

**Baby Burn and Fierce Flame,
from fire to forest fires.**

We also prevent wildfires with fire!



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Hello,
friends! I am
Flamey!



Where you see me, I am fire burning through the forest*. But don't be afraid! **My fire is not harmful**; it helps the forest to remain healthy and tidy. I totally know what needs to burn so that the forest is pretty and we can all enjoy it.

That is why the forest and I are great friends.

The guy with me is **Fierce Flame**. He also burns through the forest, but in a different way: **he causes forest fires***! So Fierce Flame is the one you do have to worry about! You only have to look at his sour-grapes face to see he is a bad guy...

Fierce Flame considers nobody and nothing but himself: he'll burn a tree or a house and even put people's lives at risk!

Actually, Fierce Flame and the forest are not very good friends...

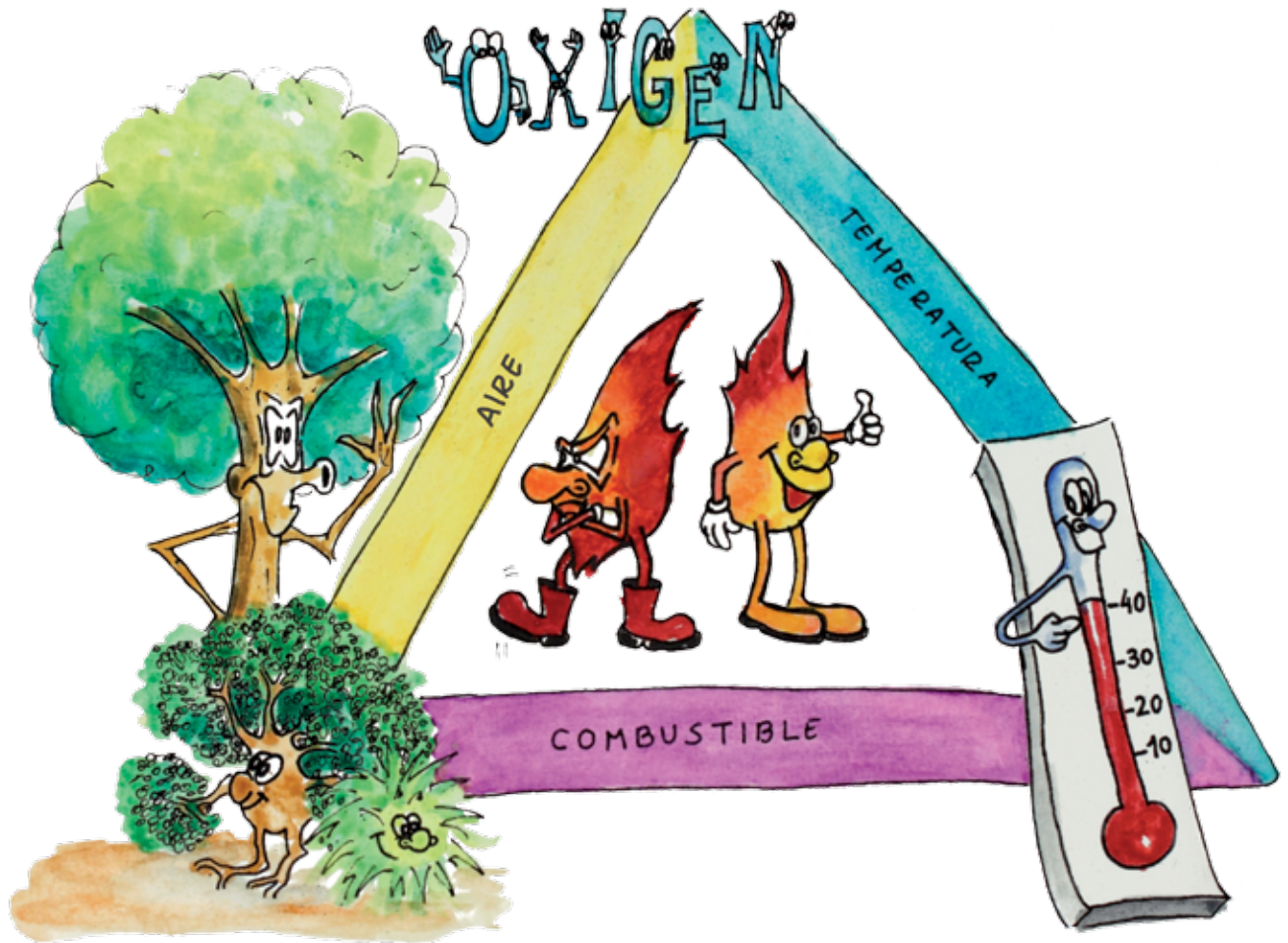
* When you see this symbol next to a word, it means it is in the Glossary at the end of this story, and you can look up its meaning.

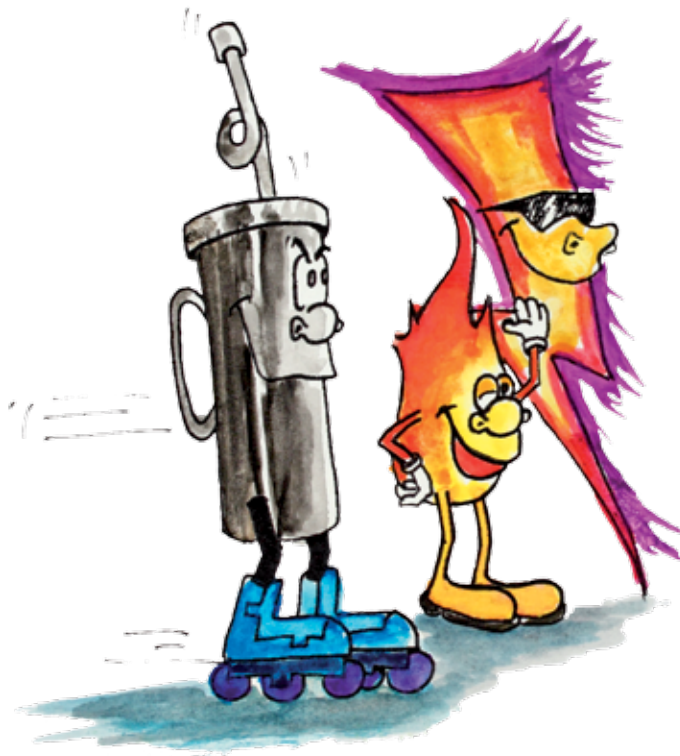
Like I told you, **Fierce Flame and I cause fire in the forest**, but that is nothing new. I have always existed and –before humans appeared– I already burned through the forest, being a natural process of it.

My work consists of regulating the growth of trees and shrubs. When you humans discovered and managed to master fire, Fierce Flame turned up and, with him, **forest fires appeared.**

4 The elements that take part in a fire or a forest fire are the same: vegetation*, oxygen* from the air, and heat*. These three items shape what is known as the 'fire triangle'*. Just like you, Fierce Flame and I breathe oxygen from the air, which helps us to stay alive, we eat vegetation –which is our food, our fuel– and the hotter it gets and the more vegetation we eat, the more we grow and grow!

On very warm and dry days, **Fierce Flame has got it easy to get into the forest and cause a fire.** Of course, the more trees, shrubs, plants and grasses he finds, the more he can eat and **the bigger the forest fire will be.**





Now that you know us, I want to introduce you to my friends and to Fierce Flame's colleagues. You'll see that we are very different gangs...

My friends are Lightning* and Drip Torch*. They are really great and nice guys. My friend Lightning is part of nature and can light forest fires. Sometimes he'll only burn undergrowth, but other times whole mountains. This lets younger and stronger trees to grow back.

On the other hand, Drip Torch is a close ally of the fire specialists* and helps them to start fires in areas that need a bit of tidying up. **This type of fire is known as a prescribed burn*.** Fire specialists watch it closely at all times to make sure it only burns exactly what they plan. Drip Torch imitates how Lightning operates, meaning that he acts like a natural fire, but only burns the undergrowth*. As you can see, you can trust all of us in my gang!

Our fires are always under control and help keeping the forest healthy.

Fierce Flame's colleagues are Stupid Cig and Mad Match.

Between you and me, I have to confess that they aren't very trustworthy.

This gang doesn't make fires like ours. They love making mega-fires* and -the saddest thing of all- they always make them on purpose. They burn up everything in their paths with no control and cause damage to nature and people.

They are very dangerous!

As you can imagine, our two gangs do not get along very well...



As I told you, the fires that Lightning, Drip Torch and I make to burn the forest are always for a good cause. For that reason, the forest loves us and the trees are some of our best friends.

Trees are great allies of nature and also of people. They give us the oxygen we need to breathe and the clouds needed to make rain. They are also home to lots of animals. **So, we have to love our friends the trees!**

Prescribed burns are not always necessary for cleaning the forest. Sometimes, when trees have lived for a very long time, a change is good for them. You might see them in your house converted into a chair, a table or even the sheets of paper you use to make lovely drawings. This means they can continue to feel loved and cared for at home with you, and will continue living happy lives.



Now that we know each other a bit, I will tell you my story.

I've lived in the forest for many years and have help it to be healthy and well cared for. In the past, there used to be many farmers living in and around forests growing crops. I burned the grasses and dry branches for them when they needed me.

There were also many ranchers, who let their herds run free so that they could eat the leaves of shrubs.

This kept the undergrowth nice and clean and I helped them burn the pastures* to get rid of old dry grass, so tasty young grass could grow, and give them food for their herds.

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I have also been a good friend to fire specialists, helping them clean the undergrowth when this was necessary. Therefore, I have always been on the side of farmers, ranchers and fire specialists, helping them **to make prescribed burns to reduce vegetation, prevent future fires and improve forests' health and vitality.**

All of us together were a great team!

You could compare my job to a good barber who always knows what hair to trim off with a scissors. The result was a countryside that –seen from the sky– looked like a mosaic of colours*: It looked like a painting from a famous artist!





Look! Here is the mosaic I was telling you about. Nature was an environment in which everyone lived happily together: there were areas with gardens, with vegetables, with fruit trees, with sowed fields, pastures for animals... **The forest was gorgeous!**

Do you see Lightning? He was there, on the top of the mountain. His fire could burn the undergrowth without damaging the tree crowns.



And Drip Torch could clean the forest in certain spots and around areas where people lived. Do you know where you could find me? **Helping farm-hands to burn crop residues*, like dry leaves, stalks and branches.**

It's true, when the forest was a colourful mosaic, we all were very happy!

But we all know that everything changes over time. With the development of industry, many farmers and ranchers that took such a good care of the forests moved from the countryside to cities and, slowly, **many croplands started to get smaller, and trees and shrubs started to grow everywhere and cover the land!**

The colourful mosaic that was so pretty started to fade, because the forest grew, occupying the old crop fields and, finally, **ended up as we know it today: a large green blanket as large as the eye can see.**



Since people abandoned the forests to move to cities, industries have grown quickly, which can be a significant source of pollution. **In turn, the forest has also kept growing untidily and in an uncontrolled way.**

16 You can see that there are trees growing over there, shrubs here... and the forest has gradually turned into a large mass of untidy vegetation, where the trees often get angry with each other, and are thirsty and get ill. Boy oh boy, the forest really needs someone that takes care of it and 'gives it a haircut'!

Can you imagine what a huge mega-fire this messy forest could generate?
What a tasty treat for Fierce Flame, Stupid Cig and Mad Match!



Unfortunately, Fierce Flame and his colleagues have taken advantage of this situation more than once to do their dirty pranks. **They have burned and burned everything in their paths: trees, crops, herds, houses... and anything else you can think of!** This gang has caused enormous mega-fires that have burned out of control!

If Lightning, Drip Torch and I cannot help the farmers, ranchers and fire specialists, who take such good care of the forest, the forest will keep growing and growing, making fire suppression harder and harder.

For this reason my friends, **it is so important that we take care of the forest all together,** as it is an essential source of resources, such as resin, honey, medicinal plants, wood and even nuts like pinecones and acorns.

If a fire has to visit the forest, I hope it is me and not Fierce Flame. I will make sure it is a happy forest, which you can go into and enjoy!



**Forest management*, planned over time,
is the best tool for preventing forest fires
and conserving our forests.**

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Do you want to help us explaining to other children what we can do to prevent forest fires and conserve our forests? Make a drawing and send it by email to the **Pau Costa Foundation:**
mefitu@paucostafoundation.org and we'll publish it on our website:
www.paucostafoundation.org/

Six basic ideas on fire to accompany the children's reading

1. What is fire for nature?

The Mediterranean climate is characterised by having the hottest season of the year happening at the same time as the driest season, and also with a high number of dry storms. All of these characteristics make forest fires a natural element in regions with Mediterranean climates.

Since fire is another natural element in nature, the species that live in Mediterranean regions have acquired a series of adaptive strategies that let them endure and survive fires burning through the forest.

This fact does not mean that fires are always positive for forests. In reality, when a forest fire occurs, it burns with great intensity, because the forests are not well managed or tidy, and many large forest fires have occurred recently in a short period of time. The high number of forest fires and their great intensity make the forests weaker, as they do not have time to recover and become stronger.

2. What is fire for humans?

Fire is the element that has contributed the most to the development of civilisation. It is essential for us in preparing food, for holding back the cold in inhospitable regions, it was the only source of lighting at night that humanity knew for thousands of years, and has a huge capacity to transform materials and adapt landscapes to the population's needs. For these reasons, we can say that thanks to fire, we human beings have been able to evolve.

Therefore, all these examples from daily life prove that controlled fires have benefited humanity and have been key to its evolution.

3. How are fire and landscape similar?

Fire and the landscape have many things in common. The two have natural origins and their evolution depends on human culture. In addition, both of them change over time and space, meaning they are dynamic elements in permanent transformation.

In recent years, the landscape has changed greatly and at a fast speed. Many people who live in rural areas and use resources from the forest to live have moved to cities, which is why forests are growing, without any organisation. With the accumulation of vegetation, the fire spreads much faster and burns at higher intensities.

For this reason, there has to be an adequate prevention and protection of goods and people against the risk of forest fires. Fire prevention and protection will be planned at a large scale for the entire landscape.

4. How can agricultural uses influence the reduction of mega-fires risk?

Forestry, farming and ranching uses are directly related to the risk of forest fires, as they influence the amount and distribution of vegetation, which acts as a fuel for flames.

Therefore, if no action is taken for the fuel –or vegetation– load in the landscape, it becomes extremely difficult for us to help a region to resist a forest fire. There is therefore the need to integrate farming uses (croplands, pastures...) and, even, prescribed burns, to reduce and redistribute vegetation. In this way, we can change from young and dense wooded areas, which are vulnerable to burning, to thick and spaced out trees, which are resistant to burning during forest fires.

The option of not managing the landscape implies that we have to deal with the current risks of extensive, intense and severe forest fires. Those risks entail a large threat and danger to people, houses, infrastructures and to the ecosystem itself. In addition, this situation can become worse due to climate change.

5. Climate change makes the situation worse.

The main environmental factors that have an influence on the vegetation condition and, therefore, on the behaviour of forest fires (intensity, speed, spot fires...) are precipitation (rainfall) and temperature.

The scenarios of climate change foretell a decrease of precipitation and an earlier onset of heatwaves. This fact will contribute to periods of high forest fires risk starting earlier on the annual calendar. That environmental conditions will contribute to fires behaving more extreme and intensely, which could limit the efficacy of the suppression techniques that could control them.

6. Suppression is the answer, but not the solution.

The real danger, mega-fires, are produced when there are extreme environmental conditions that foster them (drought, heat, wind, low humidity...). The reality of suffering more mega-fires is not just likely, but realistic. We must plan on living with mega-fires more frequent, in more places and for more months of the year. Thus, we must protect ourselves if we have to face situations that can end up being catastrophic. Preventing is acting.

Territorial regulations must be established (active and preventive) that are committed to controlling the vulnerability of farming, forest and their surroundings and urban-forest interfaces (wooded areas close to homes). We must break the continuity of the lands that burn, decrease the density and structure of vegetable fuel that burns, and reduce the fire risk of urban-forest interface areas.

Glossary

- **Combustion:** chemical reaction that releases energy and produces flames.
- **Drip torch:** tool used by fire specialists when executing prescribed burns. This tool can only be used by experienced and well-trained professionals wearing all the suitable safety gear.
- **Farming/vegetable residues:** dry trunks, branches and leaves produced during forest management tasks.
- **Fire specialists:** professionals trained in using fire for two main objectives: (1) as a forest management tool, and (2) as a tool to suppress and extinguish forest fires.
- **Fire triangle:** way to represent the different elements needed for fire to occur. Each side of the triangle represents one of the three elements needed for combustion: oxygen, heat and fuel. If any of these factors are missing, combustion is not possible.
- **Forest:** area of land covered with trees, shrubs and grasses.
- **Forest fire:** (out-of-control fire): uncontrolled fire that burns vegetation without a burning plan.
- **Forest management:** action to manage and improve the long-term quality of the forest in a planned, organised and sustainable way. The main objective consists of cutting down the weaker trees so that others have more space and can grow stronger and healthier.
- **Fuel:** substance and/or items that can burn or have a tendency to burn. In this story, the fuel is vegetation.
- **Lightning:** extremely intense electrical discharge released by clouds during a storm that releases a huge amount of heat when it hits a surface. Many lightning strikes in forests, but they will only cause a forest fire if it is hot and the forest is very dry and untidy.
- **Mega-fire:** a fire burning out of control, with a persistent speed, intensity and/or flame height that are greater than the capacity of the suppression system.
- **Mosaic landscape:** landscape made up of different areas including different land uses, for example predominantly forest areas intermixed with farmlands or pastures and, even areas affected by forest fires.
- **Oxygen:** gaseous chemical element needed to start a fire. It is also necessary for plants, animals and people to live.
- **Pasture:** area predominantly with grass providing food to livestock.
- **Prescribed burn:** (controlled fire): fire that burns the vegetation in the precise way that has been planned by the fire specialists.
- **Rangers:** professionals trained in forest management and sometimes authorised to conduct prescribed burns.
- **Spark:** red-hot particle produced by a burning material, for example a branch or a pinecone.
- **Temperature:** amount of heat in the atmosphere, for example in the forest.
- **Undergrowth:** all plants (bushes and scrubs) growing under the trees in a forest.
- **Vegetation:** all plants that live and grow in a specific land and climate.

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