



# Girl Scouts *at home*

- Make sure you have all your materials
  - ROYGBIV colored pencils or crayons
  - White paper
  - Small piece of card board
  - String
  - Scissors
  - Tape/ glue stick
  - Something round to trace
  - Dark construction paper (blue or black)
  - Plastic wrap
  - Sunblock

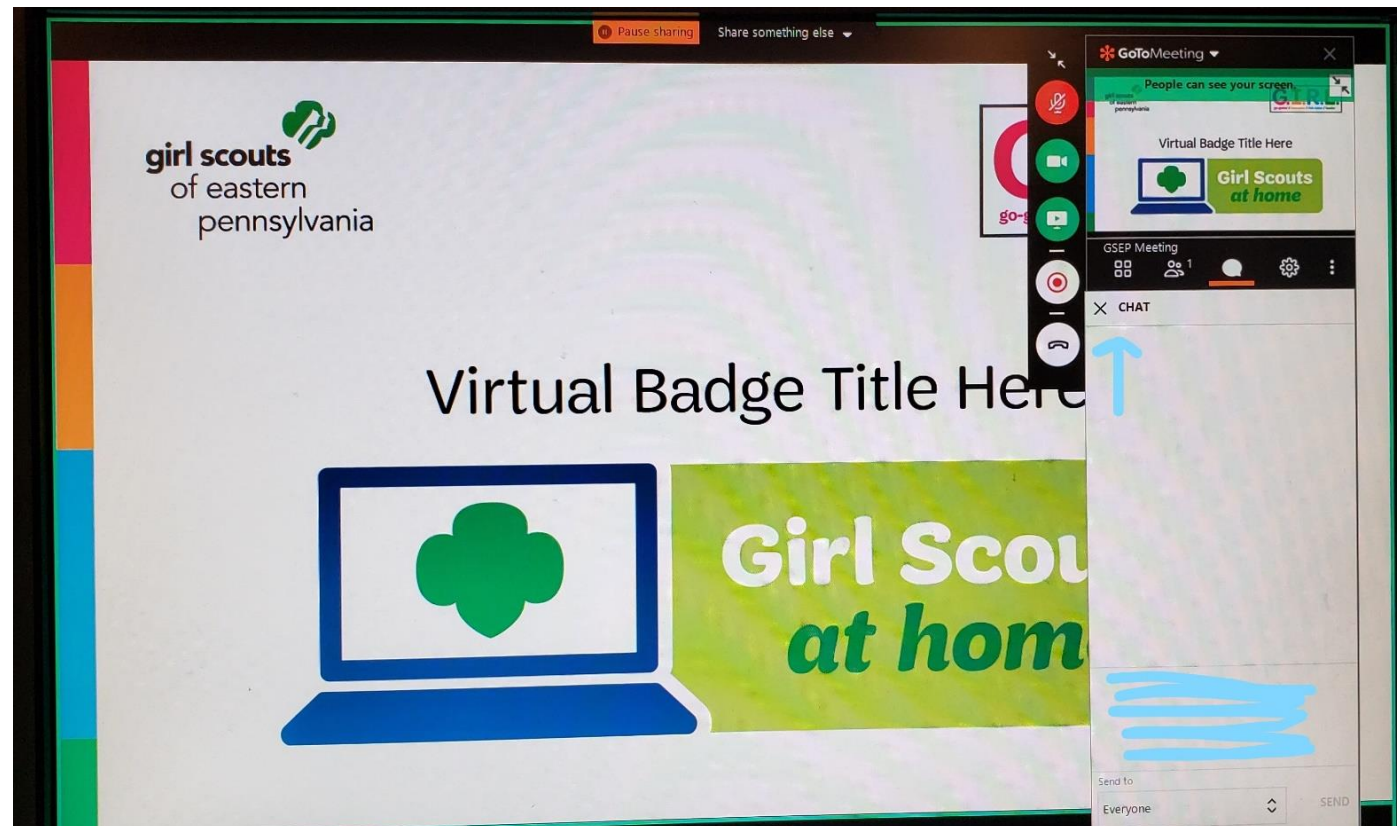


CADETTE

Space Science Researcher

# How will this Virtual Troop Meeting Work?

- On the right side of your screen, there is a control panel. You should see a microphone, a video camera and a chat bubble.
- When we sing together, you will want to click on your microphone so it is green. Then everyone will be able to hear you.
- If you have a webcam, clicking on it will let everyone else in the meeting see you too.
- The Chat Log looks like a cartoon thought bubble...see it underlined in red? You can type questions or comments into the chat log and everyone will be able to see what you write!

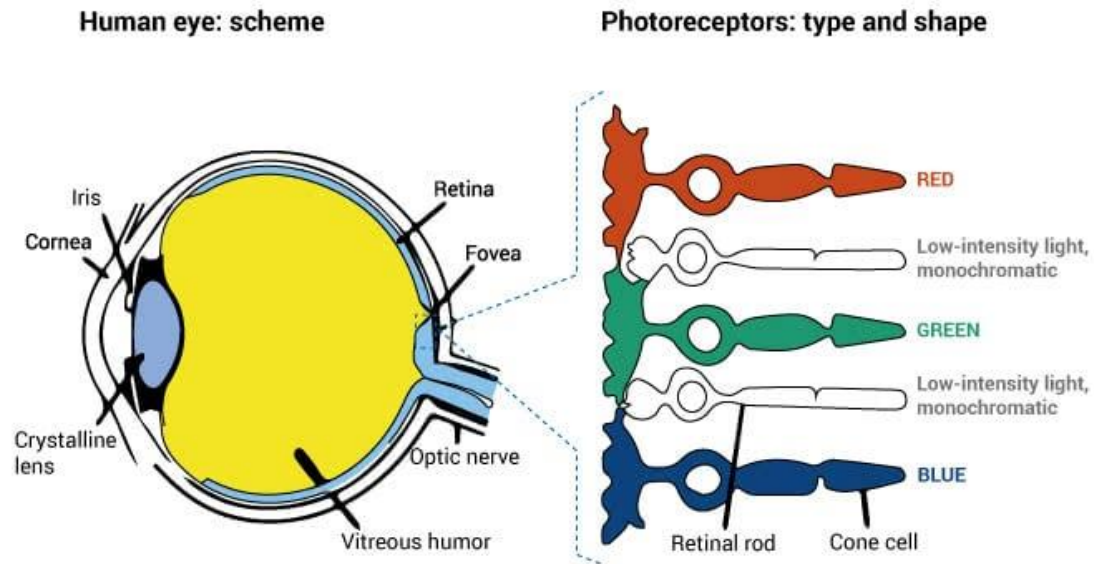


# Space Science Reasrecher

- Badge Requirements
  1. What more can you see?
  2. Explore Visible Light
  3. See the Stars in a New Way
  4. Expand your Vision
  5. Conserve the Night Sky

- Purpose of this Badge
  - Understand more about the amazing properties of light, and how we use it to make discoveries about the universe and space science.

# What More Can You See?



How does light effect how we perceive the world?

We are going to make a colored spinner and see how our eyes interpret the colors we see.

# Get out your materials

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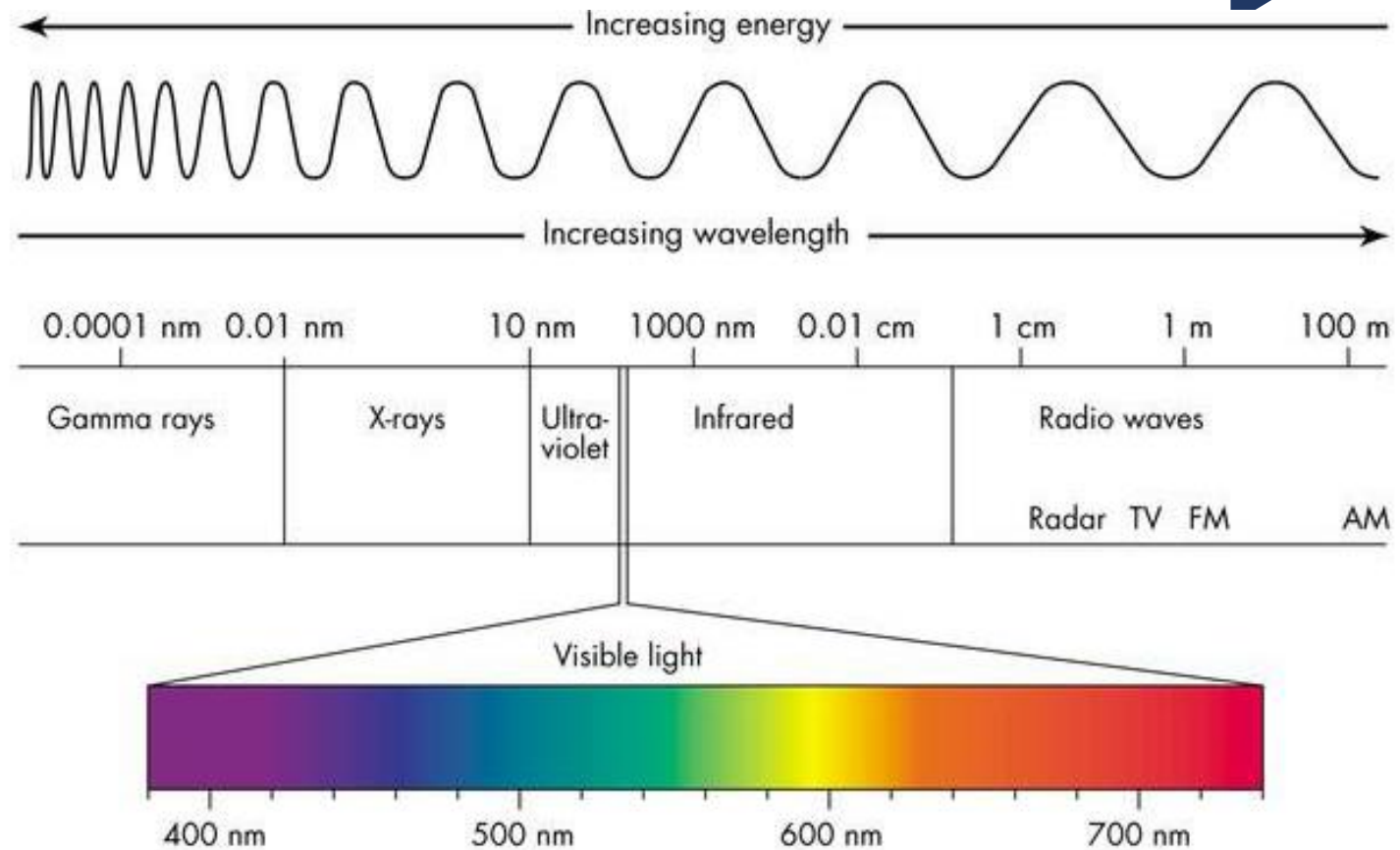


# WHAT DID YOU SEE?

- White Light
- What colors can we see in the dark?

## WHAT CAN'T WE SEE?

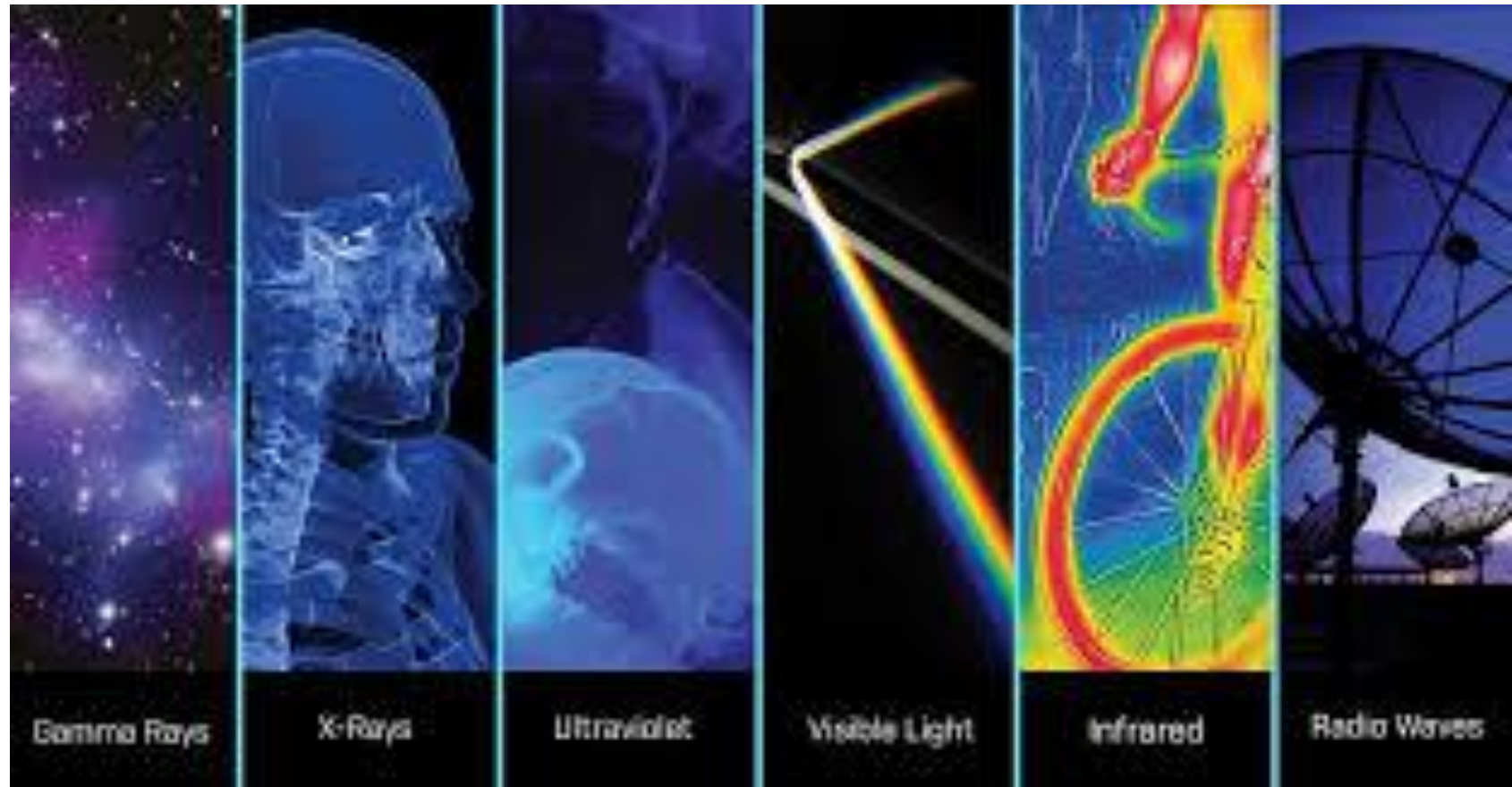
- Gamma Rays, Xrays, UV light, Infrared light, Radio waves





# Explore Invisible Light

- What waves lengths do you wish you could see?
- What observations did you see in ways humans are using light waves we cannot see?



# SUN PRINT

- The sun gives off visible light, but what other light does it give?

Get out your materials!

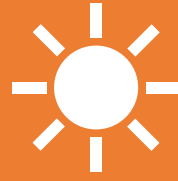
Dark construction paper (blue or black)

Plastic wrap

Sunblock



# See the Stars in a New Way



Our view of the night sky changes from night to night and season to season.



What are some constellations you know and can point out in the sky?



NASA tools :  
<https://waps.cfa.harvard.edu/eduportal/js9/software.php>

# Expand Your Vision

People have used the night sky for centuries.

Navigation

Harvest times / calendars

Worship

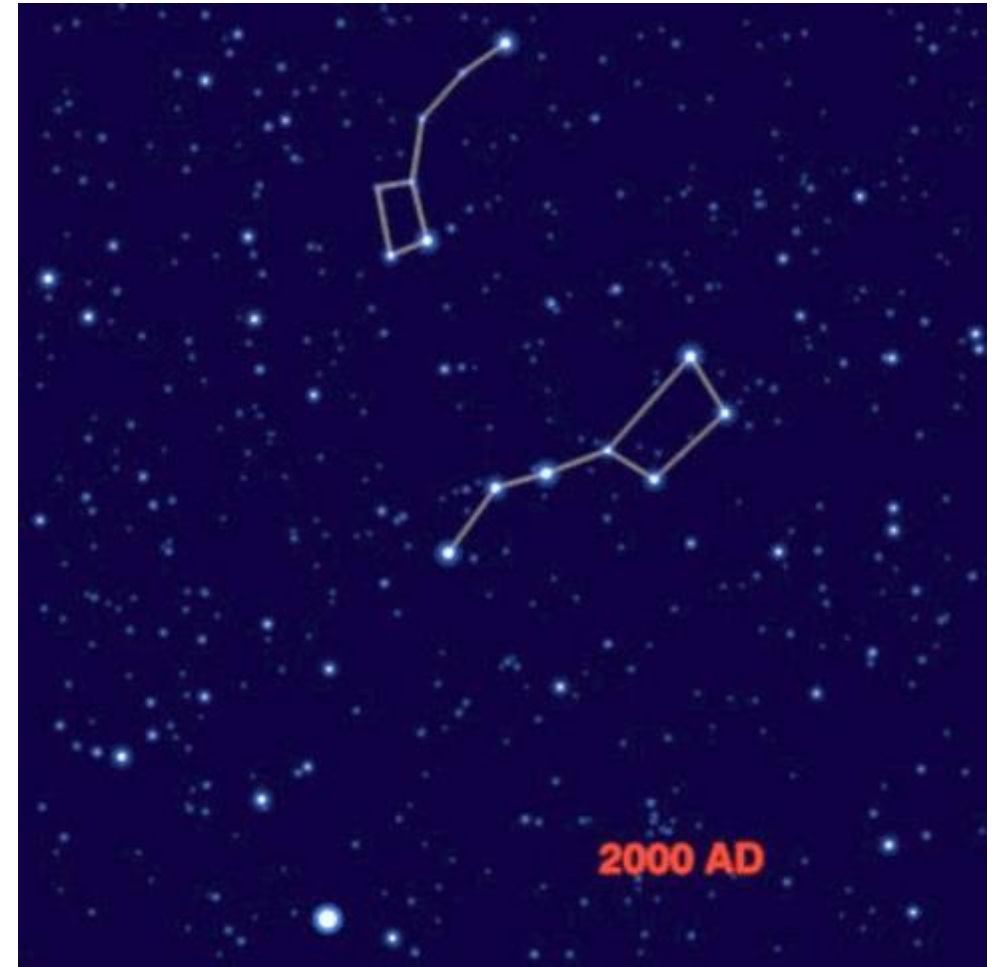
Entertainment

- A **constellation** is a group of stars that make an imaginary shape in the night sky. They are usually named after mythological characters, people, animals and objects. In different parts of the world, people have made up different shapes out of the same groups of bright stars.



# Popular Constellations

## Big Dipper / Ursa Major



# Popular Constellations

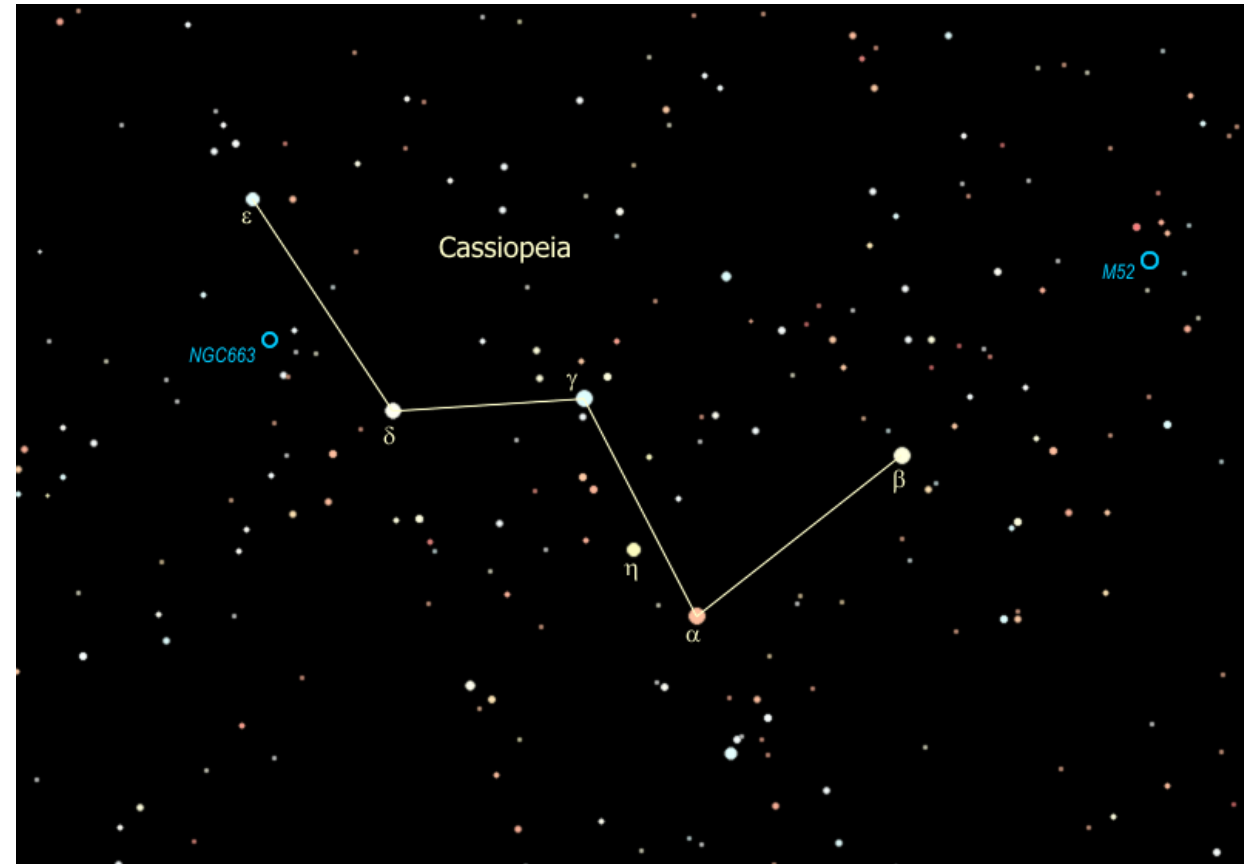
**Orion**



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# Popular Constellations

## Cassiopeia





# Popular Constellations

## Pleiades / The Seven Sisters





# How can you look at the night sky?

- **Find a dark outdoor location**
  - Try to do this when the moon is in a new phase or not out
  - You also want a clear night with no clouds
- **Let your eyes adjust to the darkness**
- **Look into the sky**

**How to find constellations, planets, and other stuff in the sky....**

**Get an App**

There are many free apps that will tell you what you are looking at in the



# Conserve the Night Sky

Why do we need a dark sky?

- **Animals**
  - **Frogs and Toads**
  - **Coral**
  - **Sea Turtles**
  - **Insects**



# What can we do to make the night sky darker / preserve the darkness

- Use only fully shielded, dark sky friendly fixtures for all outdoor lighting, so lights shine down, **not up**.
- Use only the right amount of light needed.
- Install timers and dimmer switches and turn off lights when not in use.
- Turn off lights in office buildings and homes when not in use.
- Work with your neighbors and local governments to ensure outdoor lighting isn't harming the wildlife in your area.

Visit [darksky.org](https://darksky.org)



# What is next?



Check out the resources!

<https://www.darksky.org/>  
<https://waps.cfa.harvard.edu/eduportal/js9/software.php>  
<https://mo-www.cfa.harvard.edu/cgi-bin/OWN/Own.pl>



When you can... Observe the night sky. See what constellations you can find. See if you can see planets.

Get a star app to help you



Try to observe the night sky in different locations



See how light pollution effects what you can see in the night sky



**TAKE ACTION:** try to reduce your light pollution and see if you can get others to do the same