National Parks Conservation Association®
Protecting Our National Parks for Future Generations®

October 28, 2009

Honorable Mark Udall, Chairman
Subcommittee on National Parks
Senate Energy and Natural Resources Committee
Dirksen Senate Office Building, Room 304
1st and C Streets, NE
Washington, DC 20510

Dear Chairman Udall,

Please accept the following testimony and attached reports on behalf of the National Parks Conservation Association (NPCA) in connection with the hearing by the Subcommittee on National Parks to receive testimony on the current and expected impacts of climate change on units of the National Park System.

Founded in 1919, NPCA 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, from southern Florida to Alaska, and 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.

Climate change will have serious long-term impacts on our national parks

The effects of climate change have been visible for years in our national parks. Glaciers are disappearing faster than scientists had predicted even a few years ago. Native trees and animals are losing ground because changing temperature and weather patterns are making the availability of food, water, and shelter less certain. Fish and wildlife are being driven from their national park homes by changes that are unfolding faster than the animals' ability to adapt.

America's national parks are showing the signs of climate change. From Yosemite's forests in California to the Gulf Stream waters of the Florida coast, from the top of the Rocky Mountains to the shores of the Chesapeake Bay, these lands and the incredible diversity of life they support are all feeling the heat. Climate change is here and now, affecting the coral reefs in Florida at Biscayne National Park, lodgepole pines in Rocky Mountain National Park and animals that rely on snow in Yellowstone National Park.

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NPCA is submitting for the record our 2009 report, *Climate Change & National Park Wildlife: A Survival Guide for a Warming World*, which details the climate change impacts on wildlife in dozens of national parks throughout the country. An electronic version is available at www.npca.org/survivalguide. We are also submitting for the record our 2007 report, *Unnatural Disaster: Global Warming and Our National Parks*, which details climate change impacts on national parks throughout the country. An electronic version is available at www.npca.org/globalwarming.

As detailed in NPCA's reports, national parks, including their roads and buildings as well as their natural, historical, and cultural resources, are highly vulnerable to climate change impacts already unfolding across their landscapes. Following are some of the key findings of our reports with regard to climate change impacts on the national parks:

Global Warming Impacts on Our National Parks		
ALASKA		
AK	GATES OF THE ARCTIC YUKON-CHARLEY GLACIER BAY KOBUK VALLEY	Caribou ranges and population size may become less predictable, affecting the diet and culture of native Alaskans who rely on them.
AK	KATMAI	Ocean warming may affect salmon fisheries and scientists are exploring possible links between warmer river temperatures and increased parasites in salmon.
AK	WRANGELL-ST. ELIAS	Thawing permafrost will damage infrastructure and reduce the size and location of ponds on which waterfowl depend.
PACIFIC COAST MOUNTAINS		
WA	NORTH CASCADES	Seventy to 90 percent of the snow pack could disappear by the end of this century, threatening winter sports and water supplies.
WA	OLYMPIC MOUNT RAINIER NP	Warmer winters and more extreme precipitation events could increase winter flood risk; An increase in stream water temperature and shallower stream will cause the decline of suitable salmon habitat.
OR	LEWIS AND CLARK	Earlier snowmelts and spring flooding can decimate already-stressed salmon populations.
CA	YOSEMITE NATIONAL PARK SEQUOIA NATIONAL PARK KINGS CANYON NATIONAL PARK	The yellow-legged frog is threatened by disappearing ponds caused by increased evaporation and by the lack of water replenishment from higher altitude sources; Warming and drought have made wildfire

		season longer and more damaging, and increased insect damage; Warmer temperatures will worsen ground-level ozone problems; Increasing wildfires will contribute more smoke and airborne particulates.
ROCKY MOUNTAINS		
MT	GLACIER	The sculpted peaks, magical hanging valleys, azure lakes are all here because of the glaciers. By 2030, the glaciers will be gone and they will take a part of the Park with them; Wolverines could decline as snowfields they depend on for dens disappear and carrion from winter-killed animals becomes less available.
WY-MT-ID	YELLOWSTONE	Recent warmer winters have led to burgeoning Whitebark pine insect infestations killing thousands of trees and dramatically decreasing the availability of the pine nut, a critical fall food source for grizzly bears.
CO	ROCKY MOUNTAIN	Rising temperatures and diminishing snow pack are allowing trees to take over high elevation alpine tundra putting animal species that have adapted to this ecosystem at great risk.
SOUTHWEST		
UT	CANYONLANDS ARCHES CAPITOL REEF	Bighorn sheep are threatened by an increasing scarcity of its food caused by changes in precipitation patterns.
AZ	SAGUARO	Higher temperatures are allowing invasive grasses to displace native plants, and these grasses fuel wildfires, which used to be rare in this ecosystem.
TX	BIG BEND	The Rio Grande is forecasted to narrow and dry up in places, encouraging invasive plant growth and affecting wildlife.
CA	JOSHUA TREE	More than 90% of Joshua trees in the park could be wiped out within a century.
GREAT LAKES		
MI	ISLE ROYALE	Wolf and Moose populations are declining at a rapid rate due to unusually warm summers, directly threatening their symbiotic relationship.
WI	APOSTLE ISLANDS	With the water level in Lake Superior decreasing, recreational infrastructure must be redesigned and replaced in order to maintain the visitors' enjoyment of the park

		and safety.
MI	SLEEPING BEAR DUNES	Climate change will exacerbate existing stresses on waterfowl, shorebirds, and migratory birds, such as water pollution and non-native species.
IN	INDIANA DUNES	This park ranks third of all U.S. national parks in plant diversity, but the diversity of aquatic and land-based flora will decline significantly.
NORTHEAST		
ME MA NY	ACADIA CAPE COD FIRE ISLAND	Climate change is diminishing the availability of nesting habitats for red knots and other shorebirds that annually migrate along the Atlantic Flyway.
ME	ACADIA	Rising seas may permanently submerge the park's islands, while warmer summers will result in increased evapotranspiration rates, which could destroy the park's many wetland ecosystems.
MA	CAPE COD	Much of the Cape's rich mosaic of marine, estuarine, fresh water, and terrestrial ecosystems, already damaged by rapid sea level rise over the last decade, could be completely lost to future generations as submersion and erosion claims ever more of this low-lying park.
NY	FIRE ISLAND	Sea-level rise will increase shoreline erosion, saltwater intrusion into groundwater aquifers, and drown out endangered native species, while increased storms threaten historical and cultural treasures.
NY	ELLIS ISLAND	Immigration records that connect over 40 percent of Americans to our collective past would have to be removed from the park or risk destruction from rising seas.
ME-GA	APPALACHIAN NATIONAL SCENIC TRAIL	More floods can lead to higher landslide risk, threatening portions of the high elevation trail, and communities that lie below.
MID-ATLANTIC		
MD, VA	CHESAPEAKE BAY	Warmer water is likely to increase outbreaks of two dangerous oyster diseases.
VA	HISTORIC JAMESTOWN	Jamestown celebrated its 400th anniversary in 2007, but much of the park could be under water before its 500th anniversary.
VA	SHENANDOAH	More droughts, floods, and warmer streams can diminish native trout populations.
VA,	BLUE RIDGE PARKWAY	Warmer summers can produce more ozone

NC		pollution and more "code red" air quality days, increasing health risks for visitors.
SOUTHEAST		
TN, NC	GREAT SMOKY MOUNTAINS	Rare and ancient forests may be threatened by increasing ground-level ozone and insect pests unleashed by warming; the park is expected to lose most of its populations of red squirrel, northern flying squirrel, and southern red-back vole.
NC SC GA FL MS	WRIGHT BROTHERS NATIONAL MONUMENT FORT SUMTER FORT PULASKI GULF ISLANDS NATIONAL SEASHORE	Sea level rise, increasing storm strength, and flooding threaten low-lying historic areas and historical structures that tell the story of our nation from its earliest days.
FL	EVERGLADES	More powerful hurricanes combined with sea level rise could destroy park buildings and roads, increasingly cutting-off visitor access.
VI	VIRGIN ISLANDS NP	Warming ocean temperatures and disease may be the primary contributing factors to the decline of coral reef habitats.
FL	BISCAYNE BAY DRY TORTUGAS	Rising, warming and acidifying seas threaten coral reefs and sport fishing. Toxic or unusual algal blooms may threaten wildlife and tourism.

These impacts degrade not only the parks and their wildlife, but also are beginning to have a significant impact on the National Park Service's budget. Just one result of climate change – increased seasonal flooding in the pacific west – underscores the seriousness of the challenge.

Because winter temperatures in coastal Pacific mountains hover close to freezing, the few degrees rise predicted for this region will cause more and more precipitation to fall as rain rather than snow. Predicted increases in extreme winter precipitation with expected shifts toward rain rather than snow could greatly increase the likelihood of flooding. In North Cascades National Park, the three worst floods in park history have occurred in the fall when rain fell on snow that already had accumulated in the mountains. In November 2006, Mount Rainier National Park suffered the most damaging flood in its 108-year history when nearly 18 inches of rain fell in just 36 hours. The flooding broke the main utility lines, destroyed large sections of roads, trails, and campgrounds, and filled reservoirs with mud and debris. The major year-round road through the park was closed for six months, and a major north-south road was closed for over a year. Rebuilding cost to date has exceeded $40 million.

The National Park Service desperately needs a plan to protect America's assets from climate change. Equally importantly, NPS needs the resources commensurate with the enormity of the challenge.

National parks can be part of the solution to climate change

What's happening in the parks is symptomatic of changes unfolding across the larger landscapes to which they are inseparably connected, the same landscapes that contain our communities. Changes that harm wildlife – depriving them of food, water, or shelter – will ultimately harm us. Given the iconic importance of parks, and that they protect core ecoregions of this country, working to safeguard parks and their wildlife from climate change should be a central strategy in safeguarding our nation from climate change.

Solutions are neither simple nor quick and easy. It will take decisive action on the part of our federal government and all of us to meet the challenge and keep our faith with future generations. To avoid the potentially catastrophic loss of animal and plant life, it is imperative that we wean ourselves from energy sources like coal and oil that are accelerating rising temperatures and causing unnatural climate change. And it is equally imperative that we pursue new strategies to preserve functioning ecosystems and the full diversity of life they support.

National parks can play an important role in these strategies, preserving healthy ecosystems and their wildlife, in part by helping them to adapt to new climatic conditions. But some challenges must be addressed before the parks can fully step into this role. Right now, no national plan exists to manage wildlife throughout their habitat, which often is a patchwork of lands managed by multiple federal agencies, states, tribes, municipalities, and private landholders. Wildlife need corridors that enable them to migrate between protected lands as climate change renders their current homes inhospitable. We also need to work harder to reduce air and water pollution that compound climate change stresses on wildlife. All of these elements must be put in place as soon as possible to safeguard all living communities.

We must act now to secure America's natural legacy before it is lost to our children and grandchildren. The National Park System can play a central role in restoring and preserving the healthy ecosystems necessary for wildlife – and indeed ourselves – to thrive.

Five key actions are needed to safeguard national parks from climate change

The choice is now ours to either chronicle the decline of our national parks or take actions to make our national parks part of the climate change solution. If we fail to act, many species of fish and wildlife could disappear from the parks – or even become extinct.

That we must reduce global warming pollution to protect our natural world and human communities is now understood by many. But that is not all we must do. Unnatural climate change

is already underway and will continue for decades even if we put a stop to all global warming pollution today.

Additional steps must be taken now to safeguard wildlife. We must protect the places that will help wildlife survive as the climate changes, manage wildlife anticipating the changes ahead, and improve the ecological health of the national parks and their surrounding landscapes to give fish and wildlife a fighting chance to survive unnatural climate change.

NPCA advocates five steps that, taken together, will help safeguard fish and wildlife, their homes, and our communities, from climate change. Here's what needs to be done:

1. Stop contributing to climate change

Many wildlife species are struggling to cope with climate changes already underway. Some will not be able to endure much more change, and could disappear from national parks and even go extinct if climate change is unchecked. We must limit its effects by rapidly reducing greenhouse gas emissions and switching to less-polluting sources of energy.

2. Reduce and eliminate existing harms that make wildlife more vulnerable to climate change

The damaging effects of climate change are compounded by existing stresses on wildlife. Air and water pollution, development of adjacent wild lands, and other forces are harming national park wildlife now, and adding climate change to the mix could be disastrous. By reducing and eliminating these environmental harms we can significantly decrease the vulnerability of plants, fish, and wildlife to climate change as well as produce rapid and tangible benefits – such as clean air and water – that both people and wildlife need to thrive.

3. Give wildlife freedom to roam

Climate change will cause some wildlife to move outside the parks' protected boundaries, while other species may move in. Because national parks, like all protected areas, are interconnected with surrounding landscapes, cooperation and coordination among all land owners – public and private – is essential to preserve functioning ecosystems and the wildlife they support. National parks can play a key role in conserving wildlife across the landscape. In some cases they provide natural corridors; in other cases new corridors will be needed to connect parks and other protected lands so that wildlife can move in response to climate change.

4. Adopt "climate smart" management practices

As one of the nation's premiere land managing agencies the National Park Service needs working models and sufficient resources to preserve biological diversity and ecosystem functions threatened

by climate change. Familiar and emerging concepts like habitat restoration, connective corridors, facilitated migration, elimination of compounding stressors, scenario modeling, mobile conservation areas, and genetic diversity, must be woven together into a coherent, workable, and replicable model. America's national parks are poised to assist in developing that model, but they currently lack sufficient funding and management capacity needed to formulate, implement, and market an ecosystem-wide "climate smart" adaptation model.

Climate-smart management includes four key elements:

(1) Training national park managers to build climate change into their work,

(2) Establishing guidance and policies that enable park staff to work closely and equally with other federal, state, local and private landowners,

(3) Providing sufficient funding and staffing for the challenge at hand, and

(4) Creating a political and organizational setting that facilitates appropriate, timely, and collaborative action.

While research and monitoring should be a part of any park's approach to climate-smart management, real focus needs to be placed on implementing management changes now based on what we already know.

National Parks are the ideal laboratories to develop and deploy new conservation strategies for combating the effects of climate change. They are the symbols of America, beloved by millions of our own citizens, and admired as a model throughout the world. They are home to some of the best science and innovative thinking on climate change and ecosystem management. And they enjoy strong support across the political spectrum, a dynamic that has helped parks achieve the highest level of ecosystem protection among public lands.

With its strong political support and scientific information, the National Park System can be empowered to lead the way in preserving the maximum degree of biological diversity and ecosystem function in the coming changing climates.

5. National parks lead by example

With more than 270 million annual visitors, a core education mission, and a tradition of scientific leadership, national parks have an unparalleled ability to engage Americans in the fight against climate change. National parks can help visitors understand climate change is already occurring, the vulnerabilities of tomorrow, and how we can all reduce our contribution to global warming.

National parks can also serve as natural laboratories for testing innovative ways to safeguard wildlife from the effects of climate change, and to reduce greenhouse gases that are causing climate change.

Climate legislation currently before Congress can help safeguard the national parks

As the Subcommittee on National Parks continues to examine polices to safeguard national parks from climate change, there is an immediate opportunity to secure critical protections for parks and all natural resources through climate change legislation now under consideration in both the Environment and Public Works and Energy and Natural Resources Committees. NPCA supports the *Clean Energy Jobs and American Power Act*, co-sponsored by Senators Boxer and Kerry, as well as legislation recently introduced by Senators Bingaman, Baucus, Whitehouse, and T. Udall, the *Natural Resources Climate Adaptation Act*, which establishes a comprehensive system for safeguarding America's vital natural resources from climate change.

By safeguarding national parks we help secure our own future

National parks are America's national treasures. It is a uniquely American idea that each of us owns our national parks. They have been entrusted to us, and it is our responsibility to make sure that climate change does not rob the parks of their incredibly rich array of plants, fish, reptiles, birds, and mammals.

Wildlife is threatened now as perhaps never before. The Intergovernmental Panel on Climate Change warns that up to a quarter of assessed species could face extinction due to global warming by the end of this century. It's difficult to imagine that the changes leading to mass wildlife extinctions would not also profoundly threaten human life.

Decisive action now can help bring about a more hopeful future for wildlife and for ourselves. Taking the five steps recommended here will help safeguard national park wildlife by preserving and strengthening the ecosystems that support all wildlife. In turn our communities, which have always relied on healthy natural resources, will be better equipped to cope with the changes ahead.

Thank you for considering NPCA's views on the important issue of safeguarding our national parks from climate change impacts.

Sincerely,

Mark Wenzler
Director, Clean Air & Climate Programs