

Lincoln Dark Skies Committee



Honoring its history as a rural, farming community and its legacy of leadership in land conservation, Lincoln



Corey Flint

The Lincoln Dark Skies Committee

a subcommittee of the Planning Board

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<https://www.lincolntown.org/1550/Dark-Skies-Subcommittee>

Dark Skies Committee Members

Frank Clark

Buzz Constable

Roy Harvey

Sherry Haydock

Ken Hurd

Susan KatzSliski

Virginia Lemire

Kathleen Lomatoski

Craig Nicholson

Diana Smith

Open Position

Friends

Louise Bergeron

Robin Wilkerson, Robin Breen Dobrusin: Common Grounds

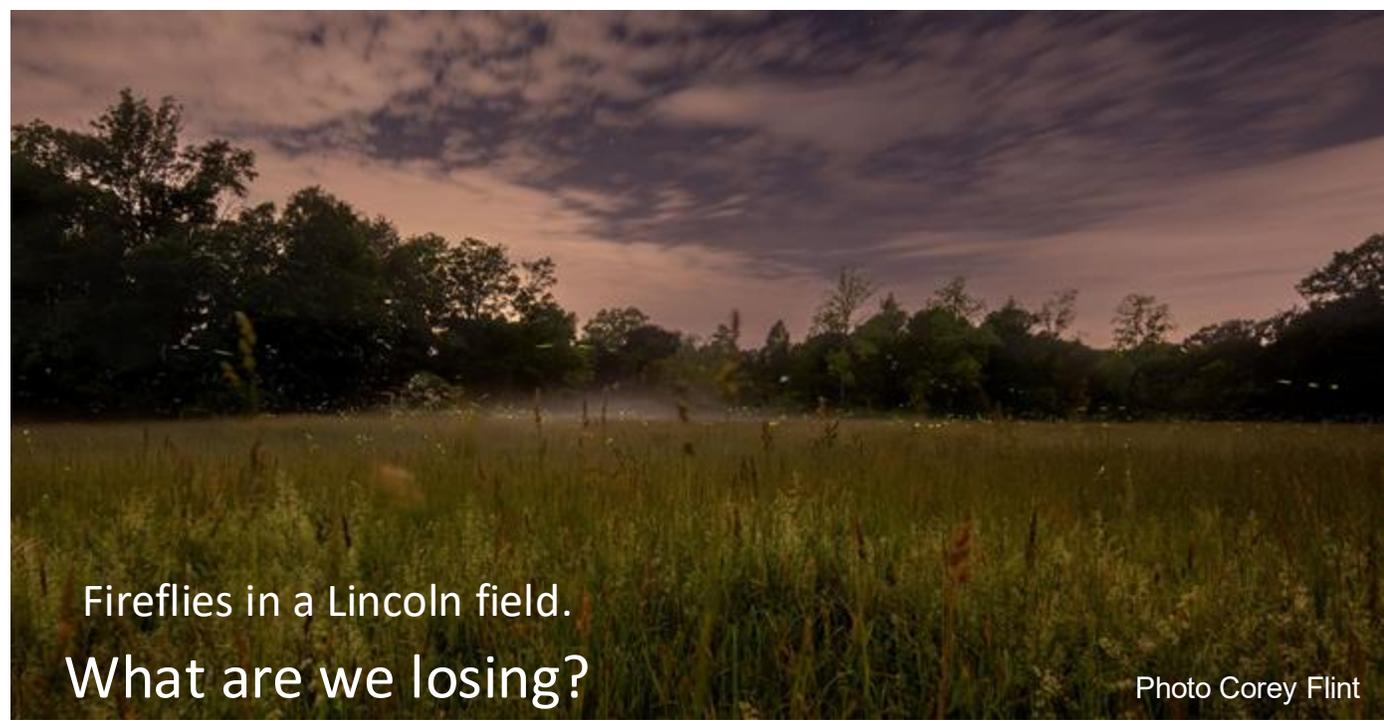
Alan Sliski: Technical expert and Dark Skies advocate

Anna Tomalski: Human Health, Oriole Landing

Barbara Peskin and Corey Nimmer: Wildlife Photographers

Stacy Carter: Lincoln Conservation Commission

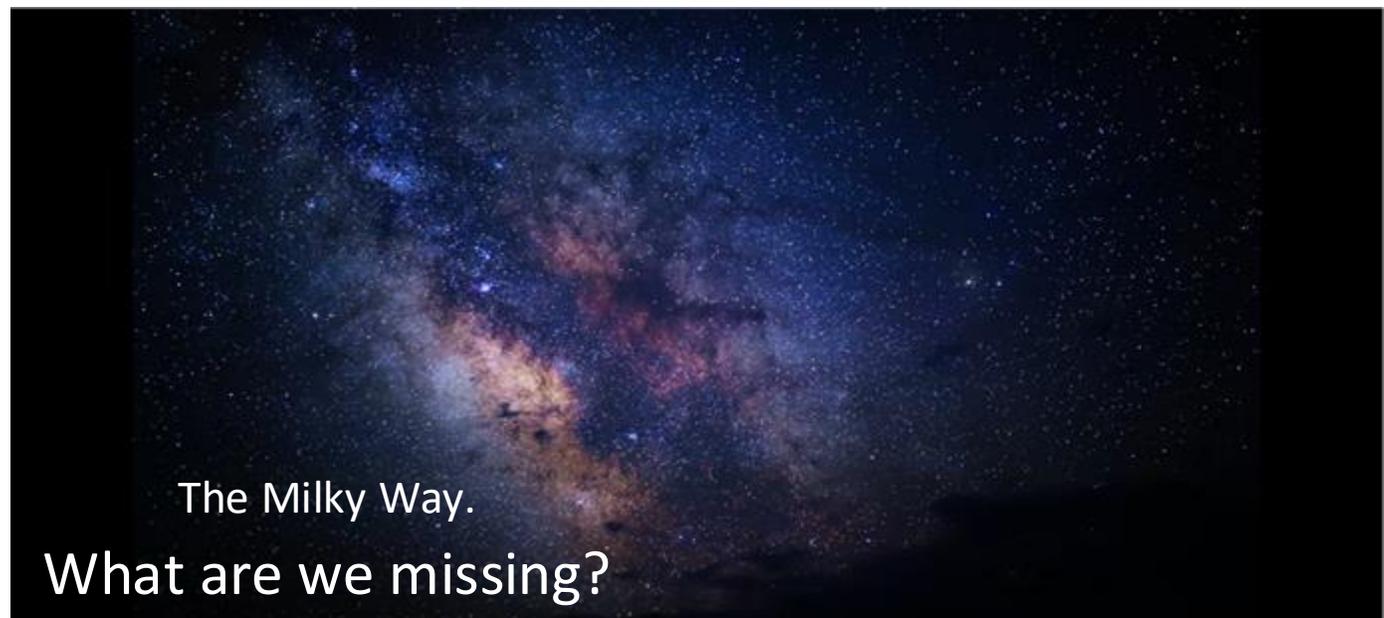
Connie Ohlsten: Lincoln Tree Preservation Group



Fireflies in a Lincoln field.

What are we losing?

Photo Corey Flint



The Milky Way.

What are we missing?

If I cannot move heaven, I will raise hell. (Virgil, Aeneid)

Dark Skies General Strategy

1. Conduct education and outreach

- Inform the public about the effects of artificial light and convey what we gain by turning off both exterior and interior lights.
- Demonstrate appropriate lighting to improve safety, and security.
- Provide information on available new technologies such as dimming, warmer color, motion activation and timers.
- Respond to inquiries from the public about what type of lighting we recommend.

2. Improve compliance

- Develop a process to address compliance on private properties.
- Discuss ways to improve compliance with the building inspector.

3. Identify solutions for Town-owned properties and streetlights in collaboration with Town administration

- DPW, Safety Building, Water Department, Streetlights.

4. Engage institutions, businesses, and condo associations

- Civico, Drumlin, Nashawtuk Country Club, DeCordova, Churches, Library, School, Community Center, Various Condos, The Commons, Oriole Landing.

5. Propose updates to Lincoln's lighting Bylaws or guidance

Content

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Exterior Lighting Zoning By-laws (2014)

13.5 All artificial lighting permanently installed in any district, shall consist only of fully shielded light fixtures and be so installed as to prevent direct light or glare from the light source from interfering with the vision of motorists or pedestrians passing in the street or streets abutting the premises and as to prevent direct light or glare from illuminating neighboring properties. Existing light fixtures are exempt from this regulation.

- *13.5.1 All exterior lamps shall have a Correlated **Color Temperature** (CCT) value of **3000K** or below.*
 - *13.5.2 Exterior light fixtures on residential properties shall have a maximum **output** of **900 lumens**.*
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Planning Board Lighting Guidance (2014)

- 1. Exterior lighting on structures will be allowed only where required by the Massachusetts Building Code or where the Planning Board determines that lighting is needed to enhance safety of occupants or visitors.*
 - 2. Exterior lighting of structures or landscape for architectural or aesthetic effect is not permitted.*
 - 3. Driveway lighting will not be allowed; however, lighting in parking areas and walkways adjacent to a home may be allowed. Such lighting should be mounted no more than 3 feet above finished grade.*
 - 4. To identify street numbers, reflective numbers on mailboxes are preferred. In unusual circumstances, the Planning Board may allow lighting of street numbers placed on the exterior of a residence or on a plaque or bollard placed near the street.*
 - 5. All exterior lighting shall consist only of fully shielded light fixtures and be so installed as to prevent direct light or glare from the light source from interfering with the vision of motorists or pedestrians passing in the street or streets abutting the premises and as to prevent direct light or glare from illuminating neighboring properties.*
 - 6. Individual light fixtures shall not exceed 900 lumens.*
 - 7. All exterior LED lamps shall have a Correlated Color Temperature (CCT) value of 3000K or below.*
 - 8. The Planning Board may allow lighting that deviates from these standards if, in its judgment, unusual circumstances justify such a deviation.*
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Why we need to amend our current By-law

- Avoid issues that occurred on sites that comply with our current By-law
 - Too bright overall, lights kept on all night, glare and dark spots (ex: School Campus, Oriole landing).
 - Include the current guidance in the By-law
 - Propose General By-law to include Institutions and Town Properties
 - DPW site, Commuter parking, Mass Audubon, Library, Churches, Streetlights
 - Incorporate recent research and take advantage of novel technologies
 - A deeper understanding of the effects of artificial lights on ecosystems and requirements for safety is emerging.
 - Controls such as timers, motion activation, dimmable LEDs, warmer color LEDs, and choices of intensities are now available.
 - Address existing lights
 - Rethinking the grandfathered clause
 - Models of lighting By-laws and experienced advisors are available
 - States of MA and RI, Nantucket, and others.
 - We have been able to discuss our plans with experts (Glenn Heinmiller, Jane Slade, Leo Smith, Gail Walker, Tim Brothers).
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Summary of proposed new By-laws

The Planning Board or the Public Safety Department determines that there are extenuating circumstances related to safety and security that justify an exception.

Shielding (4.1)

- All luminaires shall be fully shielded.

Light output (4.2)

- Residential properties: 900 Lumens per Luminaire, 9000 total lumens.
- Nonresidential properties: 3000 Lumens per Luminaire. Should not exceed the values recommended by the Illuminating Engineering Society (IES) for the specific application by more than 50%.

Color (4.4)

- The Correlated Color Temperature (CCT) of the light emitted by the Luminaires shall not exceed 2700K.

Time Limit for lighting (3.4)

- Lighting shall be turned off or dimmed after 9:00 PM or within one (1) hour of the business or building's closing time.

Walkway lighting (4.5.2)

- Maximum of 250 lumens per luminaire, no more than three feet above finished grade and oriented so that their light output points directly toward the feature(s) to be illuminated, in total, two thousand (2,000) Lumens for residential properties and four thousand (4,000) Lumens for nonresidential properties.

Summary of proposed new By-laws

Non-shielded landscape lighting

- [Not permitted](#)
- Fully shielded string lights shall have an output not exceeding fifty (50) Lumens per linear foot (4.5.1).
- Decorative lighting used to celebrate holidays shall not be installed more than six (6) weeks prior to the holiday and shall be removed within two (2) weeks following it (4.5.3).

Existing lighting must be made compliant (sections 3.3.2-3.3.5)

- Existing Luminaire must be made compliant if more than 50% of the assessed value of the structure is renovated,
- If modification exceed more then 25% of floor areas, dwelling units or parking spaces (except for single- or two-family dwellings).
- All non-conforming Luminaires shall be brought into conformance within five (5) years of adoption of this By-law for property owned by the Town or other public governmental agencies, within five (5) years of adoption of this By-law for other property, and ten (10) years for property containing only a single- or two-family dwelling.

Streetlights

Luminaires used for streetlighting shall have a total output not exceeding 2,000 Lumens, a color temperature of 2700K, and the capacity for dimming, timing, and motion activation. Each such Luminaire shall conform to the following requirements:

- The Luminaire as installed must not exceed the BUG Rating of Brightness, Uplight, and Glare, of B0-1, U0, and G1;
 - Streetlights may not be installed at heights greater than twenty-five (25) feet;
 - The Planning Board may grant exceptions for the installation or replacement of existing historically designed lighting.
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Existing Streetlights

Turn off or dim streetlights that are considered a nuisance or unnecessary

- All streetlights in Lincoln were updated to brighter, bluer LEDs in 2012, following a grant from the State.
- Streetlights at intersections are needed for safety, some dimming could be warranted to avoid glare.
- In many cases, the reasons for the installation and the streetlights and their purpose are unclear
- In some areas, the installation of high-quality reflectors to mark the road could provide sufficient safety without streetlights
- Commuter parking lights and those at the mall are on all night, we could consider dimming and motion activation

Proposal for the completion of a study to bring streetlights into compliance with the purposes and objectives of this By-law

The Select Board, in conjunction with the Planning Board, School Committee, the Department of Public Works, and the Police Chief to issue a report on its findings about the feasibility, expense, and recommendations concerning the following:

- The distribution of streetlights and determine which should be retained to comply with the purposes and objectives of this By-law
- The state of compliance of lighting in publicly administered parking areas, including rules to reduce as reasonable the number of external fixtures, the hours of external lighting, and use motion activation
- Opportunities to minimize external lighting caused by interior lights in public buildings.

We recommend the study to be completed 9 months following the acceptance of the proposed By-law.
