Wildlife Express!

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Photo courtesy of IDFG

Fire History

You have heard the saying. Smokey Bear made it famous. “Only you can prevent wildfires.” Fires that cause harm to people, buildings or endangered animals are not good. But are all fires bad?

For many years, people thought so. Every fire, whether it was natural or man-made, was fought. Now things are a bit different. People are seeing not only the destruction that fire may cause but also the benefits of fire.

Not all fires are the same. Fire can be friend or foe depending on whether it is under control or out of control. If you talk to people who work with fire, you will hear them describe it in several ways. Wildland fire is the name given to any fire burning in wildlands. A wildfire is a fire that is out of control and may hurt people or damage property. It needs to be put out or suppressed.

Some fires burn rapidly and at low intensity. These are called surface fires. Surface fires clean up the forest floor but don’t kill large mature trees and root systems. Ground fires can be intense and damaging. They burn very hot and destroy all plants and root systems leaving only bare ground. Crown fires are fires that start on the ground and climb to the tops of the trees. These are the hottest, most intense and often most dangerous type of fire. They damage larger mature trees by burning the top layer of foliage. Embers and branches fall from the trees and spread the fire even more. Often large, fluffy, cumulus clouds form over large fires. As the fire heats the air around it, the air quickly rises. Cool air rushes in to replace the hot air. This creates winds and weather that increase the flow of oxygen and “feed” the fire.

Although crown and ground fires can be destructive in a forest, surface fires are very beneficial. They open up the forest and allow grasses, bushes and other plants to grow. They recycle nutrients back into the soil and create wildlife habitat. But these are some of the very fires that have been put out through the years. Without surface fires, the amount of dead trees, pine needles and other fuels had built up. This caused more crown and ground fires. By suppressing all fires, forests have been put at risk for large, catastrophic fires. The forest balance had been upset; many forests are unhealthy.

Forest managers now see fire as important and necessary. Many of Idaho’s forests are fire dependant. That means the forest needs fire to maintain the health of the plants and animals that live there. Some fires are now being allowed to burn in areas where human life and structures are not in danger. Many forest managers use something called prescribed burns.

What Makes a Fire?

Fire is the heat and light that comes from something burning. It is a sign of a chemical reaction called combustion.

To have a fire, three things must be present. People often refer to this as the fire triangle. One side of the triangle is a combustible fuel. This is something that will burn, such as wood or paper. The second side of the triangle is oxygen. Oxygen is what gives the fire its energy and life. The third side of the triangle is heat. Extremely high temperatures are needed for the reaction. Wood needs about 617 degrees Fahrenheit to burn! When these three things - fuel, oxygen and heat - come together, fires happen. The fuel is converted into a gas. It’s the gas produced by the fuel that’s burning. You can see the flame in a fire once the gas gets hot. If one part of the triangle is missing, the fire will die out.

Not every fire is the same. What affects how large a fire will get? Three things determine how large a fire can become: weather, fuels and topography. We have more fires in summer because the hot dry conditions make it easier for fires to start and keep burning. Topography, or the lay of the land, is also important. How many mountains there are, how steep the mountains are and how the mountains are arranged all affect fires. The most important factor for how a fire will burn is the fuels that are available.

In the wild, fire is typically spread by what are called fine fuels. These are things like pine needles, leaves and grasses. Fine fuels are found on the forest floor and up in the tops of the trees. These fuels are usually involved with the start of a fire. Small fuels are woody twigs and branches up to one-inch in diameter. They help to spread wildfires because they ignite and burn quickly. Larger fuels are those fuels that are more than three-inches in diameter. Large fuels can make a fire more intense. Large fuels contribute to the amount of damage a fire can do. They don’t really help a fire to spread, because they burn slowly and are more difficult to ignite.

Fire is a complicated reaction. Every fire is unique because of the difference in fuels, weather and land.

Photo courtesy of Jeff Knetter

Let's Look at...

Wildfire

Photo courtesy of Debi Jensen

North America had been shaped by fires long before the arrival of humans. When Paleo-Indians from Asia crossed the Bering Land Bridge, they brought their knowledge of fire with them. Their use of fire shaped the land even more.

Paleo-Indians used fire in their everyday lives. They used fire to cook food and provide heat. These first Americans also used fire to hunt animals, build canoes and wipe out pests. They even used fire as a telephone to send signals to other groups and as a weapon of war.

Native Americans used fire to change the land to suit their needs. They burned holes in the forest to create sunny meadows. They knew that these meadows attracted elk and deer, making them easier to hunt. Clearing the forest also gave berry bushes and other edible plants places to grow. The meadows they created offered shelter from lightning-caused fires that threatened their camps. Fire was seen as a natural process and a helpful tool.

Early European settlers recorded seeing Native Americans use fire to clear the land and to hunt. Seeing large sections of the forest set ablaze was frightening to them. Their settlements were wooden cabins not portable structures. They couldn't pack everything up and move like a Native American. Every fire that flared up was seen as a threat. Fires were fought and put out.

Fire was taken out of the ecosystem, and fuels in the forest began to build up. This created one of the worst wildfire periods in American history. The great fires of the 1880s were devastating. Stephen J. Pyne, a fire historian, called this time "The Great Barbeque." In 1905, the United States government made a decision to suppress every fire. Yet, in 1910, fires erupted into what was called the "Big Blowup." One million acres burned in one gulp when winds stirred up over the Northern Rockies. War was declared on all forest fires. Even with such determination, fires continued to be large and devastating. Suppressing fires wasn't the answer.

Our policy of dealing with fires has changed over the last century. Fires are no longer seen as being all bad. Now they are seen as part of nature's balance. Allowing fires in certain areas helps to prevent the catastrophic, uncontrolled fires that were seen in the past.

Photo courtesy of Carl Anderson

Photo courtesy of IDFG

Run, Hide or Perish

Do fires kill many animals or do fires help animals in some way? Fire, of course, affects wildlife. It is true that some animals do die in wildfires. Young, weak or sick animals are most likely to perish in a fire. Most animals killed by fires die from suffocation not from the heat of the fire.

Wildlife species have developed different strategies to escape fires. Animals, such as deer, are great runners and jumpers. They can usually out run the flames of a fire. Other animals, such as squirrels, shrews, and snakes use underground burrows to escape a hot fire. Birds can fly to a safer area until the flames have passed. Insects don't fair quite as well; they usually do die.

Fires change habitats, and this has the largest impact on wildlife. Some animals are harmed by the changes while others benefit. Foxes, coyotes, hawks and owls visit recently burned areas. Mice and small animals are easy pickings with the plants gone.

Bark beetles find food and cover immediately after a fire. They have built-in heat detectors and heat sensors to help them find burned areas. They eat and lay eggs in the dead trees. As the beetles' numbers grow, one of their biggest predators appears – the three-toed woodpecker. About 75 percent of their diet is made up of wood-boring beetles! They love to eat beetle larvae as well as the adults. Three-toed woodpeckers also chisel out their nest cavities in dead standing trees. This species really depends upon fire to help supply their food and provide nesting sites. The number of three-toed woodpeckers has declined in some areas. Scientists think that suppressing fires is one reason why their populations have declined.

As grasses start to sprout, insects, birds and voles can be seen. Elk also benefit greatly from fires. Grass is just what elk like to eat. When a fire happens in the middle of a forest, it's even better. The new meadow created by the fire gives elk nutritious grass to eat, and the forest provides shelter from predators and weather. Wildlife managers often prescribe fires in areas to help provide elk with good habitat.

Even twenty years after a fire, wildlife is still benefiting. This is the time when huckleberries, serviceberries and elderberries are most common. Bears and birds seek out these oases in the middle of the forest for their favorite foods. More wildlife species are found in an area containing shrubs and young trees then in just about any other habitat.

It is true that fires affect wildlife. Some animals will die in the fire, but the changes to forest habitats are usually good. Nature is a cycle of birth, growth and death. Fire is just another way of starting that cycle.

Photo courtesy of Debi Jensen

Hotshots and Smokejumpers

Photos courtesy Craig Mickelson

So you want to be a wildland firefighter? It seems like an adventurous, fun job. It can be, but fighting fires is a dangerous and serious job as well. Often firefighters are working under stressful conditions in heavy smoke, intense heat and rugged terrain. It is not a career for everyone.

Every first time firefighter has to go through a firefighting course. Potential firefighters learn the basics of fire, how to be safe and use their equipment. They also must pass a physical fitness test. To pass the test, a person must walk three miles in heavy boots that come up at least six inches above the ankle. That might not be too bad, but the person is wearing a pack that weighs 45 pounds and must finish the walk in 45 minutes! No couch potato is going to pass the "pack test!"

New firefighters also learn how to construct a fireline. A fireline is a bare patch of ground scrapped out around the fire. A hand tool, called a Pulaski, is most often used. A Pulaski looks a bit like an axe on one side and a curved hoe on the other. Most of the work around a fire involves digging, cutting and sawing. The goal is to contain the fire and keep it from spreading. Removing the fuel is the easiest way to keep a fire from growing. Sometimes large machinery, like bulldozers and tractors, are used to scrap the ground. Airplanes and helicopters may also dump water and fire retardant on a fire.

Have you heard of hotshots and smokejumpers? These are special firefighting crews that have years of experience and special training. Hotshots and smokejumpers work on some of the most difficult fires. Smokejumpers are specially trained firefighters that parachute into remote areas. Although some supplies and equipment are parachuted down to smokejumpers, most of their supplies come down with them on their backs. Parachuting down to a fire is very dangerous. A rough landing in a tree is more likely to happen then not!

The fire is just one risk that faces a wildland firefighter. They also need to watch out for wild animals, falling trees, rolling boulders and toxic plants, like poison ivy. Blisters, scrapes, cuts and broken bones are more common then you might think. Still want to be a wildland firefighter? It's not a job for the faint hearted!

Photos courtesy Mike Stoddard

Nowhere to Run

Plants that are adapted to fire are called pyrophytes (PIE-ro-fites). While many animals can flee in the face of fire, plants cannot. They have developed other ways of dealing with fire and high temperatures. Many plants are specially adapted for the kinds of fires that are most common in an area. This is especially true for pine trees.

Ponderosa pines are large, tall pine trees found in Idaho's forests. If you have ever seen a ponderosa pine, you might have noticed a few things. The bark is very thick, and the lower branches on the older trees are located fairly high up on the trunk. Thick bark and higher lower branches are both adaptations to surface fires. Surface fires burn past trees quickly. The thick bark insulates the tree from high temperatures, and high lower branches help to stop flames from climbing the tree to become a crown fire. In ponderosa pine forests, surface fires usually occur every five to 30 years, whereas crown fires are uncommon.

Lodgepole pines also have adaptations common for the fires that burn through their forests. They have serotinous pinecones. Serotinous cones are sealed with a kind of resin. For the pinecones to open and release their seeds, the resin must be melted. A high temperature crown fires is perfect for melting resin. Lodgepole pine forests may go a century without fire, then be hit by a large crown fire. The sealed pinecones keep the seeds safe in the intense heat and open a few days after the fire. A lodgepole pine produces 500 to 1,000 cones every year. More than half of the cones will be serotinous. In a sealed cone, the seeds may survive for 20 years or more. Some seeds have germinated after 150 years! Lodgepole pines live for 100 to 150 years. Grown trees are often killed by mountain pine beetles or by fire. Lodgepole seeds are designed to last a lifetime.

Ponderosa Pine *Photo courtesy of Greg Painter*

Photo courtesy of Debi Jensen

Fireweed

Lodgepole Seedling

After a fire, some plants might look dead on the charred ground, but there is treasure underground. Stems, roots and seeds are just waiting to be reborn. Many plants have bulbs, roots, or underground stems called rhizomes (RYE-zomes) that can survive a low or medium intensity fire. Beargrass is a tall grass that grows in clumps. It will sprout from a thick woody rhizome after a fire. About a year after a fire, quaking aspen will sprout back from its roots. Arrowleaf balsamroot grows back every year from a woody taproot. Surface fires give the soil a burst of nutrients, so a year or two after a fire these plants are covered with flowers. Fireweed is well named. After a fire, this beautiful pink wildflower will sometimes grow in thick carpets covering the forest floor.

Plants have sure developed some interesting ways of making sure their species survive fires!

Photo courtesy of IDFG

Every year wildfires blaze across Idaho. Often these fires happen in the mountains far from people, but sometimes they are a little too close for comfort. As the population of our state increases, so do our towns. Many of our cities are spreading into areas once wild. People could be at risk of having a wildfire close to their homes. How do you protect your home from a devastating wildfire? Remember the fire triangle — fuel, heat and oxygen. Remove one side of the triangle and a fire will burn out. The easiest leg of the triangle for a landowner to control is the fuel Every year wildfires blaze across Idaho. Often these fires happen in the mountains far from

Here are some guidelines for protecting your home:

- **Remove all flammable materials (potential fuels) within ten feet of the house; sometimes shrubs touching the house is not a good idea**
- **Consider any wood roof flammable; wet the whole roof frequently or consider a metal roof**
- **Remove flammable materials away from decks or boardwalks - if it's connected to the house, consider it part of the house**
- **Remove pine needles from gutters and the roof**
- **Reduce or remove surface fuels from within a 100 foot circle around the house and prune lower limbs of trees at least eight feet above the ground**
- **Remove fuels from around propane tanks**
- **Staple metal window screening over the openings to crawl spaces and under decks and walkways; this will keep burning embers from blowing under the house**
- **If possible, place sprinklers to wet an area that is 60 feet around the house**

Wildfire Words

Across

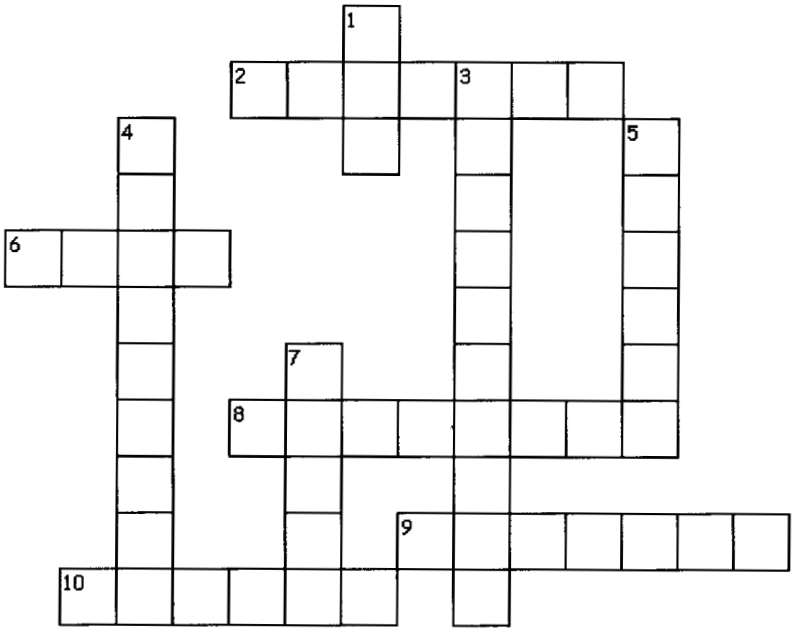
2. The _____is a common tool used by wildfire firefighters.
6. Thick _____protects ponderosa pine trees from fire.
8. Fuel, heat and oxygen make up the fire _____.
9. _____fires clean up the forest floor and give new plants places to grow.
10. Three-toed woodpeckers _____on fire to supply their food and nesting sites.

Down

1. Fire gives _____the nutritious grass they love to eat.
3. _____pine cones are sealed and need fire to open them.
4. A plant adapted to fire is called a _____.
5. _____Americans used fire to help them hunt.
7. A fire that burns in the tops of tees is called a _____ fire.

Words

Bark
Crown
Depend
Elk
Native
Pulaski
Pyrophyte
Serotinous
Surface
Triangle



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