

## Let There Be Dark: The National Park Service and the New Mexico Night Sky Protection Act

**T**he National Park Service (NPS) mission, supposed by some to be immutable, constantly changes and grows. This paper will review important episodes in the growth of this mission to include the ability to see, enjoy, and be influenced by moonlight, starlight, meteors, comets, and the vast darkness of interstellar space.

The beautiful and succinct initial statement of mission in the National Park Service Act of 1916 is often mistaken even today for the mission of the agency. It is instead a brilliant foundation for ever-maturing philosophical concepts and recognition of resources that could never have been dreamed of 85 years ago. Numerous laws have expanded the mission. Other changes have come in the interpretation of statutory language by the courts, by the many professional disciplines that are vital to the NPS mission, and by the people who are the National Park Service.

Although sometimes branded by opponents as arbitrary, these changes actually reflect normal growth in professional acuity and public consciousness. For example, the founders, in 1916, appear not to have been thinking of interdependence among great and small and popular and unpopular species, and NPS afterward participated in extirpation of unpopular species. We know now that unpopular species may need to be saved or even reintroduced in order for popular species to have the complete means for their own existence. That kind of awareness—rare in 1916—had to await broader understanding and ac-

ceptance of ecological concepts. Although it took many years, once this awareness had developed, NPS had no choice but to adopt a broader and more encompassing reading of its natural resource mission. Thus, mission requirements once presumed to be met by arresting poachers and fighting fires grew to include keeping water and air clean, removing exotic species, and other actions undreamed of when the intellectual and philosophical context of “natural resource management” was in its infancy (Sellars 1997).

Cultural resource concepts also had to outgrow a period of intellectual

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and philosophical infancy. At first, it was easy to acknowledge the importance of Cliff Palace, Casa Grande Ruins, and Chetro Ketl, because they were visually spectacular (just as moose, bison, and geysers were visually spectacular). However, it proved impossible to understand these structures without the archaeological information embedded in the soil around them. Giant steps then took us from a simple focus on the protection of ruins to the recognition that microscopic particles in stratified layers of earth are valuable cultural resources. Yet other giant steps, after scientific archaeology had been accepted, then expanded the intellectual and philosophical context to encompass the importance of values and belief systems of living contemporary cultures (NPS and Colorado Historical Society 1989). Now, with logic that allows a natural feature such as Plymouth Rock to be acknowledged as important to the cultural traditions (however apocryphal) of English-derived Americans, it is equally possible to acknowledge that sacredness attributed to a mountain may be important to the cultural traditions of an American Indian tribe (e.g., Bear Butte in South Dakota; Mount Shasta in California).

The relatively recent recognition of the night sky as a "resource" worthy of preservation within the NPS mission represents a giant, but logical, step in the growth of the intellectual and philosophical contexts of both natural and cultural resource management.

Before 1990, park managers and visitors watched in growing and helpless dismay as ambient artificial light, not yet called "light pollution," made its way from urban centers into less-populated areas of the American West (Advertising Age 1993; Denver Post Magazine 1993). A bright aura above a city might be visible from a park more than a hundred miles distant. Soon, however, similar glows were coming from small towns, and from mines, drilling rigs, refineries, and other industrial facilities that operated round the clock. Bryce Canyon National Park, in remote southern Utah, was affected by bright lights from a strip-mining operation beyond the park's boundaries. It became popular among rural dwellers to place mercury vapor lights on tall poles, ostensibly to discourage thieves. These streetlights without streets were more nearly statements of modernity than devices for security. They even penetrated Indian country. So many Navajo family dwellings had mercury vapor lights that from Mesa Verde's Far View Lodge, the vast and mostly empty reservation to the south sparkled at night like a thinner suburbia. Park managers of the era were like captains of ships, responsible only for their own individual parks and for looking inward within their own park boundaries. Little collaboration occurred among parks, and almost none occurred with non-NPS partners beyond park boundaries.

Professional astronomers took an

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early lead. Ambient light from growing metropolitan Tucson was rapidly diminishing the ability of astronomers at Kitts Peak to make use of their advanced and expensive scientific facilities. MacDonald Observatory, near Fort Davis, Texas, feared the same result. They and others began to call attention to artificial light as a problem, and successfully obtained ordinances in nearby jurisdictions to limit “light pollution” (Santa Fe Reporter 1992; Santa Fe New Mexican 1994a, 1994b).

In August 1991, Joe Sovick, then chief of the Division of Environmental Coordination of the NPS Southwest Regional Office in Santa Fe, served as acting superintendent of Chaco Culture National Historical Park. Intended as a developmental assignment for Sovick during a temporary vacancy, it also became a moment of innovation for NPS. Chaco has a magnificently unspoiled night sky, and its prehistoric ruins make it clear that the builders had paid careful attention to the night sky of their own time. Archaeo-astronomy, therefore, became an important theme of the park. Did the NPS mission not, after all, require that present and future generations be allowed to view the same night sky that the Chacoans so carefully studied a thousand years ago? When park staff explained that the danger that light pollution from outside sources might soon make this impossible, Sovick became a champion of the night sky cause (Sovick 1992a).

Brief examination of the steps necessary to protect Chaco against external light brought into focus the park’s own shortcomings. A mercury vapor light and other fixtures on and near the visitor center produced unnecessary light, and allowed much of it to escape upward as pollution. Chaco needed to “walk the talk” before it could protect itself against external pollution (NPS 1992a).

Sovick returned to his normal assignment in Santa Fe with a promise to get NPS regional help for Chaco, and also with the kernel of an idea for broader activity throughout the Southwest (Sovick 1991, 1992b). A modest sum was transferred to Chaco to support retrofitting with shielded, non-polluting lights. Soon, an inventory of other in-park light pollution problems had been conducted throughout the NPS Southwest Region, and a number of needs for retrofit had been identified. On December 27, 1991, Regional Director John Cook signed a memorandum to Southwest Region park superintendents and all employees of the regional office explaining a regionwide night sky initiative (Cook 1991). Inexpensive but effective retrofits were accomplished not only at Chaco but at Carlsbad Caverns, Canyon de Chelly (Smith 1993), and many other parks. As is the case outside parks, solving problems within parks often requires only a simple action. For example, the roadside sign indicating the turnout to Far View Lodge in Mesa Verde had

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long been visible as a disturbing glare from important points in the park. It had been tastefully designed in every way except that its lighting fixtures, carefully concealed at ground level, directed rays upward from below, upon the sign, with a resultant escape of much light as pollution. Simple reorientation of the lights eliminated the bright point, while leaving the sign sufficiently visible to approaching motorists. Cost—always a concern, and frequently cited by opponents to environmental improvement—is often not the genuine determining factor in a decision to retrofit: electricity bills at Chaco decreased by 30% as a result of the improvements (Sovick 1999).

Getting its own house in order enabled NPS to do more about light pollution elsewhere. The agency could now engage its tremendous power as an educator of the public through interpretive programs. Also, it could freely use the persuasive power of its considerable reputation as an environmental leader in counteracting specific threats and in moving the cause beyond the parks themselves. Proud of its momentum, the Southwest Region continued to behave as the Servicewide bellwether for night sky issues. When a developer undertook a major project at Chinle, Arizona, just outside of Canyon de Chelly National Monument, NPS staff found it easy to get the developer to install non-polluting light fixtures by urging him to meet the same standard that the agency was imposing upon itself

(Cook 1992).

Nationally, 260 million visitors come to the parks each year. Most, presumably, learn something from their visits, and are open to learning more. This educational power had to be tapped if there were to be any hope of preventing the steady growth of light pollution. Interpreters took up the cause with characteristic gusto. G. B. Cornucopia at Chaco obtained grants for the construction of a small astronomical observatory to accommodate the donation of a 25-inch reflecting telescope from the Albuquerque Astronomy Society. The telescope is used to give visitors personal experiences in the value of an unpolluted night sky. Major new nighttime interpretation was also initiated at White Sands, El Malpais, El Morro, Pecos, Carlsbad, Salinas, and Fort Union. These interpretive activities take many forms. In some cases they involve tours, such as the popular “nightwalk” programs at Bandelier National Monument, which feature the nighttime magic of Frijoles Canyon. In other cases they involve the traditional NPS “campfire” programs, or storytelling under the stars, as at Tsankawi Mesa in Bandelier. Exhibits, brochures, and other media are also used. Southwest Region interpreters have developed and distributed basic materials for interpreting the night sky and the threats against it to the network of interpreters throughout NPS (NPS 1992b).

It is not possible to “save” Amer-

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ica's national parks without also to some degree "saving" the United States as a whole. If it were somehow possible to save to perfection every acre of every national park unit, and the rest of the country were environmentally "lost," that preservation would have been for naught. NPS's obligation as a friendly and helpful environmental leader is therefore as great as its obligation to preserve the parks. It is not always necessary for this work to be accomplished amid controversy and conflict when reasonable cases can be presented to the broad public. Sovick and others have provided thoughtful and persuasive "op-ed" pieces to newspapers (e.g., Sovick 1997), and when newspapers ran the pieces or other stories about the night sky, they multiplied the public-awareness effect through follow-up letters to the editor.

Powerful and enthusiastic support came from the National Parks Conservation Association (NPCA). Spearheaded by Southwest Regional Director David J. Simon, NPCA conducted a nationwide survey of the effects of light pollution on the National Park System. Its report, "Vanishing Night Skies," was published in March 1999 and widely distributed to shapers of public opinion and makers of public policy. It estimated that only 10% of the U.S. population can see an unsullied night sky, and that light pollution is a resource problem in nearly two-thirds of National Park System units that offer overnight visitation.

This report recommended that NPS lead by example; that it expand night sky interpretation programs; that gateway communities and others adopt outdoor lighting ordinances; that Congress bolster Environmental Protection Agency programs for energy-efficient lighting; that Congress strengthen the Clean Air Act; and that early special emphasis be given to preventing deterioration of the night sky in the Midwest, Pacific, and Intermountain regions before it becomes more widespread and serious (NPCA 1999a, 1999b). As usual, the NPCA study stimulated a large number of news stories and editorials in newspapers and magazines throughout the country.

As also related elsewhere in this issue, NPS assisted its new partner organization, the New Mexico Heritage Preservation Alliance, to take a bold step. In January 1999, the alliance declared the New Mexico night sky—almost 122,000 square miles where it touches the earth's surface, and extending outward into infinity—to be one of the state's "Most Endangered Historic Places." As intended, this extraordinary concept quickly captured the public's imagination, opposition was subdued, and a coalition of organizations and individuals who valued the night sky for many different reasons was able to generate powerful action (Albuquerque Journal 1999; High Country News 1999; Santa Fe New Mexican 1999).

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State Representative Pauline Gubbells, a Republican from Albuquerque, timed her January 1999 introduction of H.B. 39, "The Night Sky Protection Act," almost perfectly with the alliance's declaration. Sovick and the coalition had generated positive press attention throughout the state, creating a "head of steam" for the legislation (NMHPA 1999). They also worked with Representative Gubbells to identify and remove words and phrases likely to attract opposition. For example, the original title of the draft bill, "The Outdoor Lighting Control Act," was changed to emphasize the value to be protected rather than an intent to control (Sovick 1999; Blair 1999). Nonetheless, powerful forces affiliated with the state's outdoor advertising industry went into action to try to stop the bill or to amend it into ineffectiveness. The coalition redoubled efforts to support the bill. Dark sky advocates, including Robin and Meade Martin, Katherine Slick, Dave Simon, John Buting, and Stephen Gainey, applied passion to enlist support to overcome the small but powerful opposition.

Political forces that generally oppose any form of regulation, including the so-called land rights organizations, mounted their own campaign to persuade Governor Gary Johnson, a conservative Republican, to veto the bill. Johnson, however, valued the state's natural beauty himself, and he also recognized that the new law would do much good with only a minimum of

cost and virtually no new regulatory burden. He signed the bill into law on April 6, 1999.

The New Mexico Night Sky Protection Act is by no means the comprehensive protection that is ultimately needed (Santa Fe New Mexican 1998). In order to win enactment, the bill was weakened by exempting farms, ranches, and—significantly—the outdoor advertising industry. However, cities and towns, whose streetlights are major pollution sources, were not exempted. Mercury vapor lights, the type cheapest to buy but most expensive to operate and among the worst sources of pollution, can no longer be sold legally in New Mexico. Thus, even the exempted groups will eventually be retrofitting with less polluting fixtures as present equipment wears out. The act requires that outdoor lighting be fitted with shielding that directs light downward, rather than upward or laterally. Downward-directed light is useful, whereas upward or laterally directed light is not only polluting but wasted, so greater efficiency will eventually reduce expenditures for electricity and focus attention on another reason for reducing pollution. The act allows present lighting to remain throughout its useful life, but requires the installation of conforming lights whenever replacement would normally occur, so that any economic burden is limited or avoided altogether. The law also allows local communities to enact more stringent

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local ordinances.

The New Mexico Night Sky Protection Act takes important steps to stop continued increase in light pollution while the bright stars are still among the things that make New Mexico the “Land of Enchantment.” It makes provision for the present situation to be improved in the future, all without the costs, bureaucracies, and similar bugaboos that often thwart environmental protection legislation.

From the perspective of today, two years after enactment, certain flaws in the law have become more apparent. Lack of an enforcement mechanism or overseeing bureaucracy, for example, has caused the burden of making the law widely known to fall upon the press and night sky advocates. Some suppliers are still selling mercury vapor lights, presumably unaware that they are breaking the law.

Yet even such “flaws” may have positive sides. Advocates, upon enactment of a law, often relax their attention, move on to other issues, and disband their coalitions. It is a serious error to presume that any important “victory” is final, but environmental advocates often fall into that trap. Even when there is a dedicated bureaucracy, the continued existence of a cadre of vigilant citizen advocates is vital to invigorate the bureaucracy, to help it, and to keep the public policy agenda from stagnating. For future progress to be made or past progress sustained, new aspects of the subject must come to public attention from time to time. It

may be well for a good but not perfect law to be enacted at first, so that the need for improvement can be brought to public attention in the future and momentum can be built or sustained. Indisputably, this is better than insisting upon a perfect law the first time or no law at all—a common tactic that commonly results in no law at all. The New Mexico Heritage Preservation Alliance, NPCA, the astronomers, and the other members of the coalition have an issue to nurture: they can praise lawmakers for their first step, later urge further steps, and all the while use the same efforts to educate the public (Simon 2000). A public that values the night sky and actively seeks ways by which individuals can voluntarily help to preserve it may prove to be the best and most important outcome of all.

For NPS, an important beginning has been made in recognizing, building public understanding of, and erecting actual protections for a resource that is of absolute importance to national park units, but that absolutely cannot be preserved by actions confined within park boundaries. A cadre of partners sharing a common interest has been developed that will help to preserve the night sky with the National Park Service and for the National Park Service, but also among themselves and for themselves. NPS has used its beyond-boundary authorities, such as the National Historic Preservation Act’s mandate to provide education to the public and

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leadership to the preservation movement—authorities that hold great potential for better preservation of resources within national park units everywhere. NPS has learned that effective leadership must begin with leadership by example, and that the most effective action is often the action taken by a partner holding a common

interest. And NPS, along with its partners, has learned how much greater creativity, resilience, and achievement ability lie in common action than in unilateral action.

What has been done in one state can and must be done—and improved upon—in other states.

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**Jerry Rogers** (National Park Service, retired), 29 Bosque Loop, Santa Fe, New Mexico 87508; Jerry<nburgas@Phronsis.com>  
**Joe Sovick**, National Park Service Intermountain Support Office, P.O. Box 728, Santa Fe, New Mexico 87504-0728; Joe\_Sovick@nps.gov

