



Testimony of

**Michael Cipra, California Desert Program Manager
National Parks Conservation Association**

**RE: *The Impacts of Climate Change on America's National Parks*
Before the House Subcommittee on National Parks, Forests and Public Lands**

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Mr. Chairman, and other distinguished Members of the Subcommittee, thank you for inviting me to testify about the challenges that our national parks face as a result of climate change, and the opportunity that we have to meet these challenges.

Founded in 1919, the National Parks Conservation Association works to protect, preserve, and enhance America's National Park System for present and future generations. Today, we have 24 regional and field offices across the country, including the California Desert Field Office in Joshua Tree, California, which I manage. I'm here today on behalf of our more than 330,000 members, who care deeply about the wildlife and ecosystems our parks preserve, and want to see these unique American treasures passed on to our children and grandchildren undiminished.

The single greatest threat to the health of our national parks is global climate change. It threatens not only the plants and animals, but also the health and economic viability of many communities that rely on the parks, preserves, and monuments. According to a 2006 study by the Outdoor Industry Association, fishing, hunting, wildlife watching, hiking and other outdoor pursuits that depend on healthy ecosystems contribute \$730 billion annually to the U.S. economy. Keeping wildlife populations, rivers, forests, deserts, and our national parks healthy will allow us to support nearly 6.5 million existing jobs and continue to generate \$88 billion in state and national tax revenue.

Today we sit outside Joshua Tree National Park, which is visited by over 1.3 million people every year. So many people visit this desert park because of its unique natural opportunities—to see animals like bighorn sheep and desert tortoise in the wild, to gaze in wonder at a field of blooming wildflowers or stand at sunset in a forest of Joshua trees, the park's namesake species. Joshua Tree was ushered into the park system largely through the efforts of an inspired American citizen, Minerva Hamilton Hoyt. Minerva

Hoyt was a desert enthusiast in the 1920s and 1930s, who witnessed the widespread destruction of native desert plant life by thoughtless people who dug up, burned, and otherwise destroyed many of the cacti and Joshua trees that Ms. Hoyt found beautiful. So she did something quintessentially American—she worked to protect the natural world, not just for herself but for all Americans, including those not yet born. Largely through Minerva Hoyt’s tireless efforts to educate others about the beauty and value of the desert, Joshua Tree was shepherded into the National Park System as a national monument. In 1994, with the passage of the California Desert Protection Act, Joshua Tree achieved national park status.

We stand today at another important crossroads for this park, a moment when we can witness damage and destruction wrought by human activity, and a moment when we have the opportunity to protect what has great value for the American people.

A month ago, the National Parks Conservation Association, in partnership with the National Park Service and a number of other organizations, hosted the second annual Climate Change and the California Desert Conference in Joshua Tree, California. One of our distinguished speakers was Kirsten Erin Ironside from Northern Arizona University. Professor Ironside presented the results of her research conducted with Dr. Ken Cole of the U.S. Geological Survey. This research applies climate models to the home range of *Yucca brevifolia*, a species commonly known as the Joshua tree. The results that Professor Ironside presented at our conference were stark. In all six of the climate models she explored, in 100 years, there was no new recruitment of Joshua trees in Joshua Tree National Park, and significant death of existing trees. Consider that for a second. As a result of climate change, there may no longer be Joshua trees in Joshua Tree National Park. This plant is not just an iconic image on a postcard—it is critical to the health of this desert ecosystem. Ecologists refer to the Joshua tree as a “foundation species”—a plant that serves as living habitat for a whole range of animals, providing food and shelter critical to the survival of everything from Great Horned Owls, which nest in the tree tops, to night lizards, North America’s smallest lizards, which give live birth to their young beneath decaying bark of the Joshua tree. The Joshua tree is absolutely critical to the health and integrity of Joshua Tree National Park’s ecosystem. And based on the research of Dr. Cole and Professor Ironside, the effects of climate change over the next 100 years may mean that Joshua trees as a species will not survive in the national park that bears their name.

What does it mean to have a Joshua Tree National Park without Joshua trees? On a scientific level, it means fewer animals and an ecosystem out of balance. On an economic level, it means fewer recreation visits and less money generated for our communities. And on a spiritual level, it means that our grandchildren will see a diminished world.

Minerva Hamilton Hoyt watched the native plants disappear from this desert, and she didn’t despair or give up or lose hope. She decided to do something to halt the destruction she saw. This is the story of America. We have a rich history of rising to meet conservation challenges. After all, we are the nation that invented the national park

idea and brought it to the rest of the world—this truly democratic idea that the best of our natural and cultural heritage is not something to be enjoyed by just a few privileged individuals, but should be owned by all of us, to guarantee our collective health and future, for our recreation and education and spiritual growth and economic benefit, and for our children's benefit as well.

Joshua Tree is not the only national park that is being affected by climate change. In fewer than 20 years, glaciers will disappear from Glacier National Park. Coral reefs are dying in Biscayne and Virgin Island National Parks due to increased heat and disease. Insect pests are thriving, and are devastating forests from Great Smoky Mountains to Yellowstone. Water levels at Lake Mead are in decline as a result of extended drought. As temperatures rise, species throughout our national parks are being driven upward in elevation and are literally running out of space where they can live. Global warming poses an unprecedented threat to the natural world and the survival of wildlife that Americans cherish. Ecosystems that support healthy wildlife also support healthy human communities and are the foundation of a robust economy.

Reducing greenhouse gas emissions is absolutely necessary to guarantee the health of our parks, our wildlife, our communities, and our children's future. But reducing emissions is not enough. The effects of climate change are already impacting wildlife and natural systems throughout the national parks and across multiple land management agencies. Even with immediate action to reduce greenhouse gasses, those negative impacts on wildlife and natural systems will continue for many decades to come.

There is an historic opportunity for us as Americans to address these challenges. Federal, state and tribal agencies must work together in a coordinated way to address the crucial issues related to the survival of plant and animal species, as well as intact ecosystems. Their work must be informed by the best and latest science. Effective wildlife adaptation activities must focus on building ecosystem resiliency by protecting important habitat and migration corridors and reducing other stressors, such as air pollution and non-native species.

Joshua Tree National Park presents a prime example of how other environmental stressors such as air pollution and non-native species can combine with climate change to create significant challenges. High levels of nitrogen are currently being deposited on the soil in Joshua Tree National Park by air pollution moving east from the Los Angeles Basin. Dr. Edith Allen of the University of California at Riverside found that these nitrogen levels are 15 to 30 times higher than the levels in an undisturbed ecosystem. The park's native desert plants have evolved to thrive without this extra nitrogen. But many invasive plants, grasses in particular, do really well with the added fertilizer from air pollution. Exotic grasses, such as red brome and cheatgrass, now represent up to 60 percent of the park's biomass from annual plants. The increased fuel loads provided by these exotic grasses can then carry lightning-ignited fires from plant to plant, resulting in increasingly large and destructive wildfires throughout the Mojave Desert region. In 1999, the Juniper Complex fire, burned 13,894 acres of slow-growing California junipers,

pinyon pines, and Joshua trees. This was the largest fire in Joshua Tree National Park's history.

Desert plants are highly susceptible to fire, particularly during times of drought. Desert tortoises and other ground-dwelling animals have low survivability during an intense fire event. And for people who live in an urban-park interface, homes and even families are put at risk. Now overlay climate change on these challenges posed by air pollution and invasive species. Invasive, fire-carrying grasses like red brome have accelerated growth with increased levels of atmospheric carbon dioxide, while plants like Joshua trees may never recover their habitat due to the increased temperatures and evaporation caused by climate change. To address the challenges of maintaining an intact ecosystem at Joshua Tree National Park, managers need the resources to simultaneously address exotic species control, manage fires, monitor air pollution, and work cooperatively with land management agencies such as the BLM to create ecological linkage corridors free from invasive species.

And that's just one park. Efforts to estimate the financial investment it will take to help wildlife and ecosystems vulnerable to climate change's impacts are too preliminary to precisely quantify. Like the mitigation of greenhouse gas emissions, the size and seriousness of the threat requires an urgent response. Making a substantial new financial commitment to conservation science and ecosystem management is a significant challenge we must meet. Given both the magnitude of the funding necessary and the need for a reliable funding stream, this challenge cannot be met through the annual congressional appropriations process. Funding will need to be sustained over multiple decades to protect our parks and other natural wealth.

Fortunately, legislation to address global warming provides an historic opportunity and an appropriate avenue to safeguard our national parks, their fish, plants, and wildlife, from the destructive effects of climate change. Virtually all of the legislative proposals advanced in the 110th Congress to reduce global warming emissions appropriately recognized the need to address the unavoidable and severe harm that climate change will have on wildlife and the ecosystems that sustain us all. These proposals did so by establishing a coordinated national plan to protect natural resources, and dedicating a portion of the revenues from the auction of pollution permits under a federal cap-and-trade system. The Senate's Climate Security Act, for example, proposed allocating roughly 7 percent of federal revenues from the sale of allowances, or roughly \$7 billion per year to addressing the impacts of global warming on wildlife. This funding would be made available automatically and not be subject to the uncertainties of the annual federal appropriations process. Such funding would be but a small fraction of the value of the life-supporting services provided annually by our national parks and other natural lands, and is commensurate with the challenge before us.

NPCA is very encouraged by the legislation introduced in the House Energy and Commerce Committee on March 31 by Representatives Waxman and Markey. Their comprehensive energy and climate bill would substantially reduce greenhouse gas emissions through an integrated set of policies that are sensible and achievable, including

clean renewable energy, energy efficiency, clean fuels and vehicles, and a declining cap on emissions of major emitters. We are especially pleased that Congressmen Waxman and Markey included in their bill a robust adaptation title that would safeguard natural resources and wildlife from climate change impacts. NPCA recognizes that the House Natural Resources Committee is continuing its work on natural resource adaptation issues, and we offer our assistance and support for your work.

Given the direct and severe impact of global warming on wildlife and ecosystems, it is appropriate that at least a percentage of the significant federal revenue from the auction of pollution permits, which estimates place as high as hundreds of billions of dollars, be used to address the damage and protect life-supporting ecological services. The significant and certain funding stream provided in a cap-and-trade bill can provide the most effective mechanism to ensure that the nation's federal, state and tribal natural-resource agencies will have the financial resources necessary to effectively address climate change's unavoidable impacts.

If we are realistic in our analysis of climate change, we must anticipate a future that presents huge challenges for our national parks, our natural systems, our communities, our health, and our economic future. As Americans, we have faced tremendous economic and environmental challenges before, from the dust bowl of the 1930s to the loss of species from DDT. And we have met these challenges with courage, with urgency, and with a coordinated response. That time to meet our challenges has arrived again. Climate change presents the single greatest threat to our environment, and our health and economic future depends on how we meet this challenge. Introducing cap-and-trade legislation with a dedicated funding source for wildlife and ecosystem adaptation activities is crucial to a healthy future for our economy, our national parks, and our children's health. Thank you for the opportunity to provide testimony, and I look forward to any questions you may have.