

**Testimony of Melyssa L. Watson
Senior Director for Wilderness, The Wilderness Society**

**House Committee on Natural Resources
Subcommittee on National Parks, Forests and Public Lands
“The Impacts of Climate Change on America’s National Parks”
April 7, 2009**

America’s public lands — some 600 million acres of land and 150,000 square miles of protected waters — are the birthright of every citizen, and the legacy we hold in trust for generations to come. Global warming poses an unprecedented threat to the nation’s iconic landscapes — our national parks, forests, wilderness areas, desert lands managed by the Bureau of Land Management, and wildlife refuges. At the same time, our country’s parks and other public lands offer one of our best hopes for sustaining the plants, animals, birds, clean water and air, and recreational opportunities that are important to our heritage. They store carbon and provide large core protected areas that will be essential in adapting to a changing climate. These lands also provide critical services for our communities, including filtering the air we breathe and the water we drink, and play important roles in our nation’s economy. Protecting these natural places is more important now than ever before.

Public Lands in a Changing Climate

America’s National Parks and other public lands include some of the nation’s most intact and diverse ecosystems and have an important role to play in helping us address the effects of climate change on wildlife and our communities. In addition to their vital role in carbon storage and sequestration, protected wildlands can help species cope with the many threats exacerbated by climate change. For example, wildlands provide important habitat and migration paths and large, intact landscapes create a greater buffer for wildlife from the impact of disturbances, such as floods, hurricanes, and fires made more intense by climate change.

Our economic health depends on the health of our public lands. One in every 20 American jobs is related to outdoor recreation that depends on land and ecosystem conservation. This includes fishing, hunting, hiking and canoeing jobs which are at particular risk from the on the ground impacts of climate change. Eighty-five percent of all hunters in the West use public lands for hunting and fishing. The estimated value of water flowing from national forest land is \$7.2 billion per year from both instream and offstream uses.

Community health depends on the health of our natural ecosystems. One important function of natural ecosystems is to protect our public health. Ecosystem services are those things that we would have to produce ourselves if they were not provided by nature.

Some are so basic, such as keeping our water clean, keeping nutrients in our soils, and filtering the air we breathe, that we are barely aware of what it would take to provide man-made substitutes for these necessary functions. For example, our forests provide 53% of the nation's drinking water to more than 180 million people and 66 million rely directly on National Forest lands as their water source. Other services, such as carbon storage, are necessary complements to the fight to reduce greenhouse gas emissions. It is clear that we cannot live without these services, and that our welfare is tied to their protection.

With protection, our public lands provide a critical component of ecosystem resiliency and strength. They safeguard our natural systems and the goods and services on which our human communities depend.

The Unique Role of Wilderness

Our designated wilderness lands are one of our nation's greatest treasures. We have praised the foresight and perseverance of generations of leaders in their work to establish, protect and grow our system of wilderness lands and we will continue to celebrate the recreational, scenic, educational and conservation benefits of protected wilderness. The prescience of those early wilderness leaders is likely to be especially important in an era of climate disruption.

While not even the most ardent wilderness advocate would suggest that wilderness is *the* solution to helping ecosystems and communities adapt to a changing climate—there must be many approaches if we are to successfully address the issue—protected wild ecosystems most certainly have a unique and very critical role in helping land managers figure out a path forward.

Wilderness preserves the potential to produce ecosystem services. As a strategy for protection of biodiversity and productive potential, the advantages of wilderness are well known: wilderness produces the best water quality, it provides a refuge for species from numerous anthropogenic stressors outside wilderness, and it provides unique recreational and aesthetic experiences. Wilderness represents the best strategy we have identified so far for achieving all these benefits and will remain an important strategy in the face of climate change.

Wilderness is a strategy for spreading the risk of failing to find the right adaptation options on non-wilderness lands. Climate change has changed the rules that have guided conservation for the past century. If our goal is to conserve and manage lands so that they are resilient in the face of climate change, then forms of management that were relied on to produce goods and services may not work in the future. Land management will have to be explicitly experimental to find new ways to sustain ecosystem services for the future. Wilderness is a unique form of land management among a suite of approaches that will have to be employed to maximize adaptive capacity. It is impossible to determine at present, but wilderness may turn out to be the most effective conservation strategy in the future, just as it has been in the past.

Wilderness is a critical scientific yardstick. New methods of forestry and range, wildlife, and watershed management will need to be utilized in order to adapt to future climate. The success of these new approaches is anything but certain, and their performance will need to be monitored and measured against a standard of comparison. Wilderness can provide a scientific yardstick, or “control,” for comparing the effects of active management outside wilderness.

Wilderness provides refuge from disturbances resulting from climate change. Wild ecosystems are constantly changing in response to such forces as fire and water; stasis is the exception. However, climate change is altering the environment to reflect conditions previously considered extreme or which are entirely out of the range that species have contended with in the past. Increases in fire frequency and changes in the timing and intensity of storms, for example, will alter the recovery time of ecosystems and their ability to provide habitat for wildlife. To survive these changes, species will need to be able to move around the landscape to find the places that still provide habitat. Large, unfragmented wilderness provides species with “room to roam” and refuge from areas that have burned, are experiencing drought or floods or from the effects of other climate-related disturbances.

A Path Forward

Climate change is forcing policymakers to take a new look at wilderness areas as prime examples of large intact ecosystems that can serve as reservoirs for biodiversity and clean water that will be essential to the provision of ecosystem services in the future. Also, because we were wise enough to protect areas of our country from extractive uses, deforestation and development, we have in place natural carbon sinks that can help us fight back against global warming. Yet carbon sequestration has not yet been recognized as a valuable ecosystem service provided by our wilderness areas, parks and other public wildlands.

Similarly, natural resources adaptation efforts have rarely moved from the vulnerability assessment phase to the implementation phase – that is we have studied the problem but have done little as a country to actually implement plans to address it. The vulnerability of our public lands to a few degrees rise in temperature is deep, profound and, unfortunately, inescapable. Even if all emissions of greenhouse gases were to stop tomorrow, the emissions of the last 100 years are causing global warming that we must anticipate and adapt to. We have little time. We must move ahead, from gathering and synthesizing data to implementing adaptation strategies.

We need to be both proactive and reactive. That is, we must have the ability to react and deal with climate change after an event or impacts have occurred, and we need to take action to prevent and reduce exposure to future impacts. The details of future scenarios, in terms of timing, scale, and severity, cannot be known with certainty and this uncertainty has been used as a smokescreen to delay action. However, even without precise knowledge of future events –which we will probably never gain—proactive

policy planning improves preparedness by integrating adaptation considerations into the decision-making process.

Even with all of the uncertainty, land managers already have many of the needed tools. A balanced portfolio of adaptation and mitigation strategies provides an insurance policy for our natural heritage that diminishes the risks associated with climate change. We may need to utilize them in new and creative ways, but today's conservation work is still relevant:

One, expand core protected areas, reconnect the land and reduce avoidable stressors.

Scale matters in wildland and ecosystem conservation. Large, connected, intact ecosystems offer the best hope of surviving global warming, sustaining the capacity to sequester carbon, preserve species habitat and protect human communities. This was true before the threat of climate change was first recognized, and it is even truer today now that the threat is accepted as a reality. We need to protect large areas of habitat set within sympathetically managed, jurisdictionally and ecologically diverse landscapes that can also yield food, fuel, and materials. Through the use of protective designations and conservation management on our public lands as well as conservation easements, acquisition from willing sellers, and complementary management of private lands we can:

- Reduce fragmentation and increase the size of core protected lands;
- Ensure representation and redundancy of different ecosystem and habitat types to minimize the potential for loss of component parts: and
- Protect lands along a variety of elevational and latitudinal ranges to ensure connectivity across environmental gradients and allow wildlife to migrate to suitable habitat as climate changes.

Scientists frequently point out that given the uncertainty of how global warming will affect the climate and resiliency of any particular natural environment, the first best strategy is to reduce the non-climate pressures that threaten critical ecosystems and the communities that depend on them. Toxics, development, agricultural intensification, overgrazing, loss of wetlands to infill, etc. are all added stresses to a system already stressed to the brink. Protection of large, connected, intact landscapes can reduce the effects of these pressures on climate-stressed ecosystems.

Two, develop strong adaptation plans. Land managers must consider, analyze, and develop plans to address the impacts of climate change when undertaking planning exercises, setting priorities, and making management decisions.

Adaptation strategies must develop at the local and regional levels. Climate change and associated impacts vary greatly from location to location. Yet systems such as water resources and habitat cross traditional jurisdictional lines. Those engaged in planning need to share information, plan together, and collaboratively modify existing policies and procedures to ensure effective solutions. The exchange of information, resources, best

practices, and lessons learned across jurisdictions and among different stakeholders is a key element of successful adaptation planning.

We also must avoid the situation where the adaptation actions of one sector compromise sustainable adaptation in another, or threaten our ability to protect vulnerable species and ecosystems. This is yet another reason to focus on collaboration and cooperation between and amongst interest groups and experts.

Strong, science-based adaptation plans should include:

- an experimental framework in which management is conducted using experimental treatments, “controls”, monitoring, and constant learning in a cycle of adaptive management;
- protection for existing and potential ecological movement corridors (including those that will enable wildlife, as it moves, to pass through urban and developed areas) between major ecosystems;
- protection for mature and complex elements of the ecosystem, such as mature forest stands, as these are both difficult to replace once lost and likely to be resilient to climate change (having demonstrated the ability to adapt to past changes in climate);
- mechanisms to engage the public in ongoing collaborative management; and
- for many ecosystems, an evaluation of the need to secure additional water rights for drought-prone ecosystems.

Three, manage for change. Adaptation to climate change must address uncertainty. We must adopt management approaches that both assess and react to risks, but are also designed to learn from experience. Monitoring provides an essential feedback loop to assess effectiveness and develop action accordingly. Public land managers have a host of tools available to help them appropriately manage their resources in the face of climate change. Some of the tools and actions that managers must consider include:

- Restoration of natural fire regimes through the use of prescribed fire, wildland fire use, and mechanical treatment where necessary to reduce damage from unnatural fire behavior more likely in a warmer climate;
- Removal or management of non-native, invasive species that weaken ecosystems and increase susceptibility to climate change;
- Conservation of rare species and restoration of extirpated species—though not necessarily in their historical locales) as these may be important to future ecosystem function through partnerships between agencies, research institutions and private partners;
- Management of post-disturbance environments for future resilience (e.g., if replanting after a fire is necessary, consider species that may be better adapted to future climates); and
- Monitoring of ecological and human systems in order to anticipate impacts and adjust management techniques.

Finally, we recognize the unique role the National Park Service (NPS) can play in climate change adaptation and mitigation. With the Park Service’s long and proud history of leadership on treasured landscape stewardship and conservation, wilderness designation

and biodiversity protection, NPS has a tremendous opportunity—perhaps even an obligation—to play a significant leadership role within the Department of Interior (DOI) and with other federal land management agencies on issues relating to climate adaptation and mitigation. In addition to opportunities to initiate and coordinate on important science and vulnerability assessments, no less meaningful would be leadership on reducing DOI’s own carbon footprint. We encourage NPS to set a high bar and ambitious goals that can serve as models for NPS as well as other federal agencies. What a tremendous accomplishment it would be for NPS to be carbon neutral by the NPS Centennial in 2018!

The Congressional Role

First, the most time-sensitive role that Congress can play is to pass legislation that ends the practice of dumping harmful global warming pollution into the atmosphere for free. The President has submitted a budget that assumes the end of uncapped free dumping by polluters. Congress needs to pass the legislation that will put that assumption into practice, by placing a declining cap on the emissions of greenhouse gases, making the polluters pay through auctioning permits and capturing the auction revenues for public benefits.

Second, we need to ensure that agencies have the necessary resources to respond to the new climate imperatives. Congress should provide dedicated and assured annual funding to our land management agencies that will

- support new investments in safeguarding the natural systems that sustain human communities and robust fish and wildlife populations
- provide funding for a broad range of eligible activities including conservation, restoration, enhancements, planning, research and monitoring and education.
- encourage investment in habitat acquisition and protection. The Land and Water Conservation Fund, for example, was woefully underfunded during the Bush Administration. The new Administration has placed a high priority on this important program, increasing its budget by 50 percent next year and fully funding it by 2014.

Funding for land management climate priorities should come from the auction of carbon allowances under a new climate bill. This investment in natural resources must be dedicated (not appropriated annually) so that resource managers can plan ahead in their adaptation projects knowing funding is secure and to ensure funding goes exclusively to global warming-related projects. This is the approach that has been so successful in funding the Pittman-Robertson Wildlife Restoration Act since 1950. It works for wildlife land acquisition – now we need to take the same approach to climate-related land acquisition, management and protection intended to protect all human communities as well.

Third, the agencies must have a clear and strong mandate to be “climate smart” by incorporating consideration of climate change into all of their planning, decision-making and research priority setting process. All federal agencies engaged in land management

and biodiversity activities should protect, maintain, restore and value biodiversity and wildlife habitat, while incorporating climate change mitigation and adaptation activities into management and planning. This may require new policies or legislation.

Fourth, Congress should declare the establishment of a U.S. Climate Reserve a national priority, with the intention of ensuring through a variety of regulatory sticks and financial carrots that we achieve a “no net loss” standard with respect to preserving the nation’s carbon sink. California, for example, has proposed that it set a 2020 target for emissions reductions that assumes no net loss of current sequestration services from its forests and has called on the federal government to adopt a similar goal for federal lands. The Wilderness Society urges Congress to establish an explicit federal target of “No Net Loss” in the existing sequestration value of our public forests.

This U.S. Climate Reserve needs to be nurtured and enhanced, both as a carbon sink and as a storehouse of other ecosystem services on which we rely. Congress should also provide incentives for private landowners to manage their lands in a manner which contributes to the protection of our country’s carbon storage capacity. Sixty percent of our nation’s forests are privately-owned so their management must be part of the effort to mitigate the threat of climate change. From Wilderness designation to wetland banking, we need a truly national strategy to stop the galloping destruction of our existing carbon stocks that begins with the recognition that our forests, as well as other carbon storing ecosystems such as grasslands and pinyon-juniper, are weapons in the fight against global warming and should be protected like an army protects the armory.

Finally, energy policy decisions and the fate of our public lands are inextricably intertwined. We must sustain the integrity of our wildlands and wildlife habitats as we make the transition to a new sustainable energy economy. Abundant wind, solar, and geothermal resources are found on public lands, especially here in the Southwest where solar resources are concentrated. Interest in developing these resources is rapidly increasing. As with any development that occurs in predominantly natural systems, large-scale renewable energy projects can entail a range of adverse impacts and must be carefully planned and sited to ensure renewable energy generation does not unintentionally impede ecological adaptation, disrupt carbon storage, or fragment large core areas of protected public lands.

We need not choose between development of renewable energy and protection of the country's wildlife and treasured landscapes. We have the opportunity to develop renewable energy the right way, to prioritize development on already disturbed lands, brownfields and sites close to the communities they serve to reduce transmission needs, costs and losses. Siting on public lands should require an open and transparent process about where it is best to build clean energy generation facilities and about how to ensure renewable energy installations are kind to both the land and the atmosphere. In this way, they can avoid the conflicts we’ve seen over other forms of energy development on public lands. We applaud Secretary Salazar for issuing a Secretarial Order prioritizing renewable energy development over other forms of energy on the public lands, and for establishing a task force that concerning renewable energy development and its impacts

on global warming. It is imperative that we act now to develop these resources in the right way from the start lest our communities and ecosystems suffer from the devastating impacts of global warming.

Conclusions

In 2007, in response to a request from this body, the Government Accountability Office issued a report recommending that the Secretaries of Interior, Agriculture and Commerce develop guidance advising managers on how to address climate change effects on the resources they manage. In commenting on the draft GAO report, the agencies generally agreed with this recommendation, but they have been slow to take action.

The nation's national parks, wilderness areas and other public lands cannot afford any further delay. Climate change must be a major, if not the primary, factor in making sound land management planning decisions and in shaping the agenda for land conservation actions for the foreseeable future.

Thank you for opportunity to testify today.