Mapping wilderness character for US National Park wildernesses

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What is wilderness character?
The 1964 Wilderness Act states that “each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area.”

Wilderness character is composed of the following five qualities:

• Natural - ecological systems are relatively unaffected by the effects of modern people.
• Untrammeled - free from the actions of fenced, manipulated, or controlled community of life.
• Undeveloped - without roads, habitations, installations, motorized vehicles, or mechanized transport.
• Subsistence - primitive and unconfined recreation, challenge, self-discovery, and inspiration.
• Other features of value - tangible features that are unique and integral, and have scientific, scenic, educational, conservation, or historical value.

Keeping It Wild (Landres et al. 2008) created a hierarchical framework composed of these five qualities and an associated set of indicators and measures.

How to map wilderness character?

• Use a variety of data sources in different formats and scales from the federal agency and contractors.
• Distinct attributes are formatted and converted to grids. Grid values are normalized onto a common relative scale.
• Grids are added together using park-wide weightings that factor in the different impacts each measure has on wilderness character.

A full description of the mapping process, along with listed sources and associated cautions is described in the Death Valley Wilderness Character Mapping Report (Tricker et al., 2012).

Keeping It Wild: The Death Valley National Park.

Benefits

• Show the current overall condition of wilderness character and how it varies across the landscape.
• Analyze (via WCAT) different planning alternatives being considered for forthcoming Wilderness and Backcountry Stewardship Plans in Death Valley.
• Provide a baseline from which future improvements could show the trend in wilderness character over time.
• Allow park staff to evaluate existing park needs and data and prioritize where gaps in data would be needed for future planning and analyses of effects on wilderness character.


“death valley is a unique and important park that has been impacted by a number of factors but has managed to maintain its wilderness character. it is important to continue to monitor and protect this area so that future generations can enjoy the same beauty and tranquility.”

Limitations

• The maps only record areas where wilderness character has been degraded, and does not incorporate features that enhance wilderness character.
• The maps may not be appropriate for mapping wilderness character in different kinds of wilderness. Each wilderness will have different data and weighting regimes in response to the particular characteristics and values of that wilderness.
• The map is only intended as an estimate of selected aspects of wilderness character and their relative spatial patterns and variability. The map products do not portray the symbolic, intangible, spiritual, or experiential value of wilderness character.

References & Acknowledgements


Death Valley National Parkheadquarters, Charlie Stumpf, John Stark

Olympic NP

Denali NP

Sequoia Kings Canyon NP

Death Valley NP

3.1 million acres, designated in 1994

Unique issues: existing road network, mining disturbance, outside pressures (highway, air pollution)

Auto correlation between roads/water and exotic species/water pressures

Northern half of park has the most intact wilderness character

876,447 acres, designated in 1988

Unique issues: Decline in the capability to achieve, two very different units (coastal and interior)

Soil/Ocean area and coastal unit see most of the backcountry use

Majority of park is in excellent condition

768,112 acres, designated in 1984

Unique issues: second oldest park (long history of visitor use), tradition of stock use, proximity to large urban center

Two major through trails: John Muir Trail and Pacific Crest Trail

Three large pockets of intact wilderness

2.1 million acres, designated in 1980

Unique issues: subsistence use, major seasonal differences, impact of park road

Backcountry zoning permit system in the wilderness

Southwest of park stands out as having most intact wilderness character

Baskets, Looms, and Western Indian Basketry, ed. by David A. Saunders and Jennifer Q. Wilcox (Boulder, CO: University of Colorado Press, 1989)