

## Preserving Pristine Night Skies in National Parks and the Wilderness Ethic

In the American West throughout the latter part of the 19th century, the conquest of the frontier by American industrial culture led to a profound sense of loss among conservation-minded individuals. They mourned the passing of a way of life and of an unspoiled grand landscape that fostered individual freedoms, simple rewards for hard work, and an intimacy with the land that was required for mere survival. The last 20 or 30 years have seen a similar or analogous rapid disappearance of a resource that was once taken for granted: the unfettered view of the universe on a dark, clear, moonless night. Today, we are on the verge of losing the pristine night sky entirely in the 48 contiguous states. However, unlike losing a species to extinction, topsoil to erosion, or yet-to-be-explored virgin lands to development, the night sky is 100% recoverable.

The alarm signaling the potential irretrievable loss of wildlands was sounded in large part by the preservationists of the infant wilderness movement, such as Henry David Thoreau and John Muir. This alarm awakened the public and politicians, and the idea of wilderness preservation eventually became one of the hallmarks of American values. Professional and amateur astronomers were the first to cry out for preservation of night skies in the 1970s, and an effort to save what's left of visual astronomy from earth is now well underway. Loosely collected under the umbrella organization of the International Dark-Sky Association, those wishing to preserve night skies

have become more eclectic, and now include lighting engineers, landscape architects, urban planners, federal land managers, and the general public. In the Far West, some of the darkest and clearest of night skies in the world are found in national parks such as Yellowstone, Glacier, Bryce Canyon, Canyonlands, and Death Valley. Many of these parks are now experiencing or are threatened by light pollution. I propose that the preservation of the right to view the universe from America's wilderness national parks is a duty assigned to the National Park Service under the Wilderness Act of 1964 and the Organic Act of 1916. Furthermore, the present-day effort to save night skies

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is not merely analogous to, but an integral part of the wilderness ethic.

The idea that wild and beautiful lands with all their appealing attributes should be preserved *for their own sake* has sometimes been described as “the esthetic of the sublime” (Rodman 1983). Since the Romantic movement, persons of European background have equated the feeling of awe such places bring about with sacredness, or a place that is beyond and far greater than humanity. Perhaps no landscape has promoted such feelings more than that which includes the night sky, which has been described as “that most glorious and compelling and inspiring of nature’s faces” (Schaaf 1988, 205). While the environmental ethic has evolved to focus on a more holistic approach to ecosystem health rather than exclusively on the preservation of sacred, sublime places, the preservationist tradition is still very much a part of American culture. It is an idea that is particularly appropriate when applied to a place that is primarily beyond earth’s boundaries, as no management practices humans have yet devised are affecting the health of extraterrestrial resources. The *ability to observe* that heavenly landscape is what is in danger.

Firsthand observations are exceedingly important to the development of values, philosophies, and matters of a spiritual nature. It may be argued that technological im-

provements in the observation of the universe beyond earth have rendered firsthand observations unnecessary or even inferior. The Hubble Space Telescope, placed above light pollution and atmospheric distortion of ground-based observatories, has provided views of space of unprecedented detail. One may merely log on to Web sites such as “Astronomy Picture of the Day” and enjoy an unparalleled view of the universe from the vantage point of a personal computer. While there is no reason to believe that such images have been artificially created or manufactured, such an experience is still essentially virtual reality. It is equivalent to watching a church service on television rather than attending in person, or watching a nature film on wild animal behavior rather than observing them firsthand. Part of the intent of the Wilderness Act of 1964 was to provide all Americans access to “primitive and unconfined” recreation and opportunities for the spiritual enlightenment and personal development such experiences provide. The view of a dark night sky can certainly be interpreted as an integral part of that experience, and remote wilderness parks are among the few places left where it can be seen.

It is illustrative to review events surrounding the creation of two of the most famous and cherished national parks, Yellowstone and Yosemite. Although Yellowstone is the nation’s oldest national park, created

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in 1872, Yosemite Valley was actually set aside as a park or preserve first, by a federal grant of land to the state of California in 1864. Roderick Nash, in his classic work *Wilderness and the American Mind*, describes both these great milestones in America's cultural development. He attributes the creation and early maintenance of the Yosemite park largely to Fredrick Law Olmsted, the leading landscape architect of his time. Olmsted's words in an advisory report to the California Legislature in 1865, as quoted and commented on by Nash, make a strong case for the esthetic of the sublime:

It [the report] opened with a commendation of the preservation idea which precluded 'natural scenes of an impressive character' from becoming 'private property.' Olmsted next launched a philosophical defense of scenic beauty: it had a favorable influence on 'the health and vigor of men' and especially on their 'intellect'.... Capping his argument, Olmsted declared: 'the enjoyment of scenery employs the mind without fatigue and yet exercises it; tranquilizes it and yet enlivens it; and thus, through the influence of the mind over the body, gives the effect of refreshing rest and reinvigoration to the whole system' (Nash 1982, 106).

While Yosemite's unique and striking beauty was virtually indisputable and embraced by nearly all who visited the valley, the new state preserve was relatively small in area and was intended primarily to

preserve the scenery in and around the valley only. Yellowstone National Park was initially thought of as a "museum of wonderful and natural curiosities," but it was realized later by members of Congress that this vast area of the Montana Territory was indeed a wilderness preserve. It was in this spirit that the language of the Wilderness Act of 1964 was crafted. The value of a wilderness area lies not only in the scenery and geologic oddities, but in its "primeval character," essentially "untrammelled by man." A challenge to the notion of the need for a large, wild preserve occurred in 1886 when a railroad was proposed to cross park land to support mining ventures in the area. Nash recounts the *Congressional Record* and comments on this major victory for the preservation ethic:

Representative [Lewis E.] Payson [of Illinois] ... understood the park's function as the protection of curiosities. 'I can not understand the sentiment,' he admitted, "which favors the retention of a few buffaloes to the development of mining interests amounting to millions of dollars.'

But to Representative William McAdoo of New Jersey, Yellowstone performed a larger function. Answering Payson, he pointed out that the park also preserved wilderness which the railroad would destroy even if it did not harm the hot springs. He added that the park had been created for people who might care to seek 'in the great West the inspiring sights and mysteries of nature

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that elevate mankind and bring it closer communion with omniscience' and that it 'should be preserved on this, if for no other ground.' McAdoo continued with a vindication of the principle of wilderness preservation: 'the glory of this territory is its sublime solitude. Civilization is so universal that man can only see nature in her majesty and primal glory, as it were, in these as yet virgin regions.'

A vote followed in which the railroad's application for a right-of-way was turned down 107 to 65. Never before had wilderness values withstood such a direct confrontation with civilization (Nash 1982, 114-115).

These accounts demonstrate two important perspectives on wilderness preservation that appear to have a long history in our culture. In the Yosemite example, Olmsted's view that certain landscapes have such intrinsic beauty that they can never become "private property" can inarguably be applied to the view of the night sky. If an artificial light is erected and maintained that compromises or interferes with the view of the night sky from a wilderness preserve, that light is in violation of one of the basic premises of the wilderness ethic: namely, obvious evidence of human technology becomes visible on the landscape. Such a situation is known as "light trespass," and may be regarded as just as serious a violation of the wilderness character as the trespass of domestic livestock or off-highway vehicles onto wilderness

lands. If Olmsted's philosophy is extended to night sky "scenery," skies visible from wilderness preserves should receive the same protection as the terrestrial landscape within the preserve itself. A similar concept was put forth in the Clean Air Act Amendments of 1977, whereby vistas that were considered integral to the meaning and purpose of federal Class I (wilderness) areas were given special protection from visibility impairment, even if the vista overlooked lands outside the preserve.

The Yellowstone example is remarkable in that it shows the firm conviction by members of Congress in the idea of wilderness preservation over 100 years ago, and in the realization that preservation of such areas requires a large buffer of protection from development. The proposed railroad would almost certainly have been routed to avoid the "natural curiosities" of the geysers, waterfalls, and canyons of Yellowstone, but Congress recognized that it would violate the character of "these as yet virgin regions" by voting to keep its path entirely outside of the park. Regions now possessing "virgin" night skies that also fall within designated wilderness can be seen to be experiencing a similar threat to that facing Yellowstone in the 1880s. To protect pristine sky quality, however, the buffer must extend beyond the park's boundaries because of the

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potential for the glow of lights from cities, towns, or industrial areas to pollute the skies within a hundred-mile or more radius of the source.

Exactly what is lost when the view of the night sky is less than pristine? Astronomers, professional and amateur, have addressed this question from a technical or scientific standpoint for at least three decades. An increase in sky brightness leads to a decrease in contrast between faint or diffuse astronomical objects and the sky background, in many cases rendering them invisible. Many of the more sublime features of the night sky are subtle or diffuse in nature, such as the zodiacal light and the Milky Way. A glow near the horizon from distant cities or towns, while not significantly affecting the sky quality near the zenith, may cause a "light dome" to become silhouetted against the horizon and foreground objects in the direction of the city, washing out stars and other astronomical objects. This leads to a significant degradation of the wild appearance of the landscape for the nighttime wilderness visitor. An unbroken carpet of stars extending nearly to the horizon in all directions with no evidence of artificial light is one of the more impressive features of a wilderness landscape, especially in the high-mountain or desert regions where the air is commonly very transparent.

The human eye-brain combination is well adapted to allow us to

function in all but the densest of forests or deepest of canyons at night, even when the moon is not in the sky. According to Schaaf (1988, 167), "the faintest stars the human eye can glimpse without optical aid are about 100,000,000,000,000 (100 trillion) times dimmer than the brightest light it can perceive without suffering damage." A landscape illuminated by the full or nearly-full moon is relatively easy to negotiate for the properly dark-adapted human eye. In open country, even with nothing more than starlight at the most remote of wilderness locations, it is possible for humans to get around without the use of an artificial light. It became second nature to our ancestors to use what are now known as "astronomer's tricks" (such as averted vision) to enhance night vision. Wilderness travelers of today almost entirely restrict their wanderings to the daytime hours. Occasionally, however, there arises a need or desire to travel at night, planned or unplanned, and often without the aid of a flashlight. It is during these episodes that much is learned about the eye's true capabilities, and the natural light sources in the night sky are fully appreciated. There are those who actually *prefer* to travel at night, especially in hot desert regions or exposed subalpine or alpine environments, to avoid some of the harmful effects of full sunlight on the body. For them, the wilderness preservation ethic applies twenty-four

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hours a day.

It is no mere coincidence that amateur astronomers commonly pursue their hobby in national parks. What better environment to appreciate the beauty of the night sky than from protected and pristine earthly landscapes? The San Francisco Sidewalk Astronomers, led by John Dobson in the 1970s and 1980s, promoted the glories of the night sky with star parties at Glacier Point in Yosemite National Park and in Death Valley National Monument (now National Park), gatherings which continue to the present day. Most national parks have interpretive programs on the night sky for the public. It is a simple step to include the preservation of night sky visibility in programs concerned with wilderness values or air quality-related values.

The most important value of first-hand observations of the night sky wilderness may well be the possibility that such experiences will lead to an expansion of an individual's perception. Aldo Leopold, in his famous book *A Sand County Almanac* (1949, 204), put forth the idea of a land ethic, which "simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively the land." This concept is introduced only after Leopold relates many observations of animal behavior in wild places, so that it is obvious to the reader that such an ethic is an inevitable consequence of intimate knowledge with a

place. The more one knows about a place, its features and inhabitants, the more one is likely to advocate preservation of those features, because they have led to one's personal and spiritual development. Rodman elaborates on this remarkable character of Leopold's work that has universal appeal:

When perception is sufficiently changed, respectful types of conduct seem 'natural,' and one does not have to belabor them in the language of rights and duties. Here, finally, we reach the point of 'paradigm change.' What brings it about is not exhortation, threat, or logic, but a rebirth of the sense of wonder that in ancient times gave rise to philosophers but is now more often found among field naturalists (Rodman 1983, 90).

Leopold writes of trying to put oneself in the position of various wild animals—the skunk, the mouse, the muskrat—and trying to imagine what their perception of their environment is. Those who would observe the universe under pristine skies from the platform of a wilderness preserve are ideally situated to place themselves *out there*. This type of perception expansion inevitably leads to the sense of wonder that fosters a better understanding of the place of humans, not only on this planet but in the universe as a whole. While the objects, events, and processes that go on outside earth may seem to some only to have practical value to theoretical physicists and fortune tellers, there can be little argument as to the

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cultural and spiritual significance of the face of the night sky. If it can be left “unimpaired for future generations,” the opportunity for the development of such intimate knowledge of the universe may in fact lead to respectful types of conduct, one of which might just be the judicious and conservative use of artificial lighting.

### References

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