

29 November 2018

Mr. Harry Barber, Acting Monument Manager
Grand Staircase-Escalante National Monument
669 S Hwy 89A
Kanab, UT 84741

Re: Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area Draft Resource Management Plans and Environmental Impact Statement

Dear Mr. Barber:

When President Clinton established Grand Staircase-Escalante National Monument (hereafter "GSENM" or the "Monument") in 1996, using his authority under the Antiquities Act of 1906¹, the notion of nighttime darkness as a resource eligible for protection did not yet exist among conservation professionals. The text of his proclamation does not explicitly mention darkness, night skies, or views of the heavens, but his words imply a duty to care for all of the wild and natural aspects of the Monument: "this unspoiled natural area remains a frontier, a quality that greatly enhances the monument's value for scientific study."

In the Draft Resource Management Plans and Environmental Impact Statement (RMPs/EIS), findings of fact attest to the exceptional qualities of the Monument's night sky, owing to the relative isolation its wilderness character imparts.² *"The night skies over 90 percent of the Planning Area qualify under the descriptive term 'pristine,'" while "only 30.4 percent of the land area of the United States experiences this degree of natural darkness on a regular basis, much of which is in the state of Alaska.³"* In fact, of the Monument's original 1.7 million acres, a 2016 inventory found *"that fewer than 30 fixed artificial light sources exist in the Planning Area.⁴"* Truly, the pristine night skies in the Planning Argument are rare.⁵

While *"the Planning Area is surrounded by areas with designations protecting night skies at a variety of scales,"* resource extraction and other activities on and adjacent to neighboring public lands are accelerating. Despite its 'pristine' nature, the natural darkness within GSENM is not impervious to harm from the deployment of artificial light at night (ALAN), whether on or beyond the Monument's lands. Darkness, and dark night skies, are an especially fragile resource; like air and water pollution, light pollution does not respect any boundaries or borders. Only conscientious preservation of nighttime darkness can save it, and GSDEM is arguably one of the naturally darkest remaining places in the lower 48 U.S. states.⁶

Beyond the aesthetic value of dark night skies from a visual resource management perspective,

there are distinct environmental and rural economic development benefits associated with the conservation of natural darkness. ALAN emission into the nocturnal environment has been identified as a threat to a host of organisms, including plants⁷, mammals⁸, birds⁹, and insect pollinators of food crops¹⁰. These effects of ALAN potentially involve responses in humans as well¹¹. Through astrotourism, a sustainable form of tourism that serves visitors seeking authentic night-sky experiences, upward of \$2 billion of new revenue may be realized on the Colorado Plateau by the mid-2020's¹².

Dark skies are a visual resource of the Monument and the nighttime complement to the Monument's spectacular daytime vistas. These views are best defined as Visual Resource Management Class I (*"preserves the existing landscape character while allowing very limited management activities"*) assets. Maintaining the pristine character of the Monument's night skies intact, therefore, requires an aggressive approach that does not simply expect retention of natural nighttime darkness as a collateral benefit of other Congressionally-mandated resource protection activities. Indeed, dark skies falls under no specific directive from Congress, or of the Department of the Interior. The lack of a requirement to actively manage the resource therefore often comes into conflict with the goal shared by the Bureau of Land Management (BLM) and other federal land management agency to fairly administer multiple uses of federal lands.

The Draft RMPs/EIS considers four options for future management of GSENM (hereafter "Alternatives" A, B, C and D) in order to resolve resource conflicts. In evaluating the potential impacts of each scenario on night skies, BLM made a number of assumptions, including that *"an increase in management associated with the emittance of artificial light activities (e.g., transportation networks, mining and recreation facilities) would increase the level of light pollution in the Planning Area.¹³"* It identified *"the degree of use restrictions on minerals development, the availability of areas for issuance of new ROW and renewable energy permits, creation of facilities and infrastructure for OHV use and recreation, and the extent and management of special designations"* as among the contributions that increase light pollution and degradation of night skies¹⁴, and found that *"the potential for development in certain portions of the Planning Area could increase light sources and associated light pollution that degrade dark night skies for viewers in adjacent lands.¹⁵"*

In consideration of the above, **we strongly urge BLM to adopt Alternative B** in the resulting final Resource Management Plans and Environmental Impact Statement. We reach this conclusion for several reasons.

1. Alternative B allocates the largest amount of acreage to VRM Class I. This is crucial for the long-term protection of the natural nighttime environment in the Monument.
2. Alternative B also limits the activities on the Monument more than any other alternative.

All the others have the greatest potential to diminish natural nighttime darkness "through surface disturbance, changes in vegetation, allowance of infrastructure or facilities development, or inadvertent creation of light pollution.¹⁶"

3. Only Alternative B would enable the eligibility of GSENM for accreditation as an International Dark-Sky Association (IDA) International Dark Sky Sanctuary. The other Alternatives include allowed land uses that would bring unacceptable levels of artificial light at night and significantly impact the quality of night skies over the Monument¹⁷.

We realize that the BLM's preferred management scenario is Alternative D. **We argue specifically against adoption of the preferred Alternative (D)** for the following reasons:

1. Alternative D "emphasizes resource uses and reduces constraints while ensuring the proper care and management of monument objects and maintaining compliance with existing laws and regulations designed to protect physical, biological, cultural, and visual resources. ... Compared to other alternatives, Alternative D conserves the least land area for physical, biological, and cultural resources.¹⁸"
2. Therefore, "Alternative D would increase the potential for impacts on visual resources and dark night skies compared to the other alternatives.¹⁹"
3. "In KEPA, Alternative D would increase the potential for dark night sky pollution compared to the other alternatives, followed by alternatives C, A, and B, respectively. Alternative D contains the fewest special designations and restrictions on resource uses that could increase light pollution in KEPA.²⁰"
4. Dark skies and natural nighttime darkness have no specific federal legal protection, so Alternative B really is the *only* viable option for protection of dark skies. Otherwise, in permitting activities on the monument, dark skies will always lose under every other alternative.
5. The approach of Alternative D is simply not strong enough: "*Implement BMPs in coordination with stakeholders to eliminate or minimize light pollution.*²¹" Under Alternative D, protection of night skies and natural nighttime darkness isn't a conservation mandate, but rather an afterthought.

We appreciate that proposed Alternatives "include an implementation-level decision to inventory and monitor night skies and natural soundscapes in partnership with local communities, universities, and other stakeholders,²²" and we will make ourselves available to assist the Monument in this activity in any capacity. However, it is somewhat contradictory that each alternative "include[s] an implementation-level decision to develop interpretive materials and programs to educate and

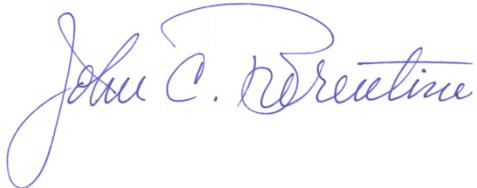
engage the public about night sky, scenic, and natural soundscape resources in the Planning Area," whereas some alternatives (A, C, and D) lack specific protections for the resource about which the plan aims to raise public awareness.

There are few opportunities remaining in the U.S., outside of Alaska, to secure the protection of vast swathes of federal lands for the integrity of their dark night skies. The remoteness and undeveloped nature of GSENM are qualities that are not readily found elsewhere in such isolation from urban centers so as not to suffer disproportionately from the interference of skylight, fouling their views of the heavens. The isolation of the Monument further protects it in this regard, preventing the rise of circumstances that would result in significant nearby development. However, changes to management practices within the Monument itself threaten to undo the protections that exist now, and imperil efforts to extend future protections.

Finally, the Monument stands to potentially become the biggest, and arguably darkest, International Dark Sky Sanctuary in the world, if only it would take a few reasonable steps to protect what it already has.

We again urge BLM to adopt Alternative B in order to properly safeguard the integrity of the Monument's naturally dark nighttime characteristics, providing refuge to humans, plants and animals alike, and to preserve intact a window to the night sky that is rapidly closing throughout the rest of the world.

Respectfully,

A handwritten signature in blue ink that reads "John C. Barentine". The signature is fluid and cursive, with "John" and "C." being more stylized and "Barentine" having a more traditional script-like appearance.

John C. Barentine, Ph.D.
Director of Public Policy
International Dark-Sky Association

¹ Presidential Proclamation 6920, 110 Stat. 4561, 19 September 1996

² Draft RMPs/EIS, Vol. 1., p. 3-67.

³ *Ibid.*

⁴ *Ibid.*

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- ⁵ "Analysis of the Management Situation: Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area", BLM, June 2018, Dark Night Sky Indicators, pp. 84-88; "The interior (of the original GSENM) is literally as dark as can be measured."
- ⁶ "Analysis of the Management Situation", p. 85.
- ⁷ Bennie, J., Davies, T. W., Cruse, D., & Gaston, K. J. (2016). Ecological effects of artificial light at night on wild plants. *Journal of Ecology*, 104(3), 611–620; Borges, R. M. (2018). Dark Matters: Challenges of Nocturnal Communication Between Plants and Animals in Delivery of Pollination Services. *Yale Journal of Biology and Medicine*, 91(1), 33–42.
- ⁸ Duffy, J. P., et al. (2015). Mammalian ranges are experiencing erosion of natural darkness. *Science Reports*, 5, 12042; Hoffmann, J., Palme, R., & Eccard, J. A. (2018). Long-term dim light during nighttime changes activity patterns and space use in experimental small mammal populations. *Environmental Pollution*, 238, 844–851; Robert, K. A., et al. (2015). Artificial light at night desynchronizes strictly seasonal reproduction in a wild mammal. *Proceedings. Biological Sciences / The Royal Society*, 282(1816).
- ⁹ La Sorte, F. A., Fink, D., Buler, J. J., Farnsworth, A., & Cabrera-Cruz, S. A. (2017). Seasonal associations with urban light pollution for nocturnally migrating bird populations. *Global Change Biology*, 23(11), 4609–3619; Ouyang, J. Q., de Jong, M., van Grunsven, R. H. A., Matson, K. D., Haussmann, M. F., Meerlo, P., et al. (2017). Restless roosts: Light pollution affects behavior, sleep, and physiology in a free-living songbird. *Global Change Biology*, in press, in press; Raap, T., Casasole, G., Pinxten, R., & Eens, M. (2016). Early life exposure to artificial light at night affects the physiological condition: An experimental study on the ecophysiology of free-living nestling songbirds. *Environmental Pollution*, 218, 909–914.
- ¹⁰ Knop, E., Zoller, L., Ryser, R., Gerpe, C., Hörl, M., & Fontaine, C. (2017). Artificial light at night as a new threat to pollination. *Nature*, 548(7666), 206–209.
- ¹¹ Garcia-Saenz, A., Sánchez de Miguel, A., Espinosa, A., Valentin, A., Aragónés, N., Llorca, J., et al. (2018). Evaluating the Association between Artificial Light-at-Night Exposure and Breast and Prostate Cancer Risk in Spain (MCC-Spain Study). *Environmental Health Perspectives*, 126(04); Nagare, R., Plitnick, B., & Figueiro, M. (2018). Effect of exposure duration and light spectra on nighttime melatonin suppression in adolescents and adults. *Lighting Research & Technology*, in press, in press. Nelson, R. J., & Chbeir, S. (2018). Dark matters: effects of light at night on metabolism. *Proceedings of the Nutrition Society*, in press, in press.
- ¹² Mitchell, D., and Gallaway, T. (2016). Estimating the Potential Economic Value of the Night Skies Above the Colorado Plateau. Report prepared for the U.S. National Park Service by the Department of Economics, Missouri State University, Springfield, Missouri. Available on <http://www.wyomingstargazing.org/wp-content/uploads/2018/02/Economic-Impact-of-Dark-Skies-on-the-Colorado-Plateau.pdf>.
- ¹³ "Assumptions made in the BLM analysis", Draft RMPs/EIS, Vol. 1, p. 3-69.
- ¹⁴ "Contributions that Increase Dark Night Sky Pollution", Draft RMPs/EIS, Vol. 1, p. 3-73.
- ¹⁵ "Cumulative Effects", Draft RMPs/EIS, Vol. 1, p. 3-75.
- ¹⁶ "Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area Draft Resource Management Plans and Environmental Impact Statement Executive Summary", p. ES-32.
- ¹⁷ "Develop an activity plan for designation as an International Dark-Sky Association Dark Sky Sanctuary. The activity plan will include development and adoption of a comprehensive Lightscape Management Plan, Lighting Inventory, and Dark Sky BMPs consistent with requirements set forth by the International Dark-Sky Association.", Record 1096, Goal VR:2 Manage uses to maintain the quality of night sky and natural soundscape resources, Draft RMPs/EIS, Vol. 1, p. 2-18.
- ¹⁸ "Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area Draft Resource Management Plans and Environmental Impact Statement Executive Summary", p. ES-10.
- ¹⁹ *Ibid.*, ES-32.
- ²⁰ "Contributions that Increase Dark Night Sky Pollution", Draft RMPs/EIS, Vol. 1, p. 3-73.
- ²¹ Record 1095, Goal VR:2 Manage uses to maintain the quality of night sky and natural soundscape resources, Draft RMPs/EIS, Vol. 1, p. 2-18.
- ²² "Impacts on Scenery, Night Skies, and Natural Soundscape from Proactive Management", Draft RMPs/EIS, Vol. 1, p. 3-74.