

Title: Celestial Encounters: Immersive Dark-Sky Event Experiences and Wellbeing

Authors:

Dr Serkan Uzunogullari (Corresponding author)

School of Hospitality, Events, Aviation and Tourism, University of Sunderland

St. Peter's Way, Sir Tom Cowie Campus, Reg Vardy Building, SR6 0DD, Sunderland, UK

Email: serkan.uzunogullari@sunderland.ac.uk

Dr Laura Nelson

School of Hospitality, Events, Aviation and Tourism, University of Sunderland

St. Peter's Way, Sir Tom Cowie Campus, Reg Vardy Building, SR6 0DD, Sunderland, UK

Email: laura.nelson@sunderland.ac.uk

Celestial Encounters: Immersive Dark-Sky Event Experiences and Wellbeing

Abstract

One of the developments of human advancement is the creation and the use of artificial lighting. However, over the years, artificial light has become more widespread, covering not only cities and urban areas but also spreading into natural environments (Gaston & Holt, 2018).

Consequently, the global increase in light pollution has increased interest in clear night skies. The combined efforts of various scientific and environmental movements have led to the creation of dark-sky places worldwide, which consist of spaces in natural areas which are far from light pollution (Tapada et al., 2021). Indeed, there are more than 230 Dark-Sky places around the world spreading across 22 countries (Darksky.org, n.d).

More importantly, there is a growing demand for dark-sky tourism through festivals and events (Blundell, Schaffer & Moyle 2020; Hall, Paddison & Jones, 2025). Particularly, immersive events represent a growing frontier in designated dark-sky spaces offering diverse experiences such as stargazing, astrophotography, storytelling, dining, wildlife walks, and various workshops (Dunn and Edensor, 2023). Despite growing interest in dark-sky tourism and the rapid expansion of dark-sky festivals and events, existing research has largely focused on environmental protection, policy, place designation, and astronomical or aesthetic values.

On the other hand, studies also highlight that stronger connections with the night sky are linked to improved wellbeing (e.g., Barnes & Passmore, 2024). Notably, a deep connection to the night sky is an immersive experience that can play an important role in eliciting a range of emotions related to wellbeing, including enjoyment, comfort, curiosity, a sense of wonder, and opportunities for philosophical contemplation (Gao & Zhu, 2025; Hall et al., 2025). Building on this perspective, the study analyses how immersive dark-sky event encounters contribute to participants' wellbeing.

Data of this study were drawn from TripAdvisor reviews of dark-sky events held within Northumberland International Dark Sky Park, the largest single area of protected night sky in

Europe (DarkSky.org, n.d.). Reviews focused on events at three key sites: Kielder Observatory, Battlesteads Dark Sky Observatory, and The Twice Brewed Inn. The data were analysed using NVivo 15, employing a qualitative thematic analysis of 1,700 reviews. Initial findings indicate that dark-sky events function as spaces for restoration, awe, personal reflection, learning, and social bonding. Consequently, they suggest that dark-sky events extend beyond astronomical observation, offering meaningful emotional, cognitive, and social benefits to participants.

Reference List

- Barnes, C., & Passmore, H. A. (2024). Development and testing of the night sky connectedness index (NSCI). *Journal of Environmental Psychology*, 93, 102198.
- Blundell, E., Schaffer, V., & Moyle, B. D. (2020). Dark sky tourism and the sustainability of regional tourism destinations. *Tourism Recreation Research*, 45(4), 549–556.
- DarkSky International. (n.d.-a). International dark sky places. Retrieved January 12, 2026 from <https://darksky.org/what-we-do/international-dark-sky-places/>
- DarkSky International. (n.d.-b). Northumberland National Park and Kielder Water & Forest Park. Retrieved February 10, 2026 from <https://darksky.org/places/northumberland-national-park-and-kielder-water-forest-dark-sky-park/>
- Dunn, N., & Edensor, T. (2023). Under the night: The futures of dark skies. In *Dark skies* (pp. 251–267). Routledge.
- Gao, M., & Zhu, X. (2025). Development and testing of the nightscape affect index. *Applied Psychology: Health and Well-Being*, 17(3), e70036.
- Gaston, K. J., & Holt, L. A. (2018). Nature, extent and ecological implications of night-time light pollution. *Journal of Applied Ecology*, 55(2), 1–9.
- Hall, J., Paddison, B., & Jones, B. (2025). The dark matters: Dark-sky leisure events as regenerative spaces for climate justice. *Annals of Leisure Research*, 1–21.
- Tapada, A., Marques, C. S., Marques, C. P., & Costa, C. (2021). Astrotourism: A literature review and framework for future research. *Enlightening Tourism: A Pathmaking Journal*, 11(2), 291–331.