec.europa.eu/reports-and-publications/countryregional-wildfire-maps>

Remember, when analysing, you need to really *absorb* yourself in the data. It is a very different skill to describing, ‘start big (big picture) then go small’. Avoid any explanations as to why data is a certain way (do not use ‘because’), for example, ‘The number of acres burned by wildfires in California is fluctuating, this could be because.....’ (the red is an explanation, which is not required for an analysis question).

Trends/patterns/proportions

Use the map/graph/data well, and refer to it with specific examples.

Correlations and relationships between data sets or areas on a map, or not....

Anomalies, what ‘sticks out’ as being different?

Manipulate the data, *do* something with it, an average, total, range....where appropriate!

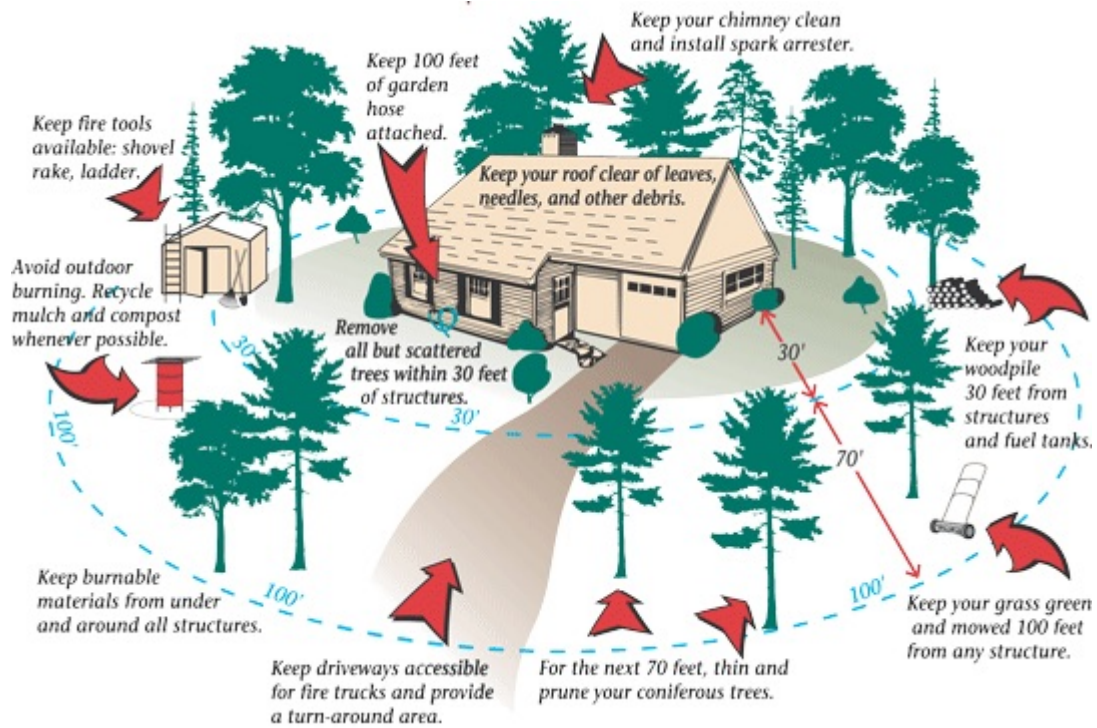
Answer:

Will was becoming somewhat of a celebrity, he just kept on burning, he was out of control! While Will was happy, the environment and humans living with the threat of him were not quite so ecstatic. Will was starting to have a negative impact.

- 4) Code the impacts of wildfires into positive and negative (extend to SPEED impacts-social, political, environmental, economic, demographic if you wish) and whether human or physical:

<p>Homes and livelihoods destroyed, the California wildfires in 2020 saw more than 10,000 buildings destroyed.</p>	<p>Burning releases carbon stored in trees, peat and plants, increasing the amount of CO₂ in the atmosphere. This is an example of positive feedback, as it enhances the greenhouse effect.</p>	<p>Soil nutrient stores are depleted.</p>
<p>Toxic ash can pollute water sources, which will in turn impact aquatic ecosystems.</p>	<p>Economic damage. The California wildfires in 2020 was more than \$12billion.</p>	<p>Vegetation loss impacts the water cycle. There will be reduced humidity, which reduces transpiration, and alters other processes such as surface runoff, evaporation and infiltration rates.</p>
<p>Nutrient cycles are impacted as both biomass and leaf litter stores are burned.</p>	<p>Crop losses have a devastating impact on farmers. Crop losses in Greece in 2018 were devastating, and livelihoods were severely affected, as the fires came in the resin harvesting season. Resin has a variety of uses, including in plastics and in Retsina wine, and it is tapped from the Aleppo pine trees, left as smoking embers after the fires.</p>	<p>Loss of life. The Greece wildfires in Attica in 2018 saw more than 80 people lose their lives. This highlights the devastating impact that these fires are having on people.</p>

Wildfire continues to burn out of control in many areas of the world, but people living in these regions can be prepared. Communities themselves are one of the best forms of early detection and limiting the spread, and many firefighting teams are run by volunteers. Warnings about Wildfire started to be communicated via social media, and some areas even introduced fire bans. People have started adapting to Wildfire:



source-<http://fisklawnscares.com/fire-mitigation-assessment/>

Now, write down everything you can remember about Wildfire Will in the space below (do not look back at notes!)

