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| Forest Fire Management  In 1972Yellowstone National Park began new "natural" fire management policies [1]. Natural fire policies are policies in which fire is allowed to burn ìnaturallyî as it would without the influence of man. Fires that occur normally due to sources such as lightning are regular occurrences, so most species are adapted to deal with their effects. The idea of the new policy was to let natural fires occur rather than trying to completely prevent them and minimize their spread. In the 1950s and 1960s the National Park Service had experimented with fires as a tool in forestry in Everglades National Park and Sequoia National Park. The National Park Service actually said,  "The presence or absence of natural fire within a given habitat is recognized as one of the ecological factors contributing to the perpetuation of plants are recognized as natural phenomena and may be allowed to run their course when such burning will contribute to the accomplishment of approved vegetation and/or wildlife management objectives."  Don G. Despain, a plant ecologist, is the focus of "Yellowstone fires and their legacy," the source of the above information. During the early years of the natural fire policy, Despain served as spokesperson for the National Park Service.  At the time ecology was a new field and the policy received harsh criticism. Previous policy had actively tried to prevent any fires in the forest, but the new policies called for them to actually be allowed to burn! Many people saw fires as destructive and dangerous. They could kill people, wildlife, plant life, and destroy property. Fire historian Stephen J. Pyne of Arizona State University described some common worries even intelectuals have concerning fire [2]. Global warming and the destruction of biodiversity and soil fertility were some of the major concerns listed in an article "Fire Planet-- The Politics and Culture of Combustion" compiled from his articles and books which argue that fire is a vital and natural part of ecosystems around the world. He also points out that fire has been used as a tool for centuries to clear areas for farming and the amount of pollution caused by a limited amount of burning would be trivial compared to that caused by cars and factories.  In 1988 there was an enormous fire in Yellowstone. It was allowed to burn according to the policy, but soon grew out of control. In the end, over $120 million was spent to battle the blaze. The sight of a beloved national park in ruins revived the opposition to the natural burning policy. However, many scientists brought forth research that supported the natural burning policies. Life began to sprout from the ruins of the fire, and advocates such as Despain seemed to have been proven right. They concluded that the size of the fire had been due to the large amounts of dry material and high winds. Today the natural burning policies are still in place.  As stated earlier, ecosystems such as Yellowstone's are adapted to fire. There are serotinous species such as the lodgepole pine (left) that actually depend on fire to release their seeds [3]. The succession that takes places after fires is part of a natural cycle as well, and without fire, imbalances may occur in the ecosystem. In the Northern Rockies, for example, fires burned away young trees and shrubs that competed with the larger ponderosa pines (lower right) [4]. The pines would survive fires because of their protective bark. The younger trees and shrubs were unable to establish themselves. When people began to suppress the fires they began to grow and compete with the other dominant species.  Fire is an important part of an ecosystem in many other ways. It destroys accumulated biomass that might not decompose fast enough and returns nutrients to the soil as well as affecting mineral flow and soil fertility. The Forest Ecosystem Management Plan for the city of Boulder includes controlled burning because of these reasons, but also because shorter and less intense burnings reduce the risk of a catastrophic fire and create a more natural environment [5]. It is generally believed that fires are inevitable, so if they are suppressed for some time and a large amount of flammable material builds up it will result in a larger fire that people will have less control over.  Less intense burnings, or surface fires, are more desirable because they reduce the amount of material available to burn and also because they do less damage to the plants. A fire that passes quickly over an area may destroy the grass and scorch the bark of trees there, but the grass can grow back easily if its roots are left unharmed and the trees are hardly affected if they are adapted to that environment. It is now commonly believed that by allowing such fires to burn out over forested areas people are actually creating a safer environment by reducing flammable materials, and helping the ecosystem by killing off exotic species and competitors.  Some species that have adapted well to fire :  Rabbit brush and aspen--They grow from roots that are protected from the fire, so if a fire ravages the surface they can still grow back.  Douglas fir--This tree has thick bark that resists fire and protects the living tree inside.  In short, there are two main strategies used by plants to further their species in the presence of fire [6]. They may grow quickly and die during a fire, but scatter their seeds to continue after the fire has passed. This is similar to the way some animal species reproduce. Spiders for example have relatively short lifespans but leave behind large amounts of eggs. The other strategy used by animals and plants is similar to that of the Douglas fir. An individual takes more time to mature, but it is protected. However, this strategy may not always work: if frequent fires are present the plant cannot establish itself and its protection.  Many plants who live in areas subject to periodic fires grow from their roots up instead of from the tip. This way if a fire destroys the upper portion of the plant the meristematic tissue below can generate new growth. Think of grass in a lawn as an example. If the lawn is cut, the grass will continue to grow. In a plant such as a tomato plant, if the tips of the plant are all cut off then growth would not occur from the ground up.  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