Day 10 Light: Glowing
Science

Some creatures, like fireflies and glowworms are bioluminescent– they have the ability to make their own light, which makes it look like they are glowing. There are also many ocean creatures, including the lantern fish and mauve stinger, that have this ability. Scientists estimate that 90 percent of deep-sea animals – those that live deep down where it's darker – are bioluminescent. Bioluminescence can help animals see in the dark, create camouflage or attract others.

Try this activity to see how bioluminescence in living creatures really works! See attached instructions.

Want to learn more?

Creatures of Light
http://ow.ly/n80750AVx1N

Bioluminescence: Nature's Fireworks!
http://ow.ly/VCqP50AVx45

Make your own glowing decals: http://ow.ly/9gir50AVx65

WQED education

Day 10 Light: Glowing

Science

SPLASH AND BUBBLES

Make Glowing Water

With this simple project, kids and parents will create "glowing water" by adding the contents of a non-toxic highlighter to water and using a flashlight to create a "glowing" effect. This project is a great way to learn about bioluminescence in nature.

Materials

- [ ] Water
- [ ] 1 non-toxic yellow highlighter
- [ ] Glass jar, plastic water bottle, or other clear container
- [ ] Flashlight

Before You Play

Explain to your child that some creatures, like fireflies and glowworms are bioluminescent — they have the ability to make their own light, which makes it

look like they are glowing. There are also many ocean creatures, including the lantern fish and mauve stinger, that have this ability. Scientist estimate that 90 percent of deep sea animals — those that live deep down where it's darker — are bioluminescent. Bioluminescence can help animals see in the dark, create camouflage or attract others.

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Science

Directions

1 Fill the container with the water.

2 Pop off the back of the highlighter and pull out the ink soaked felt that is inside.

3 Put the highlighter felt under the water and squeeze it until the water is stained with the highlighter ink.

4 Turn off the lights, place a flashlight under the jar, and watch the water glow! As you admire, start a discussion with your child: What other things might glow in water? Do any fish glow under water? Why would a creature living in the water need to glow? Would this be helpful to those creatures living near the sunlight at the top of the water or those deep in the depths of the ocean? Why?

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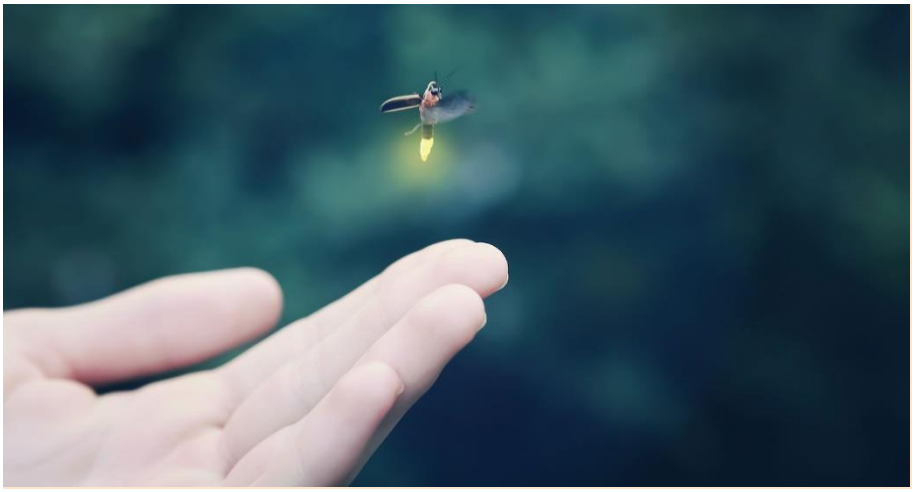
Day 10 Light: Glowing

Social Studies

In the summer and early fall, fireflies are out in full force! There is no better time to explore your own backyard and observe these interesting creatures.

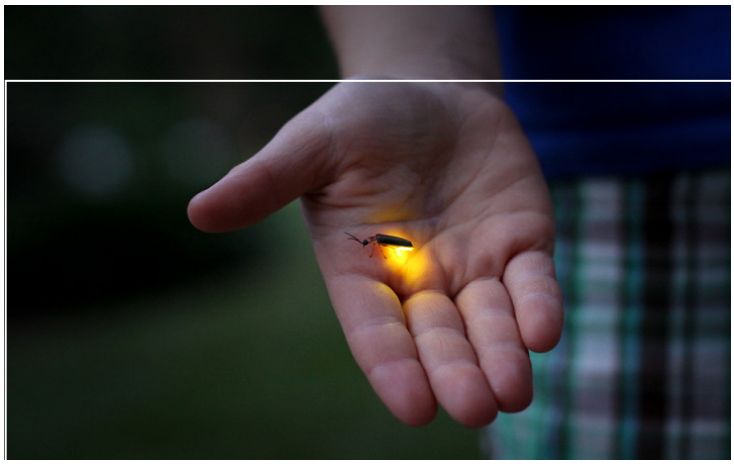
Did you know that fireFLIES aren't really flies at all? They are actually a type of beetle!

Read more about these insects using the attached handout.



Wonder of the Day **#1963**

Where Do Lightning Bugs Go During the Day?



SCIENCE — Life Science

Have You Ever Wondered...

- Where do lightning bugs go during the day?
- Are fireflies really flies?
- Do all fireflies glow?

Do you love warm summer evenings? We do! There's nothing better than sitting around a campfire in your backyard while you roast marshmallows for s'mores and look for lightning bugs.

Lightning bugs — also commonly known as fireflies — are so easy to spot during the night when their lights glow bright. But where do they go when the Sun rises?

Do they burrow underground to wait for the night to return? Maybe they bathe in the sunlight to recharge their lights?

Fireflies don't burrow underground. They also don't need sunlight to recharge their lights. So why don't we notice them during the day? Where do they go?

Fireflies are interesting creatures, and there's a lot about them that still mystifies scientists.

For example, fireflies aren't really flies at all. They're beetles! And there are over 2,000 species of them that can be found all over the world. Not all firefly species glow, though. In fact, most fireflies west of the Rocky Mountains in the United States do not glow.

Fireflies that glow do so when oxygen mixes with a pigment called luciferin, an enzyme called luciferase, and a chemical called adenosine triphosphate. This process is known as bioluminescence. Fireflies light up after dark in order to attract mates.

Since fireflies are nocturnal insects, they spend most of their daylight hours on the ground amongst tall grasses. Long grass helps to hide fireflies during the day, so you're unlikely to see them unless you're on your hands and knees looking for them.

Another reason you might not notice fireflies during the day is that they might not be there! Fireflies have very short life cycles. Adult fireflies live only long enough to mate and lay eggs. Some scientists believe fireflies may not even need to eat during their adult period. Firefly larvae usually live about one year (from one mating season to the next) before they become adults and give birth to the next generation of fireflies.

So even though you might not see fireflies once the Sun comes up, they're hanging around amongst the tall grasses. If you look for them, you'll find them. Of course, if you're like most people, you'd rather simply wait for dusk when they come to life and shine their lights for all to see!

Wonder Sources

http://www.smithsonianmag.com/science-nature/14-fun-facts-about-fireflies-142999290/?no-ist
http://www.firefly.org/facts-about-fireflies.html
http://www.firefly.org/firefly-habitat.html

Day 10 Light: Glowing

Math

NAME _____

Logic puzzles test your problem-solving skills. Can you use the clues to solve this glowworm puzzle?

THE STORY

Three glow worms named Curly Slinky, and Slim were sharing their home in a cave. They each had a favorite fruit they liked to eat: apples, pears, and peaches. Their biggest fears were fishermen, bats, and moles. They also loved hats and wore a beret, a cowboy hat, and a sombrero. Based on the clues, match the glow worms with their favorite fruits, biggest fears, and favorite headgear.

THE CLUES

Slinky thought the worm in the sombrero looked sillier than the worm that was afraid of the fishermen.

The worm that feared moles wore a sombrero and only ate pears.

Slinky was allergic to apples and never went near them.

Slim did not eat pears or wear a beret

CURLY	SLINKY	SLIM
apples	apples	apples
pears	pears	pears
peaches	peaches	peaches
fishermen	fishermen	fishermen
bats	bats	bats
moles	moles	moles
beret	beret	beret
cowboy hat	cowboy hat	cowboy hat
sombrero	sombrero	sombrero

Day 10 Light: Glowing
English Language Arts

NAME _____

What Would You Do If You Could Glow?

What would you do if you could glow? Would you wait until dark to shine your light? Or would you shine bright all day long? What uses can you think of for an ability to glow? Could you use your glow to communicate? What would you say? Think about what it would be like if humans could glow. Write a short story about what you would do if you could glow bright in the night!

Directions: Answer the questions. Then, write your story.

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Taken from: https://wonderopolis.org/wonder/where-do-lightning-bugs-go-during-the-day)

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