

The Impacts of Climatic Change on Death Valley National Park and Legal Protections

Jinhui Wang

Environmental Policy

University of Illinois at Urbana Champaign

May 2016

Introduction

The Earth's climate has significantly changed over the last one century and is projected to change even more in future. For many years, many national parks have been increasingly experiencing the effects of external factors caused by human activities. Even the most isolated parks in the world are being affected. Even though Death Valley National Park, which is approximately 120 miles from the nearest major city is no exception. The Death Valley national park is among the treasured places. However, the continued ability of the National Park to bring enjoyment to people is at risk from unprecedented threat: global warming (Death Valley National Park Action Plan, 2015). The climate has been disrupted by human activities posing threats to the scenery, natural resources and wildlife of the park (Knapp et al., 2014). Last year Death Valley's temperature averaged over 100 degrees Fahrenheit from May through September and thus it is likely to become intolerably hot for tourists and pose threats to some species. Hot summer temperatures, high evaporation, low humidity, and low precipitation characterize the park.

Death Valley National Park is at grave risk due to climatic changes. Climate change driven by human activities represents a big threat to the park. As the temperatures rise and precipitation pattern change animals and plants in the Death Park may be forced to find new places or succumb to climate change threats and become extinct. In response to the climate changes, the government and National Park Service has implemented and enacted some legal protection to enable the Park to mitigate the impacts and adapt to the changes. However, the existing legal protection can serve either as enablers or barriers. According to Jantarasami, Lawler and Craig (2010) barrier related to legislation include potential conflicts between new

management recommended for adaption to climate change and current legal requirements.

Climate disruption endangers Death Valley National Park, and the existing legislation protections does not necessarily enables parks to mitigate and adapts to climate changes. This paper will prove that Climate change is a great challenge in maintaining Death Valley Park resources unimpaired for future generation but increasing the flexibility of the existing legal protections and implementation of management plan for reducing emission will help mitigate climate change and successfully adapt to changes.

Legal Protection

Legal protections are powerful tools with the potential to force a reduction in the emission of greenhouse gasses. The United States has developed a comprehensive system of legislation designed to protect the natural environment and preserve significant species. The laws cover four key areas: species protection, habitat preservation, environmental impact assessment and pollution prevention and control (Delach & Matson, 2010). The National Park Service has been charged with parks management. To accomplish its mission, NPS employs two law enforcement branches: United States Park Police and the United States Park Rangers and special agent. One of the current legal actions in mitigating climate change is the national park service Organic Act which offers the most significant protection of the wildlife habitat. Congress created the Act in 1916 with the enactment of the Organic Act. The act provides a crucial legal framework for park service management decision and the basis for legal challenges. The Organic Act allows the park service to respond to climate change. It requires that the Park Service's manage the park to conserve the scenery, natural resources, and wildlife. The act provides guidance in the face of climate change. Given the large-scale impacts that climate change has imposed on the Death Valley park ecosystem maintenance of favorable climatic

conditions require massive human intervention. According to Biber & Esposito (2016), the legal standards in the Organic Act are not consistent with the 21st-century management needs of the park service.

Apart from the Organic Act, a range of other natural resources and environmental laws that apply to the Federal agencies apply to the management of the park condition. The most important of these laws include Endangered Species Act (ESA) and National Environmental Policy Act (NEPA). The ESA prohibits the agencies from taking actions that would jeopardize the existence of endangered and threatened species. It directs the Secretary to develop and implement recovery plans for the conservation and survival of threatened species. NEPA requires all the federal agencies to assess the potential environmental impacts thoroughly. Both laws have major impacts on the decision made by the park service. Another legal protection is the National Forest Management Act (NFMA). The law incorporates the principles of conserving biodiversity and requires the forest service to provide the diversity of animal and plants communities. Other acts such as Wild and Scenic River Act and National Wildlife Refuge System Administrative Act also provide significant protection by requiring the federal lands to be maintained in a primitive state (Bowman, 1996).

There is great need to communicate the complexities of the climate change in the park and the action that need to be taken. The National Park Service has developed four strategies for communicating the impacts of climate change. First is the coordination and distribution of climate change information throughout the National Park service. Second is the providing external communication about the implication of climate change and the National Park Service response. The third strategy is increasing climate change knowledge and understanding. The last

strategy is the communication sustainable practices that lead by example (National Park Service, 2011).

The objective of the legal protection

The objective of the legal protection for the impacts of climate change in parks is limit global warming by reducing the emission of greenhouse gas emission. The laws are meant to stabilize the greenhouse gas concentration in the atmosphere at a level that would prevent dangerous interference with the climate system. Such levels are supposed to be achieved within a time frame to allow the natural resources and wildlife in the park to adapt naturally to climate change. Another objective of the legal protections is to maintain the diversity of plant and animal communities by mitigating the risks that may threaten their survival (Bowman, 1996).

The Role of Different Stakeholders

Meeting the challenge of climate change in Death Valley Park require unprecedented collaboration and cooperation. Engaging multiple groups of stakeholders who interact with the Death Valley Park in distinct ways can help in the mitigation of the impacts of climate change and adaptation. Effective mitigation of the impacts of climate change requires combined effort of the national law, state law and local communities (Knapp et al., 2014). While a lot of effort to mitigate and adapt to the impact of climate changes in Death Valley Park occur at the state and local level, national laws are critical players in an effective and coordinated approach. The role of the federal laws and agencies is to implement policies that regulate the emission. Agencies are supposed to take a leadership role in enabling the state government, local government, communities and businesses in their mitigation and adaptation planning. Park agencies are being involved in efforts to mitigate, adapt and educate the local communities about the impacts of climate change in parks. It is the obligation of both the state and national agencies to identify

solutions to issues presented by the transportation facilities by encouraging alternative fuels to reduce emission. The local communities have a significant role in supporting the park to mitigate climate change. One of the major roles of the local communities is incorporating green practices in their daily lives to reduce greenhouse gas emission such as using clean energy sources (Saunders et al., 2007).

The state laws and agencies are more concerned about the climate change than other stakeholders. California has set emission standards for vehicles, and the state is also implementing and developing comprehensive plans to reduce people's contribution to global warming. The state agencies are developing sustainable strategies to mitigate the emission of greenhouse gas. Moreover, it has implement programs for educating the public about the mitigation efforts, and it is also developing plans to adapt to climate changes (Jantarasami, Lawler and Craig, 2010).

Park Management Plan Responding to the Impacts of Climate Change

Death Valley National Park has developed a management plan in the face of climate change. The park has proposed to contain, reduce or eliminate, select species or population of non-native plants to restore the environment. The purpose of the management plan is to identify methods that will be used to restore the natural conditions, adapt to the climate changes and prevent further degradation of the natural resources due to climate change (Saunders et al., 2007).

Death Valley is creating new strategies in response to uncertain future of the plants and animals in the face of the climate change. From building a LEED certified visitor center to developing plans that provide a course towards a greener park system, Death Valley is

incorporating climate friendly behavior into its operations, management of facility and communication (Delach & Matson, 2010).

The largest segment of greenhouse gas emission from the Death Valley Park operation comes from the waste. Death Valley Park has developed and implemented a set of actions to reduce the emission from within the park. In its management plan, the park is committed to reducing its solid waste stream by reducing the creation of waste through green procurement, recycling, reuse, and repurposing. Wastewater is also a significant emitter of the greenhouse gas emission for the park. Currently, the park uses the traditional sewer lagoons to treat its wastewater at Stovepipe Wells and Furnace Creek. The strategies to reduce emission have been prioritized based on a qualitative assessment of a set of criteria including cost-effectiveness, co-benefits, feasibility, and emission reduction potential (Death Valley National Park Action Plan, 2015).

Death Valley park management plan is evolving with the growing impacts of the climate change. One of the specific actions that have been undertaken to address the threatened species, ecosystem and landscapes is the implementation of alternate energy sources. Emission inventory results indicated energy consumption account for 42% of the park's emission. In implementing specific actions, the park also found that a better understanding of benefits for reducing emission can motivate the visitors, staff, and the community members to incorporate climate friendly actions in their daily practices. The specific actions that are currently underway in Death Valley Park include the production of green energy, promotion of energy efficiency through behavioral change, reducing visitors' vehicle energy consumption and replacing National Park Service equipment and vehicle. Another specific action that the park has undertaken is the establishment of new plans policies to promote the reduction of waste, gas emission and communication of

impacts of climate change. The park is encouraging the public to reduce the use of reducing use of plastic materials by encouraging alternatives. Moreover, the park has implemented public education to increase public awareness of the climate change (Death Valley National Park Action Plan, 2015).

Communication of the Death Valley Threat from Climate Change to the Public and Stakeholders

The government is taking steps to mitigate, adapt and communicate the impacts of climate change in Death Valley National Park. In the absence of federal legislation curbing the emission of gasses that global warming political leaders are taking action. National Park service is also communicating threat that impact of climatic change is posing to the park. The purpose of communicating the threats is to encourage the stakeholders and the public to eliminate practices that threaten species and ecosystem. Moreover, Death Park Valley is communicating the consequences of the climate change to the wildlife and other natural resources in the park to encourage the public to engage in supporting its mitigating goals (Death Valley National Park Action Plan, 2015).

Scientific Studies of the Impacts of Climate Change on Death Valley

Climate change in Death Valley Park presents significant risks and challenges to the park resources, visitor experience, and infrastructure. While some impacts are known and already visible in the park many are beginning to be understood through scientific studies. Most impacts of climate change are complex and far-reaching. The uncertainty of when and how specific impacts will become evident in the park makes mitigating and adapting to the climate change a challenge (Rosenfeld, 2013). However, the uncertainty in the impacts of climate changes has attracted many researchers in this area.

Scientific studies have been conducted to assess the impact of climate change on the Death Valley Park. They have also been conducted to identify changes caused by climate change, to predict potential changes and assist in identifying the potential responses to climate change. The available scientific literature has proposed two types of actions for the management of the park. One type of category includes strategies designed to resist change or promote resistance to climate changes. The other category involves strategies that focus on promoting resilience. These strategies seek to enhance the ability of the ecosystem to withstand the increasing climate change effects without irreversible changes (Biber & Esposito, 2016).

Recommendation for Future Plans

The existing laws and policies need some modifications to clarify the roles, responsibilities and authorities for enacting actions for climatic change response. The natural resources and environmental laws should become more flexible to allow for adaptation to impacts of climate changes (Biber & Esposito, 2016). The flexibility of legal protection is essential for the implementation of an adaptive management plan that in turn reduces uncertainty in Death Valley that is increasingly affected by climate changes (Jantarasami, Lawler and Craig, 2010).

The federal government should play two roles to improve Death Valley Park stakeholders' response to climate change. First, it should improve federal coordination and policy evaluation by establishing clear leadership and responsibilities for climate-related decisions. Secondly, it should establish information and reporting systems that allow regular evaluation and assessment of the effectiveness of responses to climate change (National Research Council (U.S.) et al., 2010).

Death Valley Park should play a crucial role in addressing the human influenced impacts of the changing climate. It should promote new approaches to stewardship and offer information and tools to enable the park visitors to make informed decisions. Through creative engagement, Death Valley Park has the power to shape the public sentiment by showcasing its climate change response and practice. Embodying and communicating their strategies to convey lessons meaningfully for the visitors to replicate in their workplace, homes and communities. Moreover, Death Valley Park should demonstrate through scientific discoveries how climate change has shaped the landscape and threatened the ecosystem and species. Intrinsic features in the park can be used to reveal the source and impact of climate change and show the rate at which human activity amplifies the change in the ecosystem. Being able to show the tangible impacts of climate change in the park is the best way to get people engaged in the mitigation of climate change impacts. By reducing its contribution to the problem, Death Valley Park will set an example to the local communities (Death Valley National Park Action Plan, 2015).

References

- Biber, E. & Esposito, E. (2016). The National Park Service Organic Act and Climate Change. *Natural Resource Journal*, 56(1): 193-245. Retrieved from http://webcache.googleusercontent.com/search?q=cache:bF5xTahq4OkJ:lawschool.unm.edu/nrj/volumes/56/1/NRJ_56_1_Biber_Esposito.pdf+&cd=5&hl=en&ct=clnk
- Bowman, M. (1996). *International law and the conservation of biological diversity*. London [u.a.: Kluwer Law Internat.
- Death Valley National Park Action Plan (2015). <https://webcache.googleusercontent.com/search?q=cache:546t4Zc1F8cJ:https://www.nps.gov/subjects/climatechange/upload/DEVA-Climate-Friendly-Action-Plan-Final.pdf+&cd=4&hl=en&ct=clnk>
- Delach, A., & Matson, N. (2010). Climate Change and Federal Land Management.
- Jantarasami, L., Lawler, J. and Craig, T. (2010). Institutional barriers to climate change adaptation in U.S. national parks and forests. *Ecology and Society* 15(4): 33.
- Knapp, C. N., Chapin III, F. S., Kofinas, G. P., Fresco, N., Carothers, C., & Craver, A. (2014). Parks, people, and change: the importance of multistakeholder engagement in adaptation planning for conserved areas. *Ecology and Society*, 19(4), 16.
- National Park Service (2011). Climate Change Response Program. http://webcache.googleusercontent.com/search?q=cache:uOrhWHtxYbUJ:oceanservice.noaa.gov/education/pd/climate/teachingclimate/nps_responding_to_the_challenge.pdf+&cd=7&hl=en&ct=clnk
- National Park Service (2013) Death Valley National Park: Weather and Climate. <https://www.nps.gov/deva/learn/nature/weather-and-climate.htm>

National Research Council (U.S.), National Research Council (U.S.), National Research

Council (U.S.), & America's Climate Choices (Project). (2010). *Informing an effective response to climate change*. Washington, D.C: National Academies Press.

Rosenfeld, S. (2013). Death Valley National Park. *Booklist*, 110(3), 76.

Saunders, S., Easley, T., Logan, J. A., Spencer, T., & Jarvis, J. B. (2007). Losing Ground:

Western National Parks Endangered by Climate Disruption. *The Challenges of Climate Change* 24(1). Retrieved from

<http://webcache.googleusercontent.com/search?q=cache:sr62qiA0as4J:www.georgewright.org/241saunders.pdf+&cd=9&hl=en&ct=clnk>