

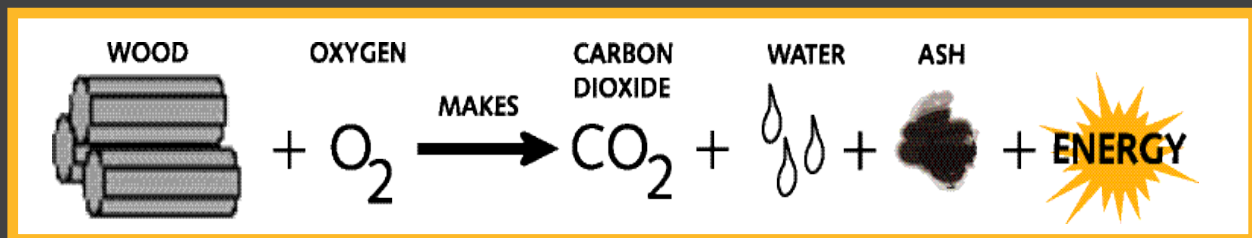
# JUST FOR U.S.\*

GRADES 4-5

\* Understanding Science

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Wood burns because of a chemical reaction. The scientific name for this chemical reaction is combustion.



Three things must be present for combustion to occur:

- ☀ Something that burns--the wood
- ☀ Heat to get the reaction started--a match
- ☀ Oxygen



Did you know that:

- ☀ All flames are not the same color?
- ☀ Some plants and animals need fire to survive?

# A GEORGIA FIRE FOREST

A fire forest is an ecosystem that needs fire to stay healthy. Two hundred years ago, Georgia had millions of acres of longleaf pine forest. Now, logging has removed almost all of these forests.

A fire forest needs to burn every one to three years to keep the plants and animals healthy.

Fire helps the forest in many ways. It clears away some plant species that compete for soil, nutrients and water. Young pine trees grow best in open spaces where they get light and nutrients.

Also, fire releases nutrients like nitrogen from leaf and wood litter on the forest floor. Certain plants, especially members of the bean family, then use the nitrogen.

Fire molds tall pine trees so that they do not touch one another, leaving spaces for the sun to shine through.



# Plants and Animals of the Fire Forest

Plants of the fire forest protect themselves from fire. The long needles of longleaf pine seedlings guide fire away from the bud. Many plants have long roots--below ground, they do not burn.

Almost 100 species of birds live in the longleaf pine ecosystem, and more migrate through. Many species of mammals, reptiles, amphibians and insects also are found here.

You might think that fire would kill all the animals in the fire forest. This is not true! Most animals just move away from the fire. Some large insects are carried up by the rising smoke. Hawks and kestrels like to eat "smoked" grasshoppers.

Georgia's longleaf pine ecosystem is home to many of the state's 66 species of endangered or threatened plants and animals. We must all do our best to help Georgia keep this precious resource!



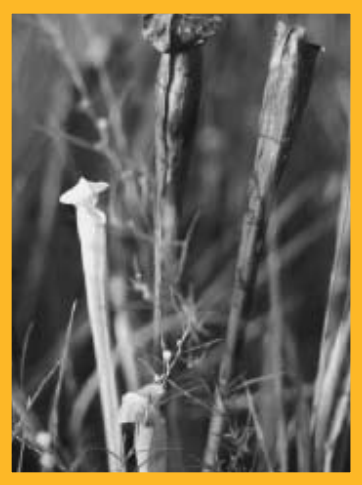
## Longleaf Pine

The longleaf pine can live 300-500 years, and can be 100 feet tall. It has very thick bark that protects it from fire and many insects.



## Wiregrass

There are so many wiregrass plants in the fire forest that the forest is sometimes called the "longleaf pine-wiregrass" ecosystem. Wiregrass grows in areas that burn most often.



## Pitcher Plant

Some plants in the fire forest survive by capturing and digesting insects and spiders. This kind of plant is called an "insectivore." The pitcher plant is an insectivore that is found in the wet parts of the fire forest.



## Southeastern pocket gopher

The Southeastern pocket gopher needs sandy soil for its tunnels. It even builds its own toilet underground!



## Red-cockaded Woodpecker

The red-cockaded woodpecker builds its nest in living pine trees. It loves the longleaf pine! Its babies are cared for by 4 - 10 adult birds, including the parents. Other animal species sometimes live in the nests of these social birds.



## Gopher Tortoise

The gopher tortoise is Georgia's state reptile. Gopher tortoises need low-growing plants and sandy soil for their burrows.



# Fire-y Fun

B	G	R	X	S	X	L	M
O	C	M	W	M	Q	I	P
X	U	A	T	O	E	G	E
Y	A	T	O	K	S	H	L
G	B	C	R	E	U	T	S
E	C	H	C	B	S	R	N
N	L	E	H	E	U	N	E
K	M	S	U	I	N	G	R
C	O	O	K	I	N	G	I
S	X	B	L	W	R	U	F
K	E	E	P	W	A	R	M

Find the "fire-y" words in this table and put a circle around each one. Hint: The hidden words are at the bottom of the page.

## Why does a candle flame burn straight up?

Answer: The hot gases at the top of the flame are less dense than the air around them, so they rise up, pushed by the cooler air that flows in. The rising gases pull the flame into the shape of a teardrop.



What would a candle flame look like if there were no gravity?

Answer: it would look like a ball!



Some answers to "Fire-y Fun": Matches, torch, keep warm, light, cooking, smoke, oxygen, burn, fire

**ONLY GROWN UPS  
SHOULD USE FIRE!**



How many new words can you make from the word CANDLES?

Some answers: an, as, ad, Dan, and, can, sad, end, cans, sand, cane, canes, led, lead, leads, lean, lend

A candle flame is orange, but not all flames are the same color. Different substances burn with different colors. Flame color can show what chemical is present in a sample.



Calcium salts  
turn the  
flame

Barium salts  
turn the flame  
yellow-green

Lead salts  
turns the flame  
blue-white

Potassium  
salts turn the  
flame pale

**COLOR EACH FLAME THE COLOR IT BURNS!**

Written by Linda Lbgdberg with assistance from V. Dailey, Chris Showalter, Larry Wilson. Layout illustrations and graphics are by Sheila Ward. The "fire forest" photographs are by Teri Nye.

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