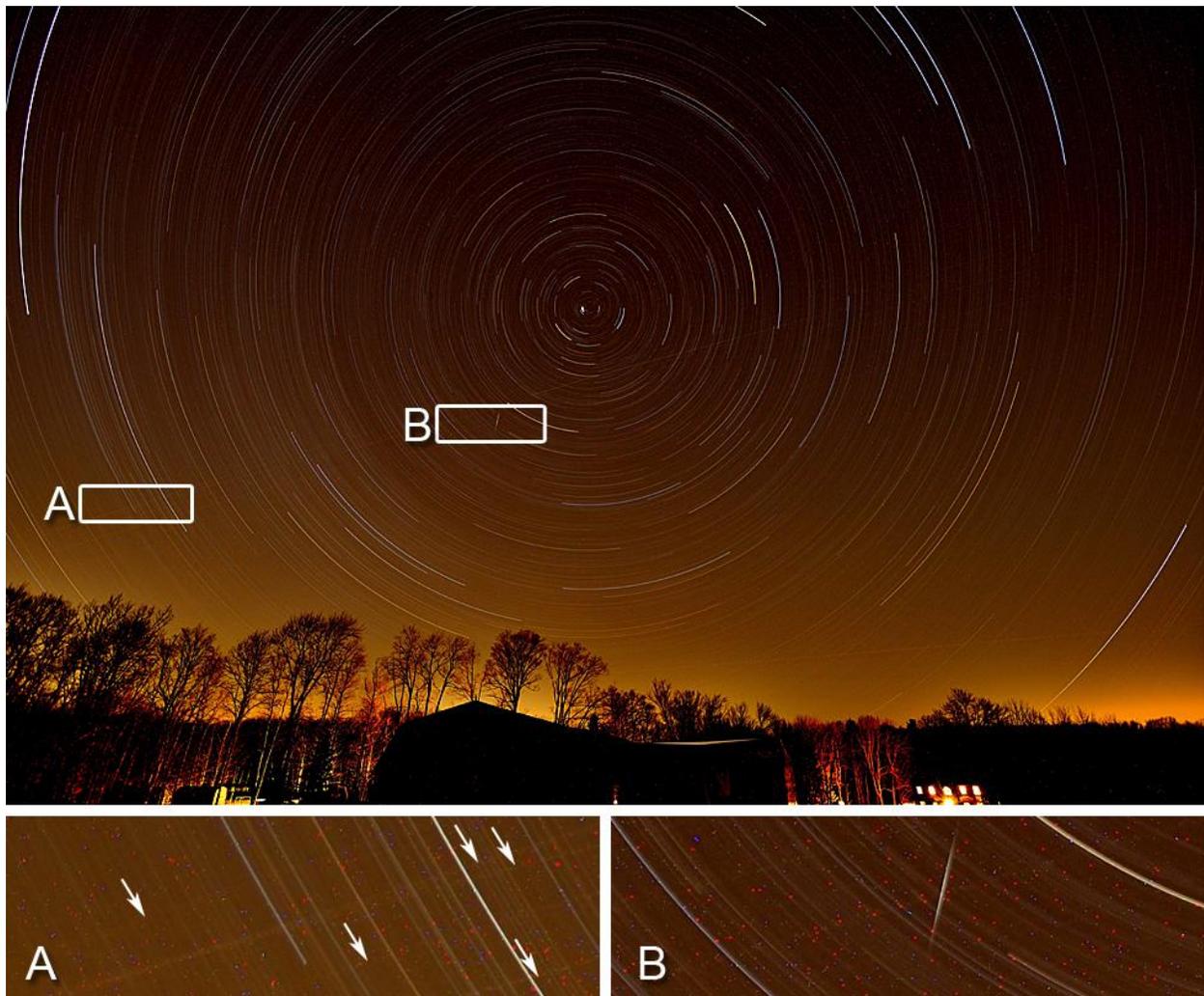


What's Missing from Tonight's Sky?

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In [Spectacular Spectacles in the Night Sky](#) (December 2025), we learned about the Stable Auroral Red arcs, aurora borealis, and comets that appeared in the Northern Virginia skies. Aurora lights normally occur at latitudes too far north for observations here and when they are present, light pollution obscures the display. Comets can be tricky since their tails are most brilliant when they pass closest to the sun, so the glaring sun is a natural obstacle. Furthermore, the solid comet core or nucleus needs to be large enough to produce a sizeable tail and ideally aligned with Earth for the tail to be seen.

With comets and auroras best observed in dark skies yet frequently drowned by light pollution, what else is lost in a moonless sky? That answer is to look where the skies are much darker than the D.C. area. The image here was taken in rural northeastern Pennsylvania. The DSLR camera shutter was open for 2.4 hours, f 5.6, ISO 100, enabling the earth's rotation to cause the stars to produce "star trails." Polaris, the North Star, is nearly stationary and creates the central dot. The neighbor's lights and horizon's glow from towns are artificial light sources, but their cumulative light pollution is not as blinding as what Northern Virginia endures. The seemingly random dots are hot pixels and long exposure noise—both are digital photography artifacts. To preserve the raw image, [methods to digitally subtract these artifacts](#) were not applied.

A darker background sky helps people detect more stars, especially the faint ones. As seen with aurora and comet tail photography, long camera exposures make faint lights visible, though those extended exposures have limited effect when light pollution saturates the sky. In both A and B insets, dim stars are perceived as faint star trails. Inset A shows a new problem astronomers face: vast artificial constellations of Starlink satellites transversing the sky, each trail indicated with perpendicular arrows. Starlink satellites are such a problem that some astronomers allude to an original *Star Trek* episode and equate them to the Tholian web! Inset B captures a natural phenomenon, a meteor burning up in the atmosphere. This example is one of the many pieces of space dust and pebbles hitting Earth daily. Meteor showers, when numerous meteors are countered per hour, occur as our planet passes through a dust cloud, like old trailing comet debris.

Other celestial objects are clearly seen with the naked eye in the dark night sky. The Milky Way's arm looks like a softly glowing band across the heavens. At approximately 2.5 million light years away, the Andromeda Galaxy's diffuse flare is the most distant object that an unaided eye can see. Short-period comets, like Halley's Comet (orbiting once per approximately 75 years), typically have small displays because they lose ice with each close brush with the sun, so newly discovered, long-period comets and those that only visit our solar system once before burning in the sun or heading to deep space tend to have large cores and even more impressive tails. Telescopes help reveal and magnify fainter comets as well as nebulas, star clusters, and more distant galaxies. Keeping nighttime skies dark open a universe of discoveries!

Tips for Suburban Backyard Nighttime Observing

- Find the darkest area of your yard, away from streetlights and neighbors' lights, where the sky is unobstructed by trees. In small Northern Virginia yards, compromises may be necessary.
- Turn off all outdoor lights including ones that seem dim and outdoor string lights.
- Turn off indoor lights that shine outside of windows or at least close their shades. Blackout curtains work great at preventing indoor lights from contaminating nighttime darkness.
- When a light is needed, such as a flashlight, install a red filter. Red light has less of an impact on night viewing than other parts of the visible spectrum. The same applies to using smartphones, or switch them to night mode.
- Allow your eyes to adapt to the darkness for at least 20 minutes. During the initial adjustment time, brighter celestial targets can be observed. As time goes by, seek fainter ones.
- Avoid nicotine and any other substances that negatively impact eyesight.
- Winter has the best observing because the cold air contains less humidity, resulting in clearer skies, than a muggy summer night. During winter skywatching, dress in layers, wearing more clothes than when walking or jogging in the same temperature.
- When using telescopes, binoculars, and cameras on cold nights, keep the equipment outside for an hour before viewing to allow the temperatures to equilibrate.
- Invite your neighbors to a mini-star party! Doing so helps promote cool citizen science and encourages others to switch off unnecessary outdoor lights.

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