

A night sky photograph featuring the Milky Way galaxy stretching across the frame. The foreground shows the dark silhouettes of trees and a horizon line. A semi-transparent teal box is overlaid on the right side of the image, containing the title text.

# Artificial Light at Night: A primer for thinking about health & well-being

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University of Utah minor in Dark Sky Studies: a first-in-the-world program focused on the human relationship with the night.



<https://plan.cap.utah.edu/dss/>





Health & Well-Being includes:

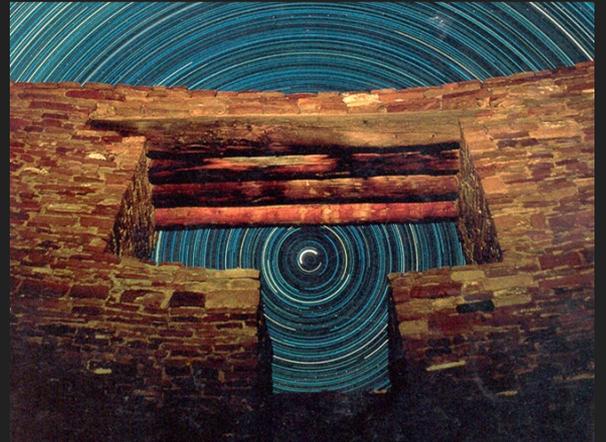
- Physiological responses to light in the human body





## Health & Well-Being includes:

- Physiological responses to light in the human body
- Ecological and cultural resilience



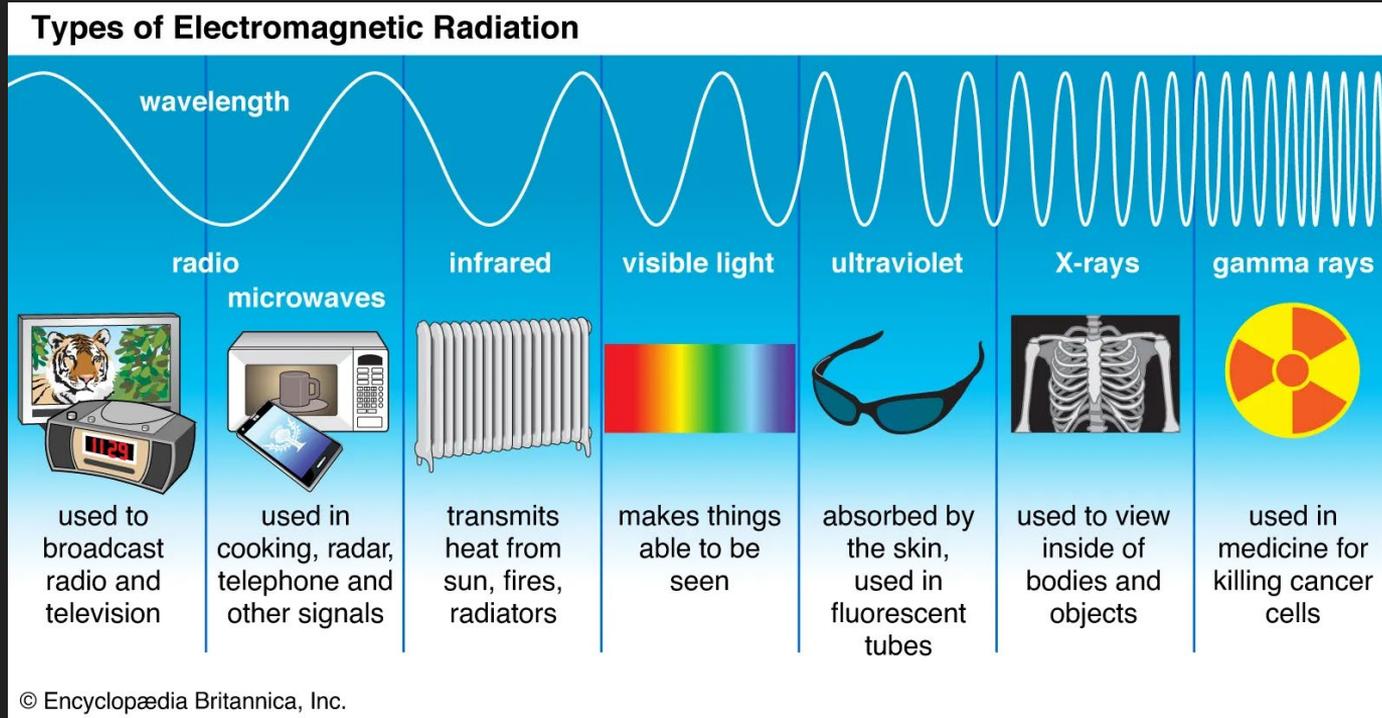


## Health & Well-Being includes:

- Physiological responses to light in the human body
- Ecological and cultural resilience
- Safety

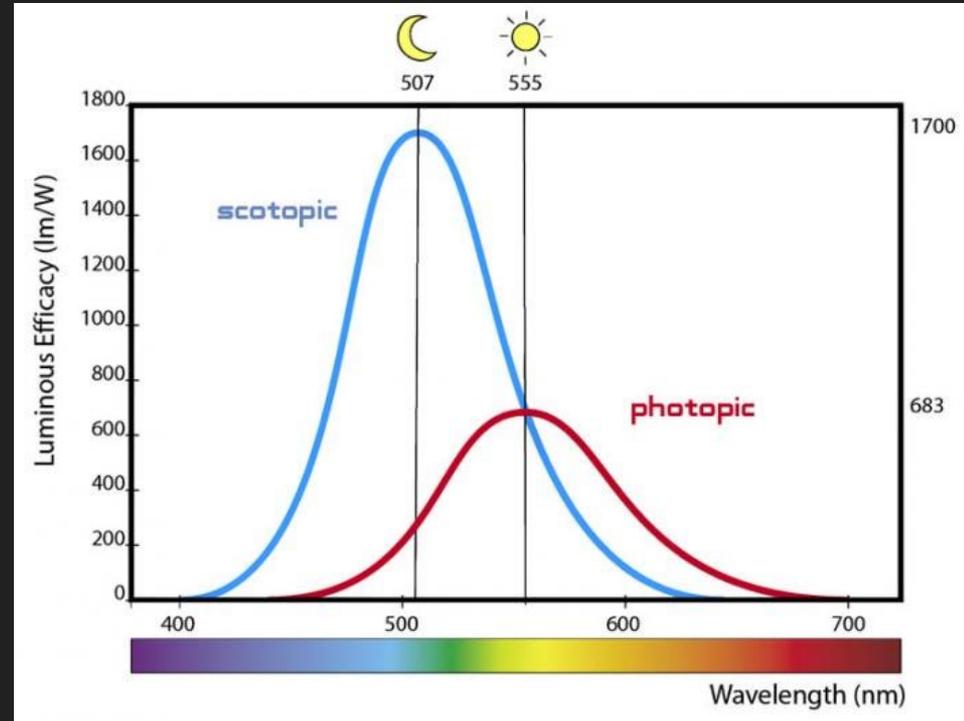
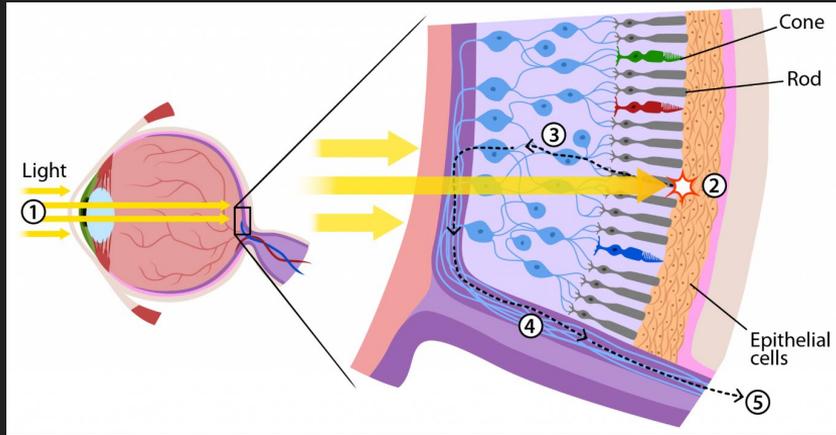


# Physiological responses to light in the human body





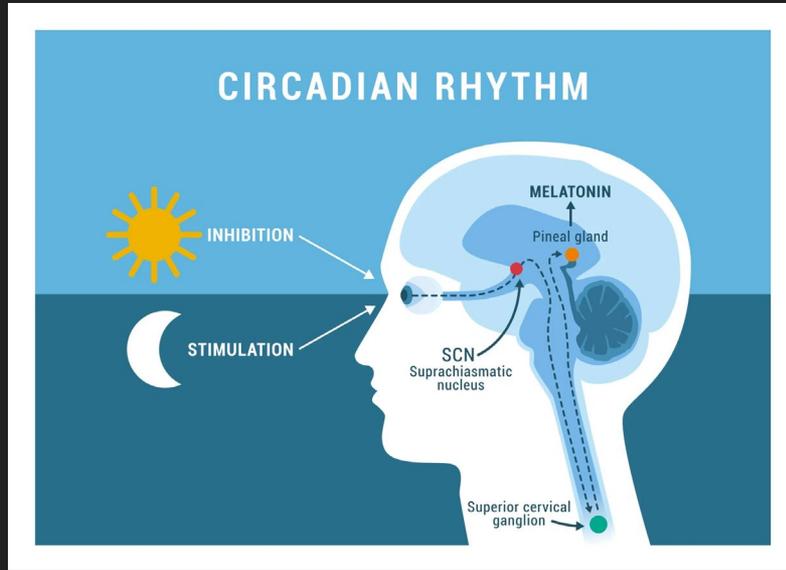
# Physiological responses to light in the human body





# Physiological responses to light in the human body

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Varied light exposure across the day and night regulates melatonin production, a very important hormone implicated in:

- Healthy sleep
- The ability to focus
- Digestion
- The immune system (especially cancer suppression)
- Mental health

Eunice will elaborate on this.



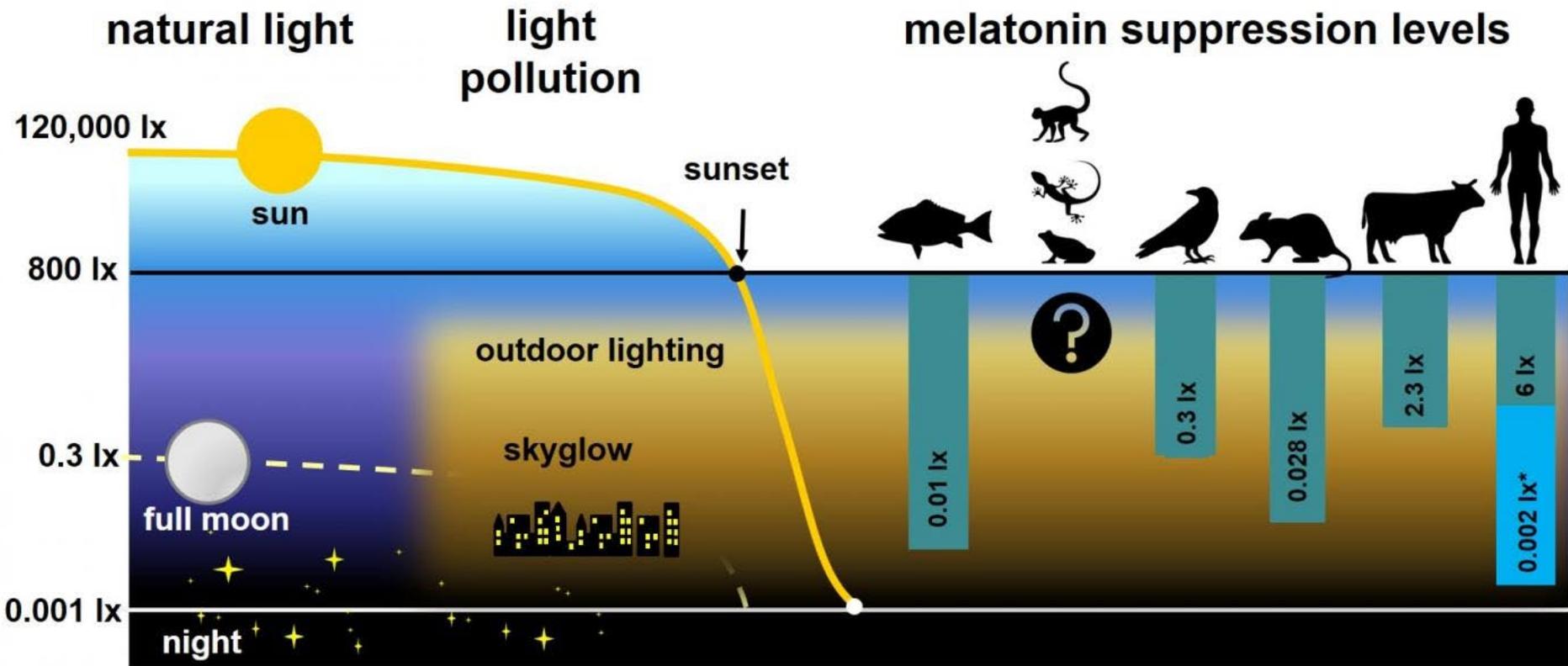
# Ecological and cultural resilience

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# Ecological and cultural resilience





# Ecological and cultural resilience

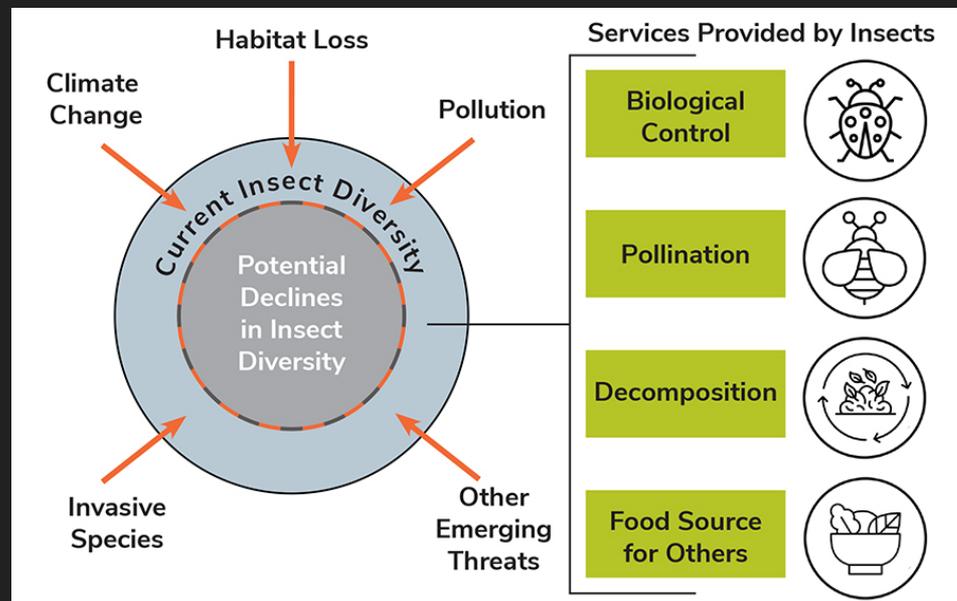
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# Ecological and cultural resilience

The benefits of healthy ecosystems—such as clean air, clean water, pollination of crops and native plants, and robust food webs—all depend on a diverse and thriving community of insects and arthropods, "the little things that run the world."





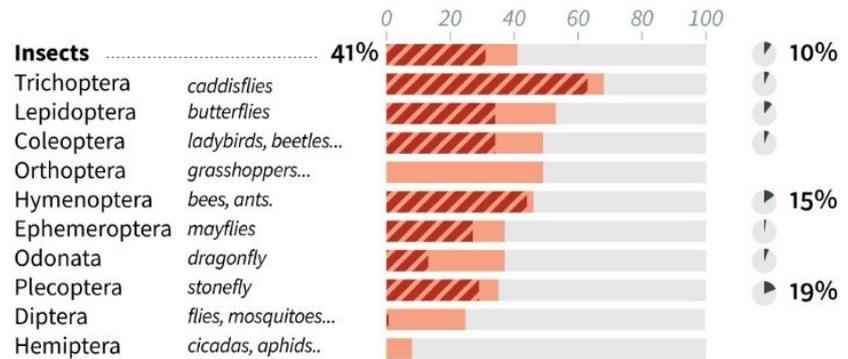
# Ecological and cultural resilience



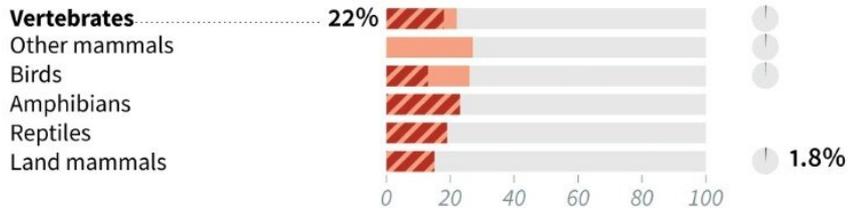
Kim Smith

## Insects in global decline

■ Nearly half the species in rapid decline
 ▨ Including a third threatened with extinction
 ■ Extinction rate\*



... two times more than vertebrates



Source: Biological Conservation 232

\*% of species not observed for 50 years



# Safety

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- Navigation
- Crime
- Perception (along with anxiety and equity)
- Long term safety related to previous slides



# Safety

## Five Lighting Principles for Responsible Outdoor Lighting



Responsible outdoor lighting is

### 1 Useful

#### Use light only if it is needed

All light should have a clear purpose. Consider how the use of light will impact the area, including wildlife and their habitats.



### 2 Targeted

#### Direct light so it falls only where it is needed

Use shielding and careful aiming to target the direction of the light beam so that it points downward and does not spill beyond where it is needed.



### 3 Low Level

#### Light should be no brighter than necessary

Use the lowest light level required. Be mindful of surface conditions, as some surfaces may reflect more light into the night sky than intended.



### 4 Controlled

#### Use light only when it is needed

Use controls such as timers or motion detectors to ensure that light is available when it is needed, dimmed when possible, and turned off when not needed.



### 5 Warm-colored

#### Use warmer color lights where possible

Limit the amount of shorter wavelength (blue-violet) light to the least amount needed.





Thank you!

