



Responsible Light at Night: The Impacts of Light on Wildlife & Ecosystems

March 3, 2022

A few reminders

- Audience is automatically muted.
- Please use the chat function to submit questions during the discussion. The panel will answer questions at the end of our discussion
- The webinar will be made available on the DLC website
 - <https://www.designlights.org/news-events/on-demand-past-events/>

Our Panelists



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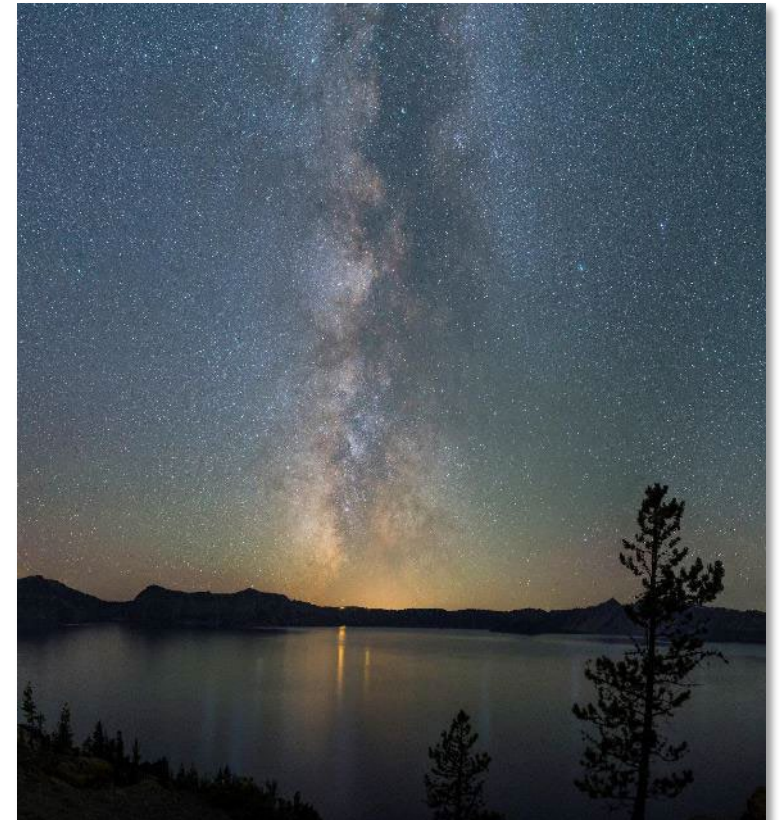
Protecting the Night for Future Generations

"...to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." -1916 Organic Act



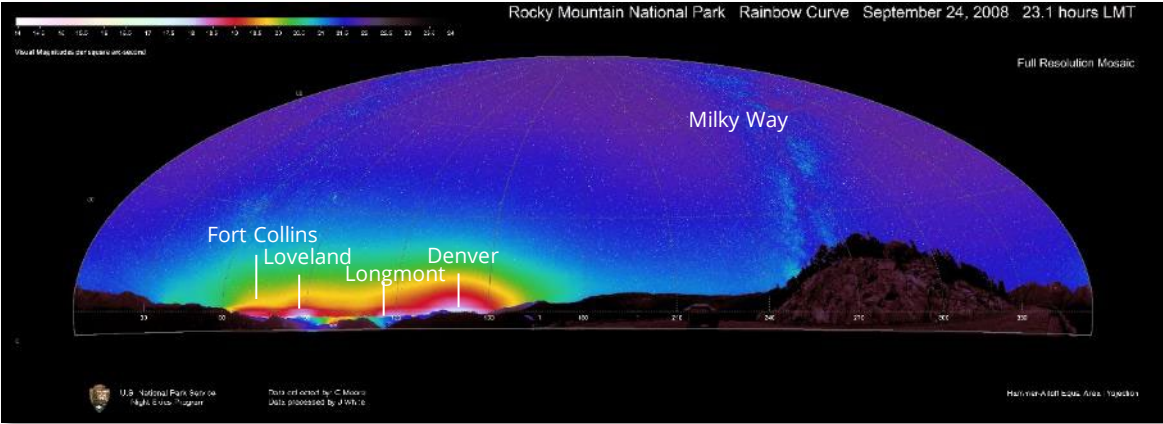
Natural Resource Stewardship and Science

Natural Sounds and Night Skies Division



Crater Lake National Park, OR

Understanding and Sharing the Night



Big Bend National Park, TX



Canyonlands National Park, UT

ABOUT

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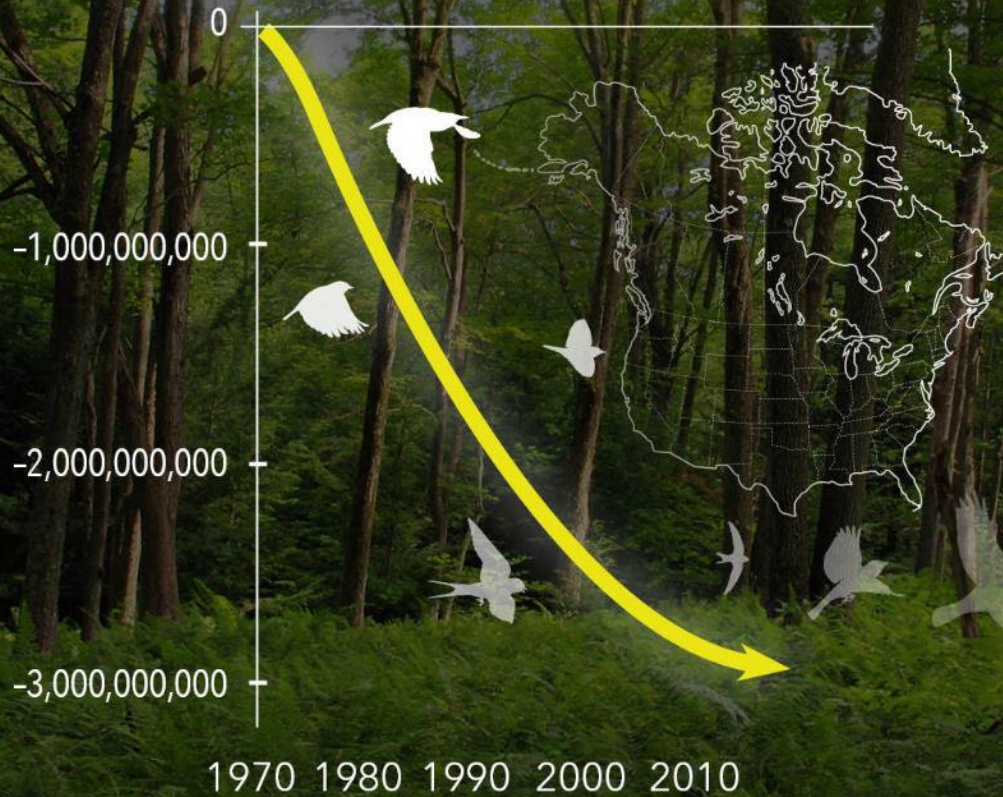
About

Dedicated to advancing the understanding and protection of the natural world, the Cornell Lab joins with people from all walks of life to make new scientific discoveries, share insights, and galvanize conservation action.



2.9 billion

birds gone since 1970



Forest by Nicholas Tonelli/Creative Commons, Map from Birds of North America birdsna.org

Courtesy of the Cornell Lab of Ornithology. Source: Science, 2019

Migratory Birds

2.5
BILLION
MIGRATORY BIRDS
LOST SINCE 1970

2 IN 5
BALTIMORE ORIOLES
LOST SINCE 1970



-28%
POPULATION LOSS
IN MIGRATORY
BIRD SPECIES
SINCE 1970



Courtesy of the Cornell Lab of Ornithology. Source: Science, 2019

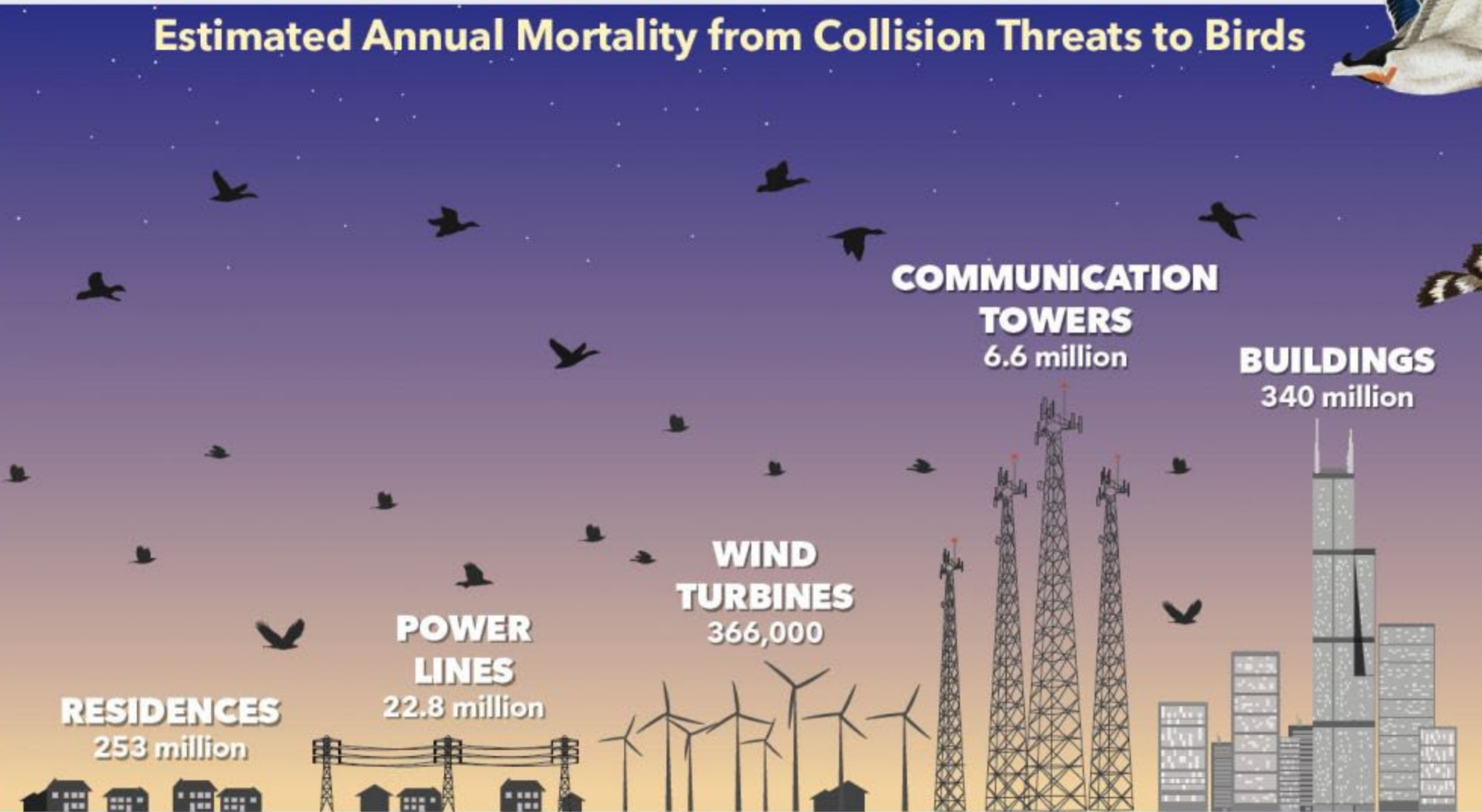
Baltimore Oriole by Gary Mueller/Macaulay Library, Forest by Nicholas Tonelli/Creative Commons



Energy · Quality · ControllabilitySM

DANGEROUS SKIES:

Estimated Annual Mortality from Collision Threats to Birds



MIGRATORY CRUISING ALTITUDE

WATERFOWL
200-4,000 ft

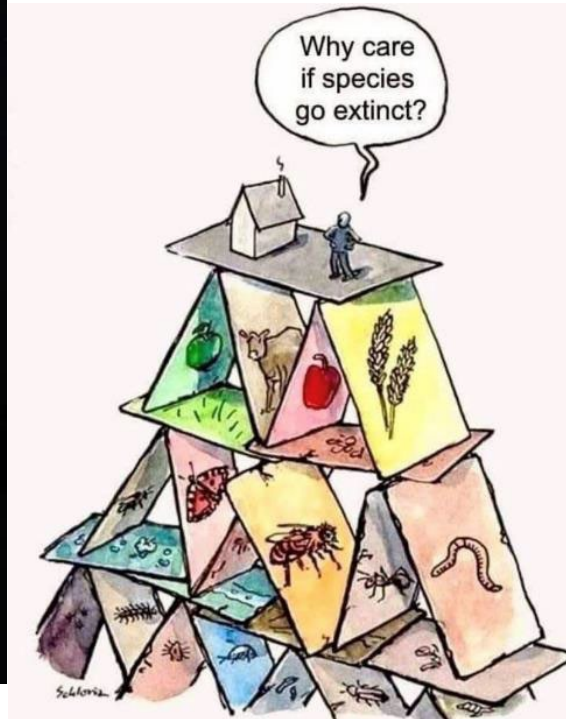
RAPTORS
700-3,000 ft

SONGBIRDS
500-2,500 ft



Tell me why

Anthropogenic Light at Night (ALAN)

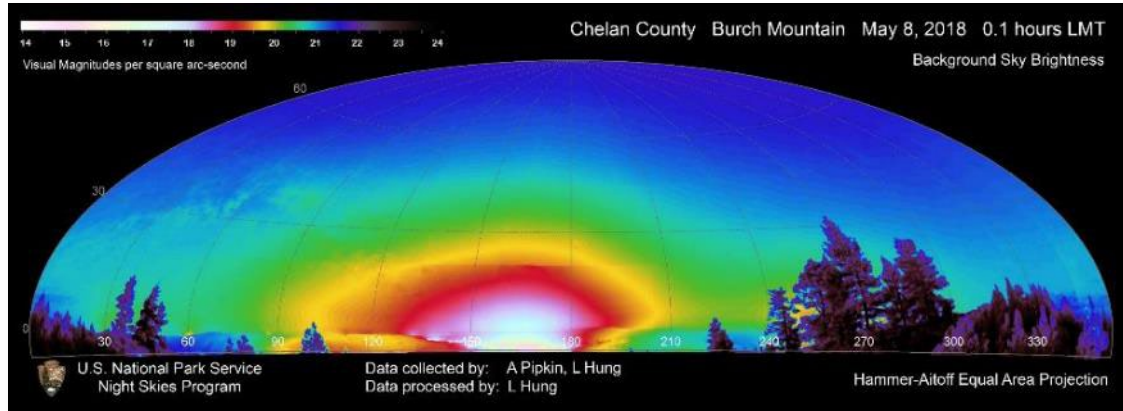


TRENDS

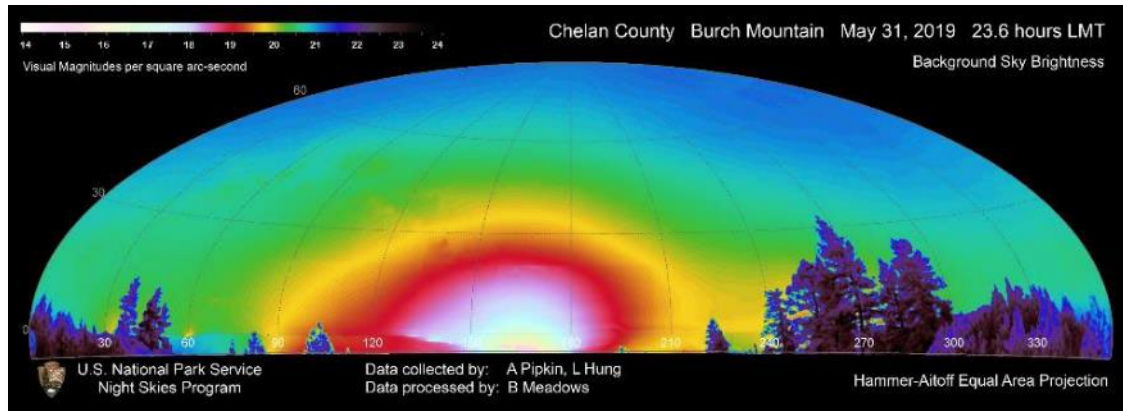


Impacts on the environment

Chelan County, Washington

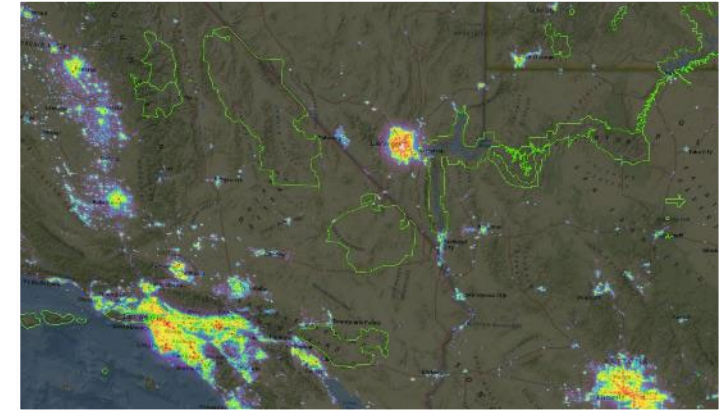


Before

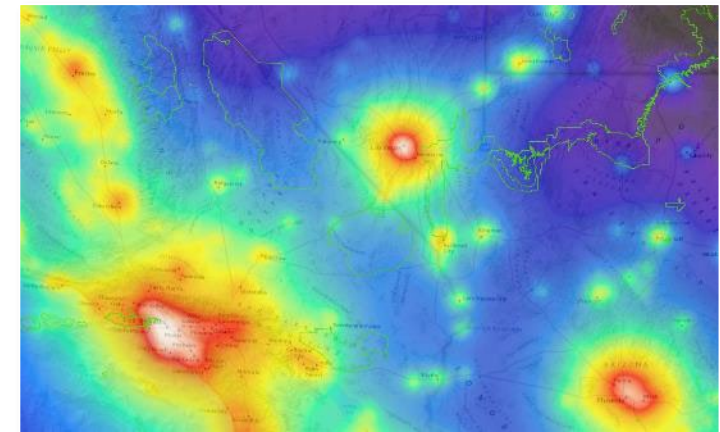


After – 60% Increase in Skyglow

Landscape Effect

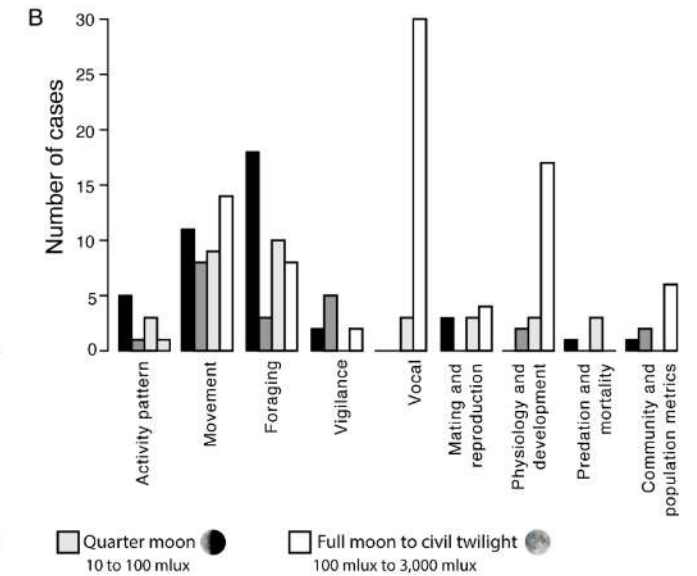
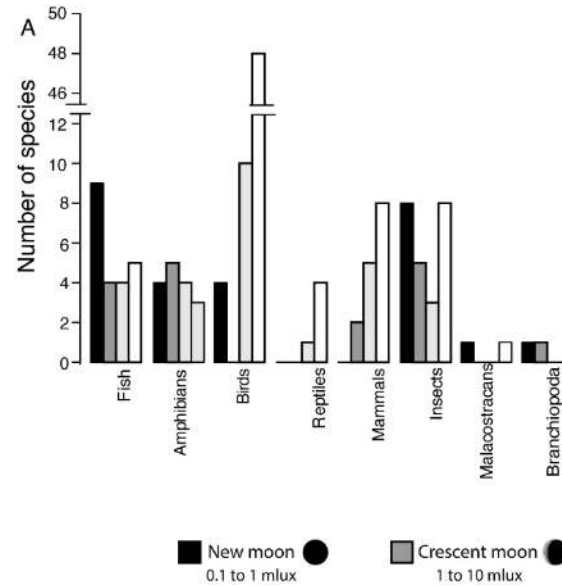
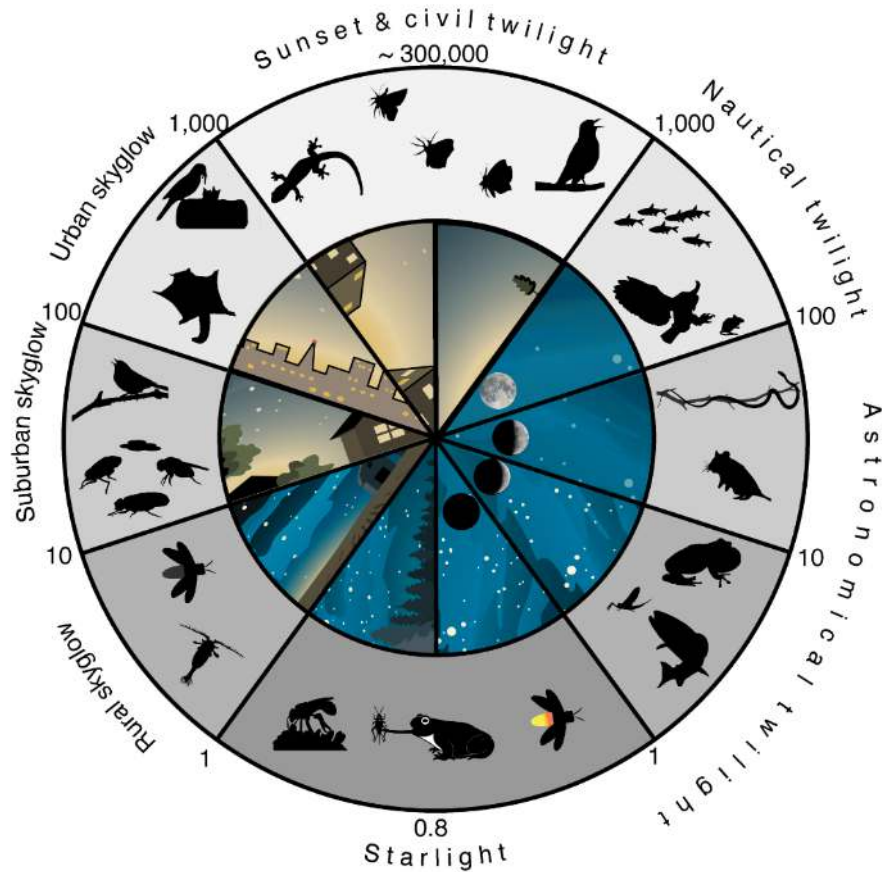


Upward Radiance



Skyglow

Ecological Impacts of Light



Seymoure et. al (in review)

National 9/11 Museum & Memorial Tribute In Light





Up to 1,500 birds may have flown into Philadelphia skyscrapers -- in a single day

By Giulia Hayward and Saeed Ahmed, CNN
 Updated 10:25 AM ET, Fri October 9, 2020



A general view of the Philadelphia city skyline

(CNN) — The only word Stephen Maciejewski can use to describe the event is traumatic. It should have been a routine morning for Maciejewski, the 71-year-old Audubon Pennsylvania volunteer. He expected to find some dead or injured birds that need to be collected, and tallied. It was, after all, peak migration time.

But on the morning of Sunday, October 2, he quickly realized there were far more birds than he was used to retrieving. Hundreds more.

"I've never seen anything like this," Maciejewski told CNN on Thursday. "There were birds everywhere, and they were all dead."

Maciejewski had begun collecting the fallen birds at 5:30 a.m. Two hours later, he realized he needed backup. He called Keith Russell, the program manager for urban conservation for Audubon Pennsylvania.



"I immediately jumped out of bed," Russell told CNN. "This was a big deal."

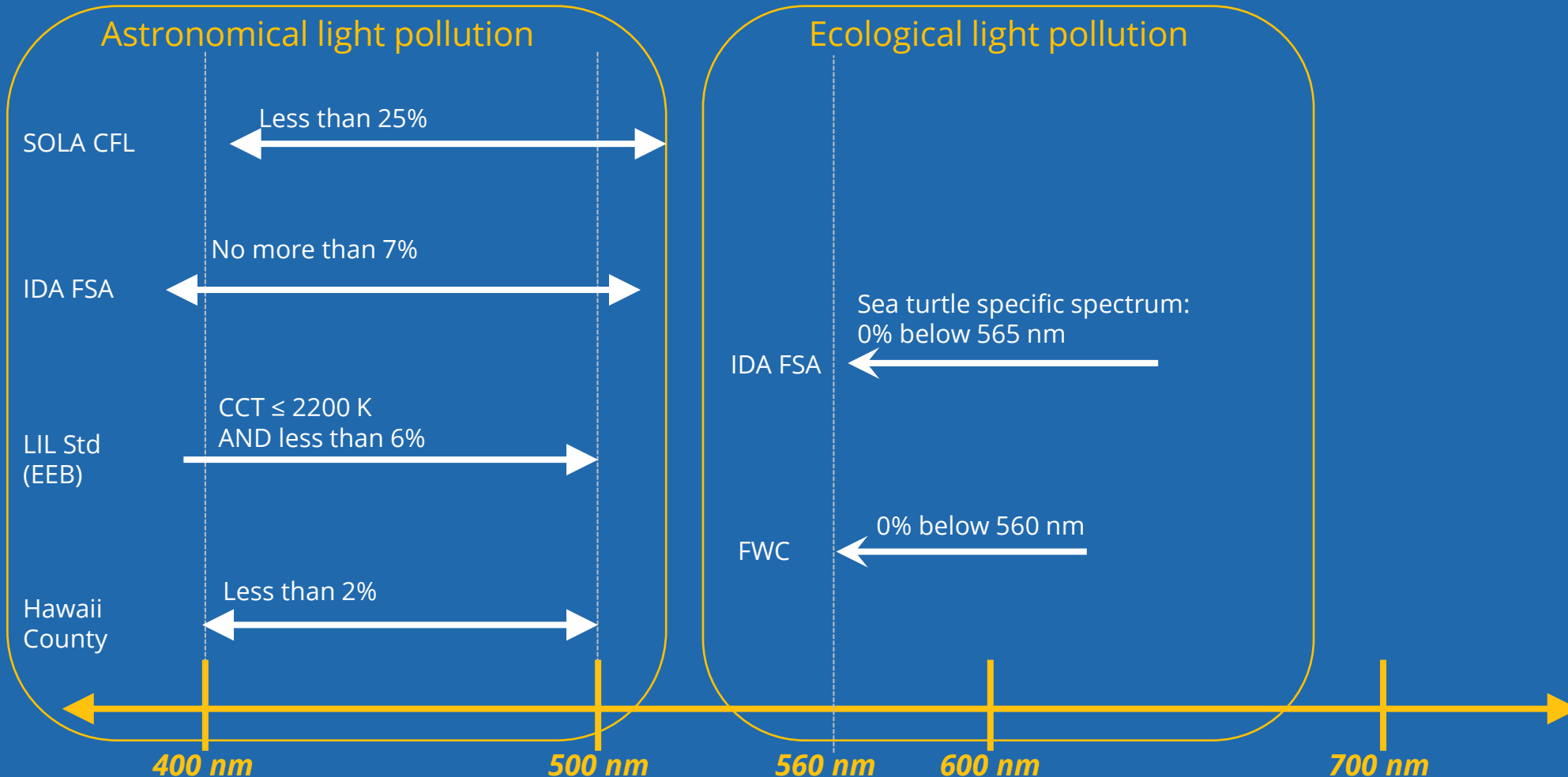
Maciejewski, Russell and other volunteers were able to collect 400 birds, most of which were dead, others injured. But they weren't able to reach every building they needed to that day.

So, they estimate the birds they found represents just one-third of the deaths -- meaning, the total could be anywhere between 1,000 to 1,500.

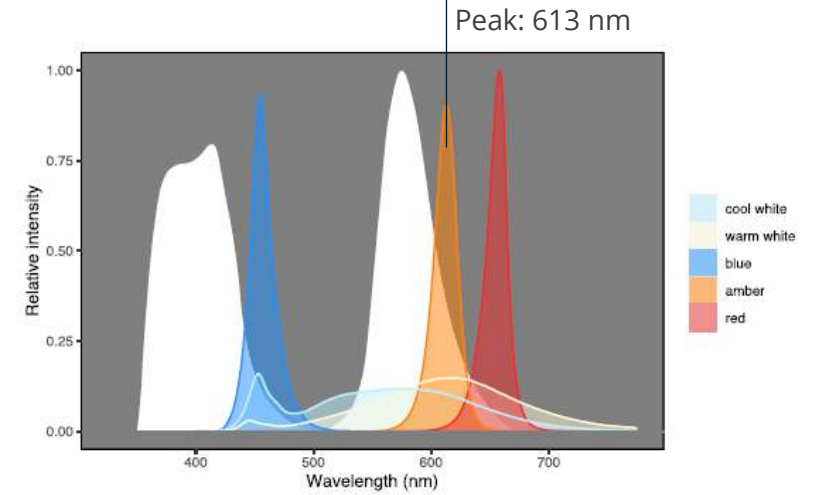
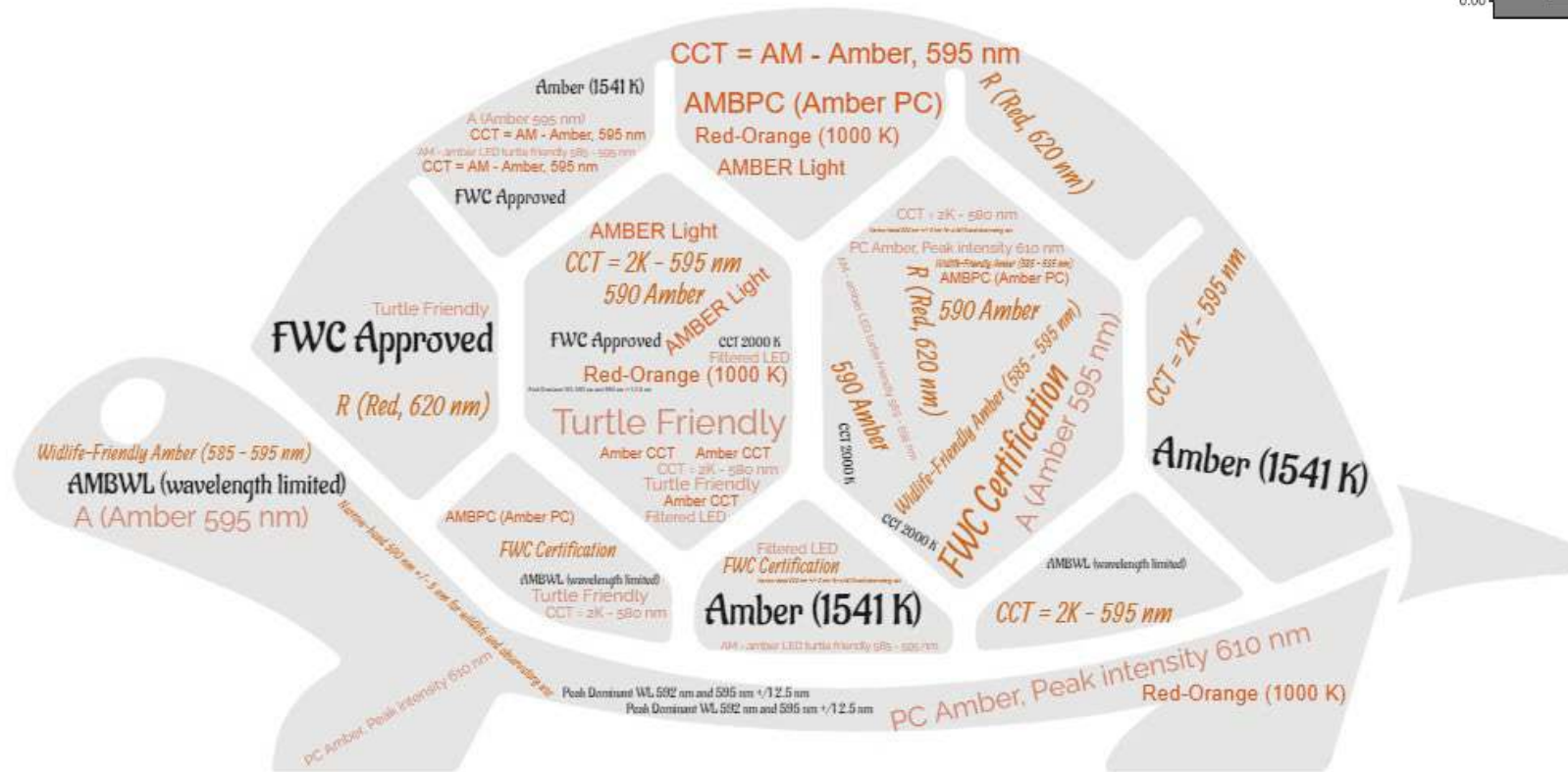
"I just can't stop thinking about it," Maciejewski told CNN.



What is blue?



The name game



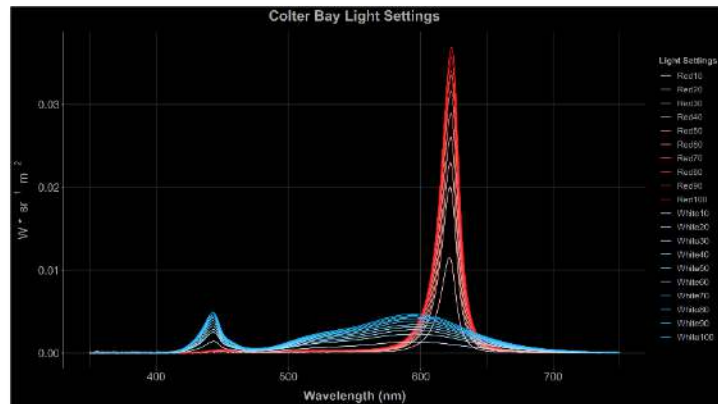


SOLUTIONS

Solutions

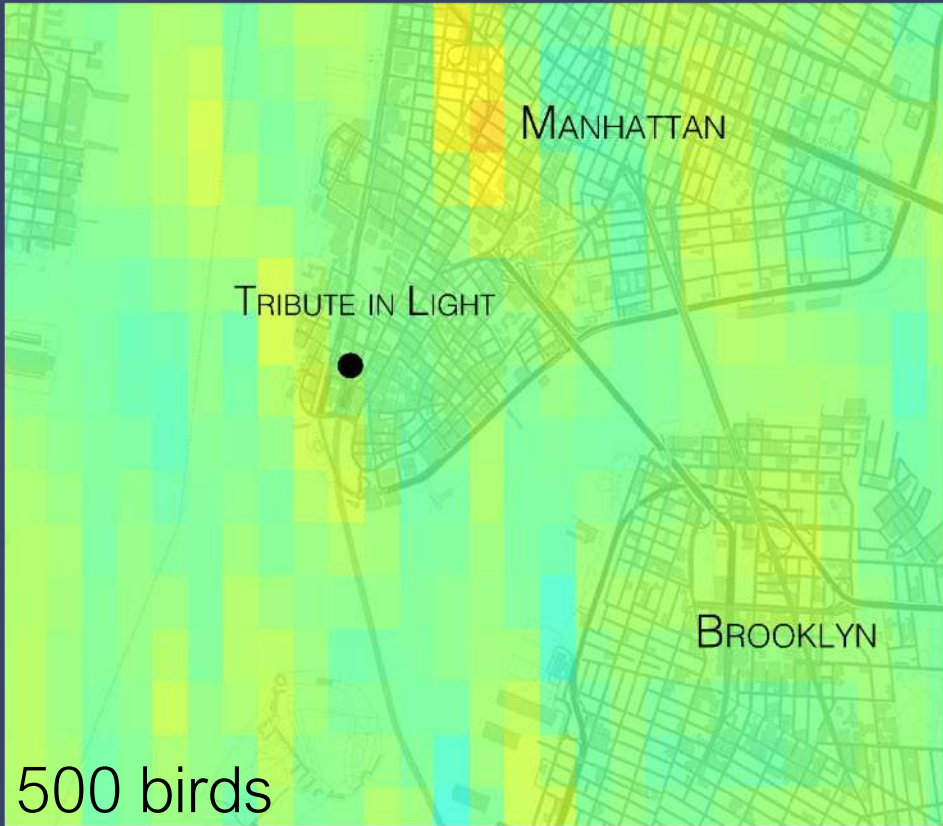


Colter Bay, Grand Teton National Park, WY

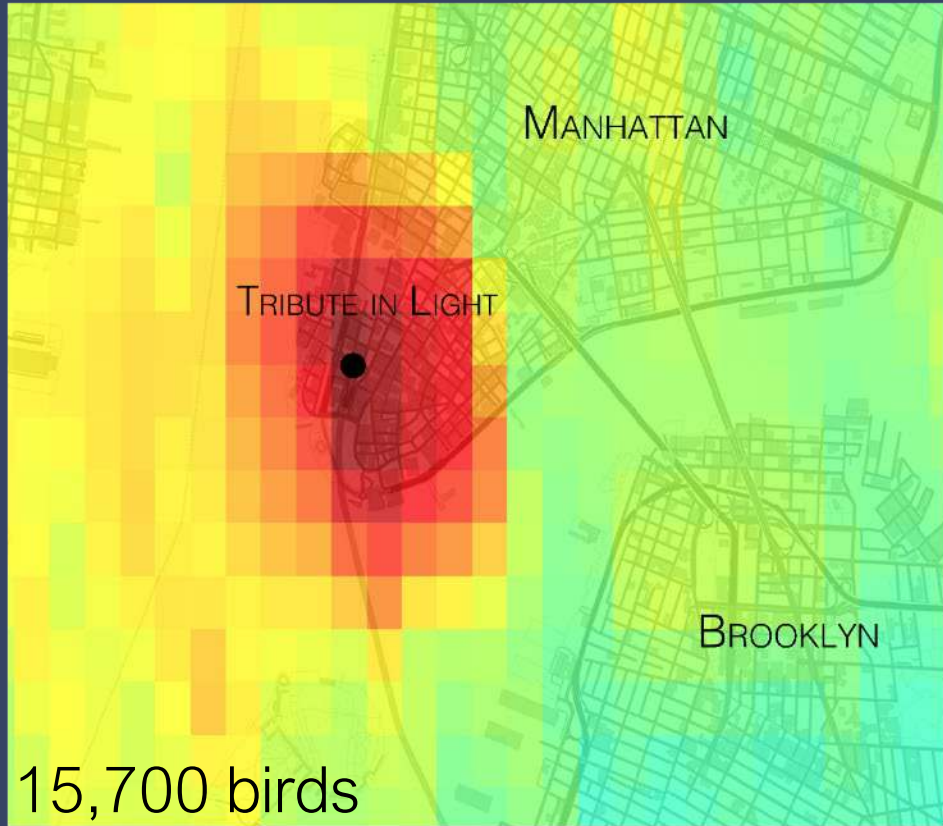


El Tovar Hotel, Grand Canyon National Park, AZ





Sept 11th, 2015 10:12 pm



Sept 11th, 2015 10:32 pm

Fewer birds  More birds

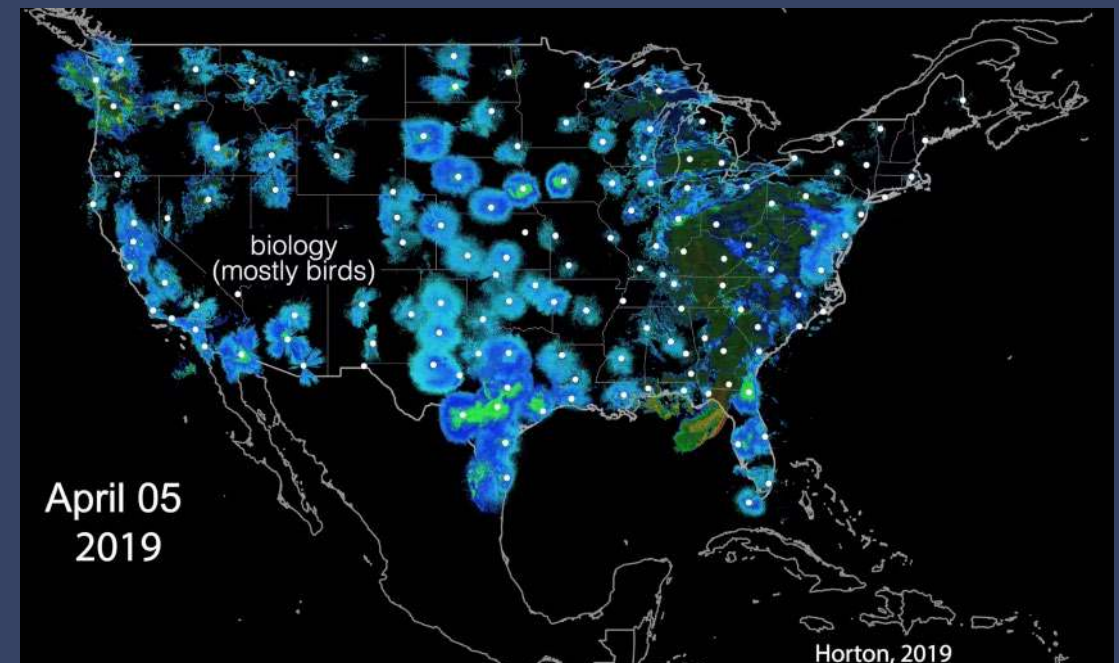
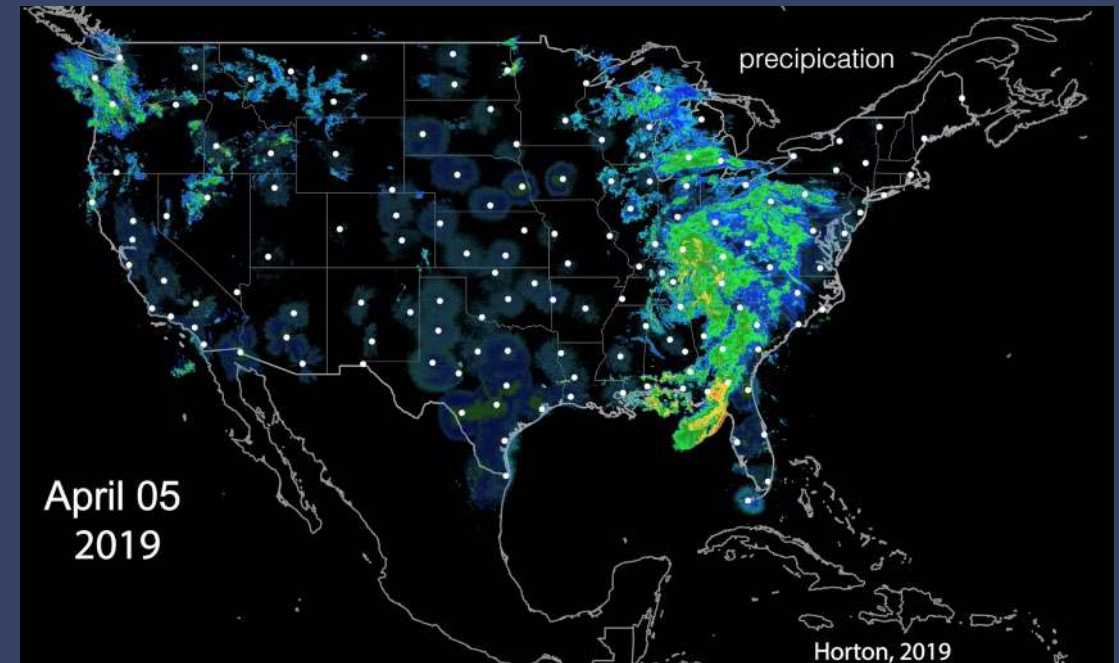
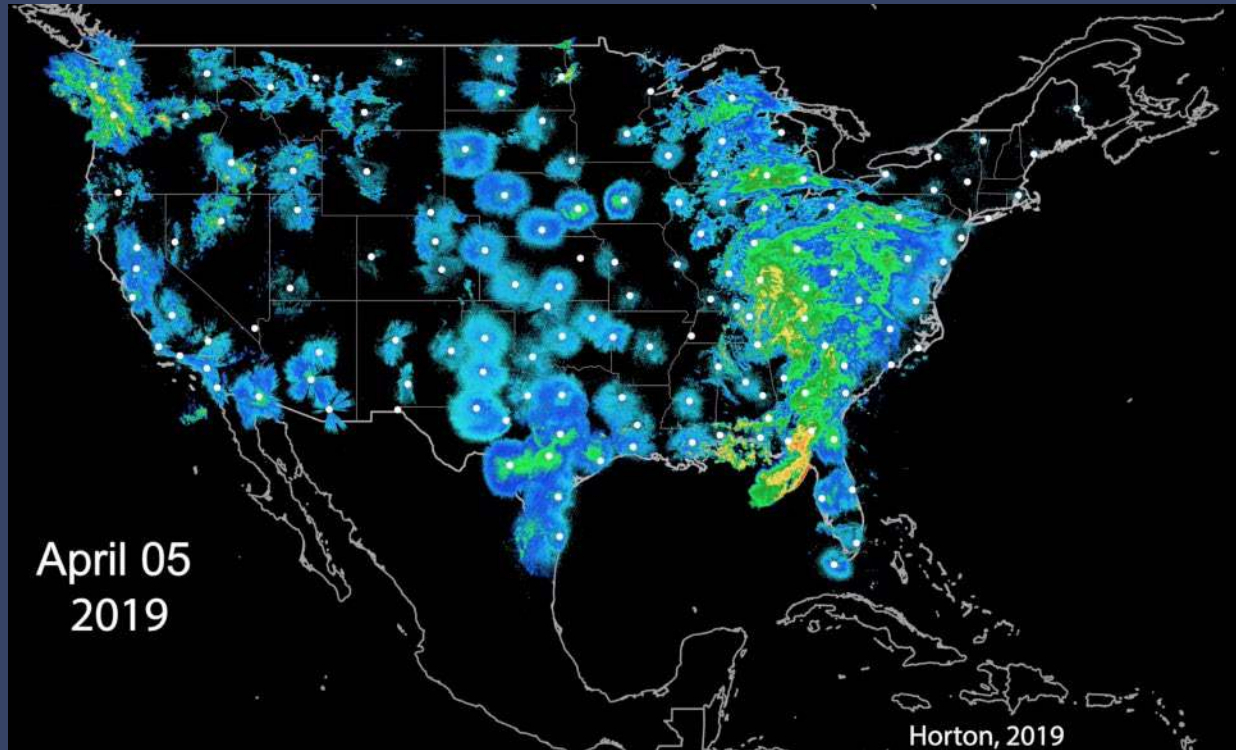
Van Doren and Horton et al. 2017, PNAS



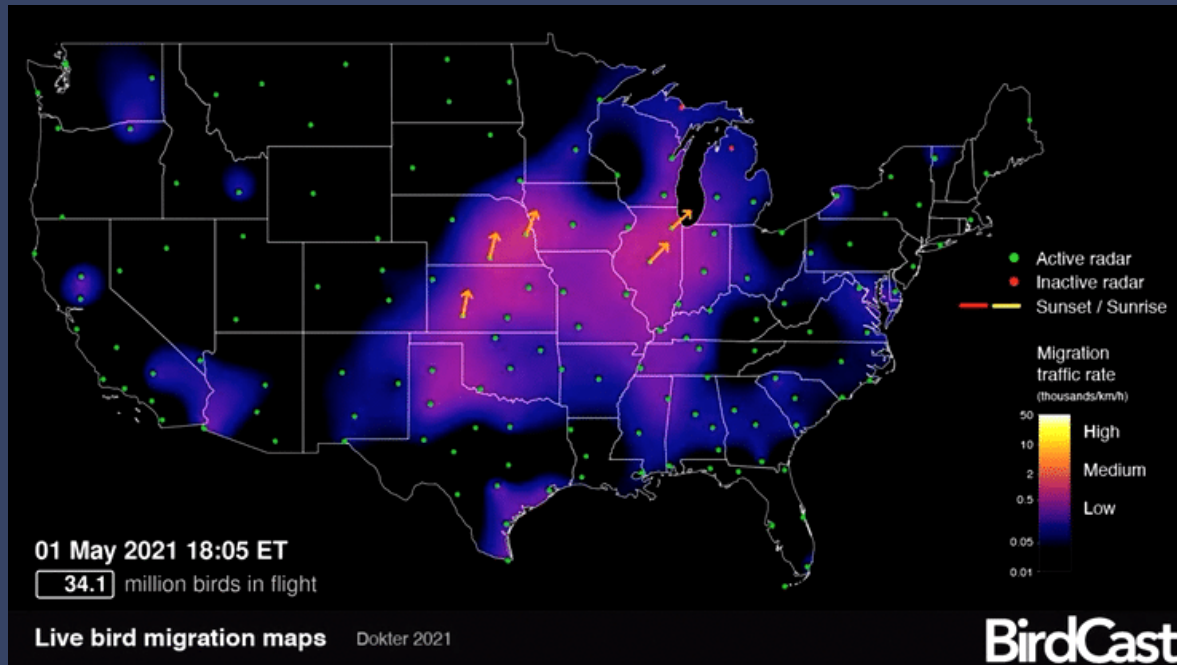
Chicago: McCormick Place Convention Center



BirdCast: Radar Aeroecology



BirdCast: Migration Forecasting and Tracking Tools



Lights Out Alerts BETA BirdCast

Houston, TX Change location

Tonight's migration forecast

Night of Wednesday, October 27

High >23,000 birds/km/night

Lights Out Alert
Turn off your lights tonight to save migrating birds.

A Lights Out Alert has been issued for this region. Large numbers of birds are forecast to migrate over this area overnight. Bright lights attract and disorient nocturnally migrating birds, potentially causing fatal collisions with buildings or exposure to additional day time hazards. Help protect birds as they pass through your region by turning off all non-essential lighting from 11:00PM tonight until 5:00AM tomorrow morning. [Learn more](#)

[Subscribe to alerts](#)

3-night migration forecast

Wed, Oct 27 High >25,000 birds/km/night	Thu, Oct 28 High >25,000 birds/km/night	Fri, Oct 29 Medium 11,000-25,000 birds/km/night
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BirdCast Lights Out Alerts were funded in part by grants from the National Science Foundation, Leon Levy Foundation, NASA, Wolf Creek Foundation, Edward W. Rose Postdoctoral Fellowship, and Marshall Aid Commemoration Commission.

The Cornell Lab

Colorado State University

UMass Amherst

alert.birdcast.info/lightsout

Three, location specific prediction classes (low, medium, high migration intensities)

High intensity prediction produces an ²² "Alert"

Lights Out Texas

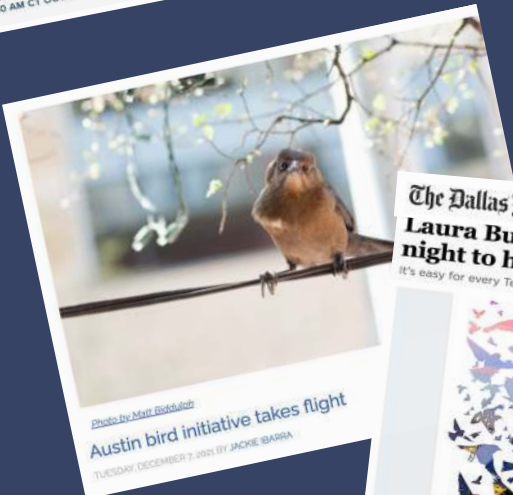


Lights Of Downtown Dallas Skyline Dim For Weeks As Migratory Birds Pass Through



Dallas Skyline Will Dim Its Lights To Protect Migrating Birds

Volunteers search for dead birds in downtown Austin during fall migration season



The Dallas Morning News
Laura Bush: Texans, turn out the lights at night to help migratory birds

Birds are Migrating – Lights Out, Please

Downtown Fort Worth turning 'lights out' to save migrating birds



"Lights Out Nights" Dallas, TX

Lights Out Guidelines: keep it off, low, long, or shielded during migration, 11pm-6am

Guidelines for Everyone

- **Turn off all non-essential lights from 11:00 p.m. to 6:00 a.m. each night during migration season.**
- Do not use landscape lighting to light up trees or gardens where birds may be resting.
- For essential lights (like security and safety lighting) use the following dark skies friendly lighting practices:
 - Aim lights down;
 - Use lighting shields to direct light downwards and avoid light shining into the sky or trees;
 - Use motion detectors and sensors so lights are only on when you need them;
 - Close blinds at night to reduce the amount of light being emitted from windows.
 - You can find [examples of dark skies friendly lighting](#) from the International Dark Sky Association and additional guidance and language regarding dark skies from the McDonald Observatory's [dark skies resources](#) and [recommended lighting practices](#).
- If you own or manage a building, consider the following for custodial services:
 - Consider adjusting custodial schedules to end by 11:00 PM.
 - Ask custodial staff to ensure that lights are off after they finish their work.

Additional Guidelines for Buildings Taller Than 3 Stories

- Extinguish or dim:
 - Exterior and decorative lighting (i.e. spotlights, logos, clock faces, greenhouses, and antenna lighting);
 - lobby/atrium lighting;
 - lighting in perimeter rooms on all levels of the building.
- Avoid:
 - Floodlights,
 - Illuminating interior plants or fountains,
 - Illuminating unoccupied floors,
 - Lights with blue-rich white light emissions (lighting with a color temperature of over 3000 Kelvin).
- Use:
 - Desk lamps or task lighting rather than overhead lights,
 - Blinking lighting in place of continuously burning lights,
 - Warm light sources (less than 3000 Kelvin) for outdoor lighting



Questions?

We just scratched the surface! Want to go deeper?

- **NPS Night Skies Division**
<https://www.nps.gov/subjects/nightskies/index.htm>
- **Cornell Lab of Ornithology**
<https://www.birds.cornell.edu/home>
- **BirdCast and Lights Out!**
<https://birdcast.info/science-to-action/lights-out/>
<https://texasbynature.org/projects/lights-out-texas/>
- **DLC Recommendations**
IES lighting library
<https://www.ies.org/lighting-library/lighting-library-contents/>
CIBSE LG21 Protecting the nighttime environment
<https://www.cibse.org/knowledge/knowledge-items/detail?id=a0q3Y00000JqICjQAJ>
Chris Kyba's Artificial Light at Night Database
https://www.zotero.org/groups/2913367/alan_db/library

Thank you!



designlights.org



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