

Makers May

**Are you looking for something fun and educational to do at home?
Check out these library recommended STEAM activities, programs, podcasts
and more! Click the links to visit activities and books.**

For more ORL STEAM content visit: www.orl.bc.ca/steam

SCIENCE

Endangered species day– May 20

Activities:

[Be a food waste warrior](#)

[Animalia](#)

[Invasive species](#)

Books to Read:

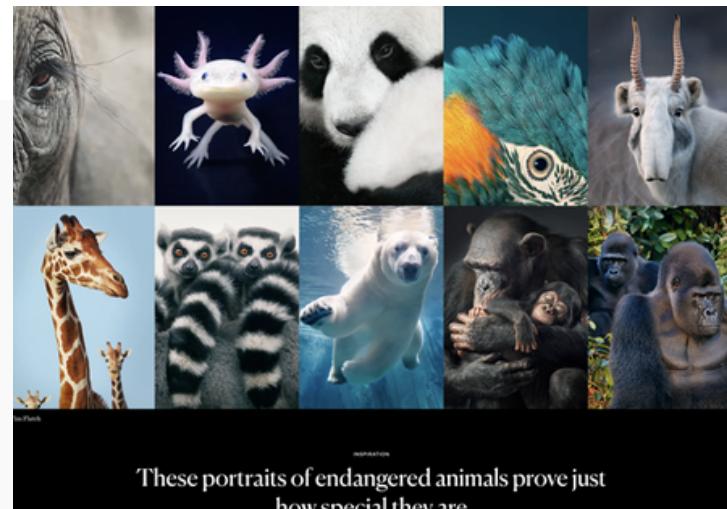
[Global Warming](#) by Simon, Seymour

[Keeping the Bees,](#)

Why All Bees Are at Risk and

What We Can Do to Save Them by Packer, Laurence Dennis Marchant

[Last Chance to See](#) by Adams, Douglas



Endangered species facts: An endangered species is one whose numbers are so small that it is at risk of extinction. Humans Are Responsible for 99% of the Endangered Species (Source: World Animal Foundation).

- Over 12% of bird species are under extreme threat and close to extinction.
- More than 20% of mammals are nearly extinct.
- 97% of all species on Earth are invertebrates, including butterflies, worms, and mollusks. One-third of them are close to extinction.

You can make a difference to this. Check out what you can do at

<https://www.endangered.org/10-easy-things-you-can-do-to-save-endangered-species/>

The International Day of Light - May 16

Activities:

[Make a Kaleidoscope- Kids](#)

[Make Polarized Light Art - Elementary and up](#)

[Measure speed of light- Teen and Adults](#)



Books to Read:

[Light by Cavell-Clarke, Steffi](#)

[A Ray of Light, a Book of Science and Wonder by Wick, Walter](#)

[Light Waves by Adler, David A.,](#)

Facts about Light: Things appear a certain color because it's the only color that is **reflected**. For example, a red car is red because it absorbs all other colors except red. Black objects absorb all colors and white objects reflect all colors. Light is a beam of **energy**. It travels in **wavelengths**. Without light, life on our planet would not exist. The International Day of Light is celebrated on 16 May each year, the anniversary of the first successful operation of the **LASER** in 1960 by physicist and engineer, **Theodore Maiman**. A laser produces a very narrow beam of light that is useful in many technologies and instruments. The letters in the word laser stand for Light Amplification by Stimulated Emission of Radiation

Check out posters at the end of the newsletter!

TECH FACT

Did You Know?

Theodore Maiman invented the first working laser in 1960.

8:28

ENGINEERING

Maker week- May

Activities:

Make anything- All Ages

Creative expression through STEM- All Ages

Made by you- All Ages

Books to Read:

Maker Projects for Kids Who Love Paper Engineering by Sjonger, Rebecca

Maker Projects for Kids Who Love Robotics by Bow, James,

Maker Lab Outdoors: Build, Invent, Create, Discover by Challoner, Jack

Maker week facts: May 16-22 yearly is considered as National Week of Making. This year's Week will highlight the diversity of Makers big and small, young and old, urban and rural. The Week of Making is an opportunity for individuals in communities to participate in Making activities locally, celebrating the innovation, ingenuity and creativity of Makers. The National Week of Making was created by Nation of Makers to support, encourage, promote, and highlight organizations who are working to create more opportunities for more people of all ages to make. **So, what are you going to make?**

Don't forget -- You can always come to the makerspace at the library to checkout some interesting stuff you can make!



Photo: Children's Museum of Pittsburgh

International Museum Day – May 18

Activities:

Virtual museum visit - All ages



Books to Read:

How the Dinosaur Got to the Museum by

Hartland, Jessie

Museum Trip by Lehman, Barbara

Night at the Museum by Michael Anthony,

Facts about Museums: The word museum comes from the Greek “mouseion,” the temples dedicated to the Muses and the arts they inspired. There are museums of all kinds -- wax, space, lego, bad art, hair, ramen (yeah you read that right), toilet museums, and even a potato fries museum! St. Peters Basilica, the biggest Catholic church in the world is part of the Vatican Museums. Galileo’s middle finger is on display at the Galileo Museum, Italy.

The underwater museum in Mexico has a vast collection of 500 sculptures. These are submerged deep in the ocean. Additionally, they are also instrumental in advocating the growth of coral reefs.

Check out your local museum and see what they have on display this month!!



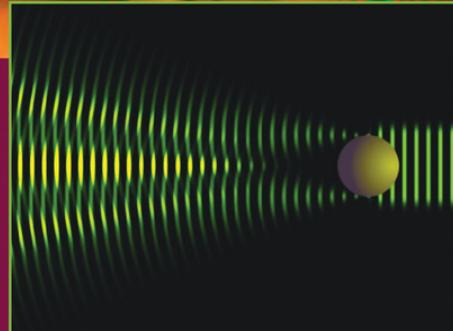
LIGHT As a Wave

On this soap bubble, interference causes light waves to combine and reinforce certain colors.

Photo courtesy Jane in Colour — <http://jane-in-colour.zenfolio.com>



A polarizing camera filter removes the light waves that are oriented in a direction that causes surface glare.



Light waves diffract when encountering a ball.

What is Light?

Light is part of the electromagnetic radiation spectrum, which is a form of energy. Light is usually considered to be the visible part of the spectrum. However, in physics, light is defined by all portions of the electromagnetic scale, including invisible forms such as infrared, ultraviolet, x rays, radio waves, and more. Light energy can be described as a wave, a particle (or photon), or a combination of both (called the wave-particle duality). The observations of how light behaves with matter demonstrates the various properties as a wave, particle, or ray.

Wave properties of light include diffraction, interference, and polarization, and are studied and utilized in the field of Optics and Photonics. Uses have expanded into areas that are critical to the health and quality of human life, such as in stereoscopic surgery where doctors can more precisely and safely perform surgery. Crop health and the detection of oil slicks can be monitored from space satellites, called remote sensing.

New discoveries in the field of Optics and Photonics opens the door to addressing and solving the challenges of a modern world.

Diffraction—Diffraction is the bending and spreading of light waves when encountering an obstacle or when passing through an opening, called an aperture. Different kinds of light behave differently when diffracted, and this helps researchers to identify the composition of light of unknown objects' such as stars.

Interference—Interference is a phenomenon in which two or more light waves superimpose to form a new wave. The result is the production of bright colors of different shades, or else dark bands with no color. These characteristics can be used in filtering light. For example, coatings on optical lenses in binoculars or sunglasses remove certain unwanted colors or stray reflections by filtering out specified wavelengths.

Polarization—A beam of light is made up of a vast number of waves at different wavelengths, and these normally vibrate at many angles to one another. A light wave that is vibrating in more than one plane is referred to as unpolarized light. It is possible to transform unpolarized light into polarized light, in which the vibrations occur in a single plane. Camera filters are a common application of this property.



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LIGHT

As a Particle

Atoms in the atmosphere of the earth absorb and release photons, resulting in the Aurora Borealis.



A solar sail propels a spacecraft because photons from the sun transfer their momentum to the ultrathin sail.
Photo courtesy of EISA & DLR Project Constellation

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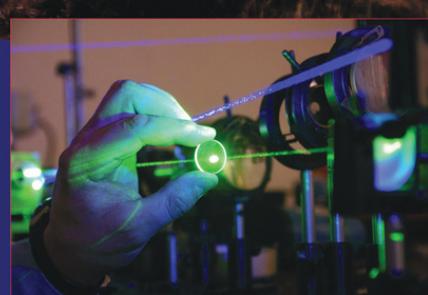
Particle properties of light include absorption, emission, and momentum and are studied and utilized in the field of Optics and Photonics. Besides enabling us to see, the use of light has expanded into areas that are critical to the health and quality of human life, such as in precision cancer treatments, defense and security devices, and new energy sources.

New discoveries in these fields open the door to addressing and solving the challenges of a modern world.

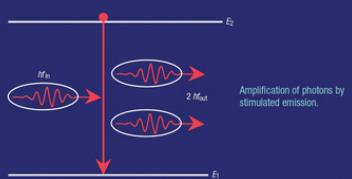
Momentum-Photons (or particles) have energy and momentum, and a photon's momentum can be seen to change when it hits a surface.

Absorption-Electrons inhabit discrete energy orbitals, which are regions around the nucleus of a particular atom where the electron can more frequently be found. Electrons will occupy the lowest energy orbital possible. Photons, acting like particles, hit that electron; the electron absorbs the energy and occupies a higher energy orbital of the atom.

Emission-An atom that has absorbed a photon is then in a temporary excited state, and unless continuing to absorb additional photons it will return to its original state upon which a photon maybe emitted.



Lasers are the result of the stimulated emission of photons, producing a very bright and intense beam of light.



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