



منظمة الأغذية  
والزراعة  
للأمم المتحدة

联合国  
粮食及  
农业组织

Food  
and  
Agriculture  
Organization  
of  
the  
United  
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Organisation  
des  
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pour  
l'alimentation  
et  
l'agriculture

Organización  
de las  
Naciones  
Unidas  
para la  
Agricultura  
y la  
Alimentación

## NORTH AMERICAN FOREST COMMISSION

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### FORESTS IN THE UNITED STATES: CHALLENGES OF THE 21<sup>ST</sup> CENTURY

#### INTRODUCTION

In the United States, the focus of forest managers has broadened. Much of the work in recent years by the U.S. Forest Service and other forest managers has focused on reducing wildfire threats to lives, homes, and forest resources; controlling invasive species; addressing the loss of working forests and ranches to development; and better managing outdoor recreation. We will certainly continue focusing much of our work in all four areas. In 2005, however, when we celebrated the centennial of the US Forest Service, we held a number of meetings with partners around the country to discuss the conservation challenges of the 21<sup>st</sup> Century. From those deliberations, three broader, longer-term challenges have gradually emerged:

- climate change;
- water quality and quantity; and
- the way our citizens, particularly our children, relate to forests and the Great Outdoors.

These three great challenges present opportunities for us all to make a difference, all of us who work with forests and all of us thinking about the future. The generations who will inherit the lands and resources of the United States - indeed, of the world - should be able to look back at the early part of the 21<sup>st</sup> Century and recognize the wisdom of our decisions.

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**FULL TEXT (original language)****Climate Change**

1. History will judge the leaders of our age by how well we respond to the challenge of climate change. We can easily see the effects of climate change on forested landscapes:
  - Fires are a natural part of most forested landscapes in the United States, but each year the fire season comes earlier and lasts longer. In the last few years, at least five states have had their largest fires in history, with fires up to 200,000 hectares in size. More hectares are burning each year than at any time in the past 50 years, even though nearly 98 percent of fire starts are controlled at very small sizes. Many fires today are behaving in unprecedented ways, and studies have shown that climate change contributes.
  - Insects are also a natural part of forested landscapes, but now the insects—both native and nonnative—are spreading more rapidly than ever in our history due to temperature changes, faster breeding cycles, and reduced tree vigor. In the Rocky Mountains, the Appalachian Mountains, and elsewhere, the winter cold no longer controls insect populations as effectively as before. Pine beetles, woolly adelgids, and other insects are killing more trees than before—and creating more ready fuel for fires.
  - The warmer winters also affect water supplies. Snowpacks are far more variable, and snow comes off earlier in the spring. Waterflows peak earlier in the season, affecting riparian resources and recreation use. Droughty forest soils contribute to stress in trees.
2. Scientists call this a “positive feedback loop”: Climate change exacerbates droughts, making trees more vulnerable to insect outbreaks and fueling larger fires, which in turn means more smoke and carbon in the atmosphere—and more climate change. This cycle threatens the capacity of our forests to provide the kinds of ecosystem services that people have come to expect and even taken for granted, including clean air and water, habitat for fish and wildlife, and opportunities for hunting, fishing, skiing, and other kinds of outdoor recreation.
3. If current trends continue, forested landscapes in the United States will be changed for future generations. In Oregon, for example, warming and drying could reduce the area of forest by up to 25 percent within the lifetimes of today’s children. Drier conditions could favor Douglas-fir and pine over coastal hemlock and spruce, and alpine systems might disappear from the Cascade Mountains. Even if climate change were to result in more precipitation rather than less, the forests would drastically change, and people who depend on them would have to adjust their expectations and dependencies.
4. As forest managers, it is our responsibility and our opportunity to do something about climate change. We can manage the existing carbon sink through forest conservation. We can increase carbon sequestration through improving forest health, reforesting degraded land, and supporting sustainable forest management. We can use forest biofuels for energy, offsetting fossil fuels. We can substitute wood for nonrenewable energy-consuming materials like plastic, metal, and concrete.
5. The U.S. Forest Service is committed to helping forest ecosystems in the United States adapt to the inevitable impacts of climate change. Each year, we manage the vegetation on millions of acres of national forest land to make forests more resistant to fires, insects, and disease and more resilient to major disturbances such as large wildfires. These same treatments can make forests better able to withstand the stresses associated with climate change.
6. Our scientists are also looking for better ways of forecasting how ecosystems will change in response to a changing climate and how the changes will affect animals and plants that depend on these ecosystems. In partnership with other land managers, we will work to identify the landscape-level forest conditions most likely to sustain forest ecosystems in a changing climate.

7. Second, the U.S. Forest Service is committed to using forests to reduce the buildup of greenhouse gases. We are supporting the development of markets for carbon offsets created by sound forest management. Carbon markets can create new income streams for landowners who use trees to pull carbon from the air and store it in wood fiber and forest soils. The markets will also encourage landowners to keep forests in forests, with active management; every day, the United States loses hundreds or even thousands of hectares of open space to development.
8. Urban forests are a vital carbon sink, in addition to providing neighborhood shade and greenery. With almost 75 billion trees, metropolitan areas provide valuable forest cover in the United States. The U.S. Forest Service is working with state, municipal, and private partners to promote urban forestry.
9. Third, the Forest Service is promoting the utilization of woody biomass to offset greenhouse gas emissions. Left in the woods, this same woody biomass can fuel severe fires or insect outbreaks. We can burn it in a system of controlled fires or we can remove it and use it to heat homes, generate electricity, and even power cars. Forests can provide renewable biofuels that can partly replace fossil fuels like coal and oil, reducing the greenhouse gases emitted into the atmosphere—and our dependence on fossil fuels.
10. The Forest Service is also working to reduce our own carbon footprint. We have taken such steps as buying more fuel-efficient vehicles, recycling paper, and utilizing telecommunications technology in lieu of travel. We are also generating more heat and electricity for our buildings from wood. Our facility construction involves green building guidelines.

### **Water Issues**

11. You cannot talk about climate change without making the link to water—to declining snowpacks, retreating glaciers, and changing patterns of precipitation and runoff. The evidence shows that we are entering a period of water scarcity not seen in our previous history. This is a concern I hear again and again in traveling around the United States: dwindling supplies of pure, clean water.
12. Seventy percent of the Earth's surface is covered by water, yet the world faces a shortage of water safe for use. According to the United Nations, some 1.1 billion people worldwide lack sufficient clean water and some 2.4 billion people lack sufficient sanitation. Half of the people in developing countries are exposed to polluted water; diarrheal diseases kill about 6,000 people per day, mostly children under 5. Up to 25 percent of global freshwater use exceeds sustainable supplies, and global water quality is deteriorating.
13. Water supplies in the United States are also at risk. Even the seemingly well-watered eastern United States is seeing rising conflict over water. A drought in 2002 brought water wars to the Carolinas, with reservoir levels so low that municipalities quarrel over upstream water removals. By 2007, Alabama, Florida, and Georgia had seen 17 years of bitter court battles over water sources that cross state lines. The 2007 drought led Georgia to ration water and declare a state of emergency in its northern counties.
14. In the arid western United States, old conflicts over water are heating up again. Surface water supplies are fully or excessively appropriated, with interstate tensions mounting. California is notorious for its water battles over the Klamath, Owens, and Sacramento Rivers; an advancing crisis in the Central Valley is resurrecting statewide controversy over water transfers. One study has predicted that, by 2025, every western state will have unmet rural water needs and/or a moderate to high likelihood of water conflicts.
15. Future developments could compound problems with water. By 2100, America's population is expected to reach 571 million, almost doubling in size. Population growth alone will

likely cause local water shortages nationwide. Moreover, the climate is changing, threatening to alter natural systems in ways that scientists are only just beginning to understand.

16. Climate change affects water resources. The Intergovernmental Panel on Climate Change predicted that runoff and water availability at high latitudes and in the wet tropics will increase by 10 to 40 percent. By contrast, they will decrease by 10 to 30 percent at middle latitudes and in the dry tropics. Freshwater storage in the form of snowpacks and glaciers will also diminish, adversely affecting water availability on every major continent. With changing patterns of precipitation and water storage, forests across the United States could become drier in summer. Fire seasons will likely become more severe, and less water will be available to accommodate the many needs of plants, animals, and people. If current trends continue, future generations will inherit forested landscapes degraded in their ability to deliver the services that people want and expect.

17. As forest managers, we have an obligation to help. Spongy forest soils are ideal for holding, filtering, and slowly releasing water. In fact, 53 percent of the water supply in the contiguous United States originates on forestland, even though forests cover just 29 percent of surface area. In addition, forests cool and purify the water they release. Conservationists have long understood the connection between forests and water. As the very first Chief of the U.S. Forest Service, Gifford Pinchot, put it, “The relationship between forests and rivers is like father and son. No father, no son.”

18. As forest managers, we specialize in knowing how land management practices affect water quantity and quality. We study different forest and rangeland conditions to know how water filtration works. The U.S. Forest Service also has the largest forestry research and development organization in the world, and through partnerships with universities and other federal and state agencies, we learn more every day.

19. On public land, we are applying that knowledge by investing in ecological restoration—by restoring the ability of ecosystems to deliver clean water and other services that Americans want and need. For example, we are restoring high mountain meadows, recreating their capacity to store water for slow release in summer. This offsets some of the effects of climate change and drought, such as reduced summer flows. It also cools the water, protecting aquatic species downstream. In some cases, it obviates the need to build new systems for water storage and flood protection.

### **Kids in the Woods**

20. For generations, children grew up in the United States understanding much that forests provide. In 1900, 60 percent of our population was rural (compared to 20 percent today). Most people either lived in rural areas or had relatives there. Children grew up with hands-on experience with trees and forests in their daily lives, whether as part of outdoor chores or outdoor play. Through daily experience, they saw the connection of natural resources to their homes and communities. They saw that forests provide clean air and water; habitat for wildlife; hunting, fishing, and recreation opportunities; building materials; and jobs. Such experiences and insights spawned the great conservation movements that have safeguarded the natural treasures for which the United States is justly renowned.

21. However, today’s children generally do not have these same experiences. Outdoor activities are often limited to supervised playgrounds and playing fields, and electronic gadgetry and imagery draw children indoors. Of course, children do learn something about the natural world through electronic media, but nothing can replace experience that is direct and personal. My concern is that a whole generation of children might be growing up estranged from nature in a way they never were before.

22. Our most important resource is not forests, vital as they are. It is not water, although life itself would cease to exist without it. It is people. The challenges of climate change and looming water shortages will not be resolved in a few years. It will take generations. Today's children—and theirs—will need to be able and willing to meet that challenge. For that, they will need a good understanding of why forests are so valuable and why a well-managed forest is so important. It is our imperative to give them that.

23. The U.S. Forest Service is committed to giving children opportunities to experience forests. We manage 193 million acres of national forests and grasslands in 43 states and Puerto Rico, a wonderful resource for children of all ages. Children under 16 account for more than 30 million visits each year, usually in the company of their families. If each visit includes just one opportunity for connecting to nature—wonder over a spider web, for example, or the awesome experience of a waterfall—then conservation is making modest but steady gains.

24. In 2007, the U.S. Forest Service—along with the National Forest Foundation, the American Recreation Coalition, and ReserveAmerica—announced the national recipients of the “More Kids in the Woods” challenge cost share program. The program is designed to supplement the hundreds of programs and activities run by the agency each year that engage children in recreation activities and nature-based learning. In its first year, the program awarded \$510,000 in matching funds to leverage more than \$1 million in partner contributions for two dozen projects across the country. For example, the Harlem Link Charter School in New York City is bringing students into nearby forests and wetlands for hands-on learning experiences; the Poudre School District north of Denver, CO, is hosting a 3-day “Eco-week” residential camp where students will learn about ecological and stewardship principles through team-building exercises; and the Salish-Kootenai College in Polson, MT, is organizing a Math and Science Camp to engage tribal children in outdoor activities in the context of their traditional culture.

25. The Forest Service is also working with local communities to engage more children in outdoor recreation. For example, “Be Active Bitterroot” is an offshoot of the HealthierUS Initiative launched in 2002 by the U.S. government to increase personal fitness. The Bitterroot National Forest, the Bitter Root Resource Conservation and Development Area, and other partners are capitalizing on local interest in children's health issues to raise awareness of local recreation opportunities—and concern about the health of the forests surrounding communities in Montana.

26. In addition to bringing children into the wild, the U.S. Forest Service connects children with nature by bringing the wild into homes, neighborhoods, and schools—into the places where children live. As urban areas nationwide have expanded to the margins of national forest land, the city has literally come to the forest. About 10 percent of all national forest land now adjoins urban areas or is within easy driving distance from major metropolitan centers. The U.S. Forest Service also provides technical, financial, and other aid to cities, states, and nonprofit groups for maintaining and improving urban forests. Such forests are valuable learning laboratories. Changes in public values and new recreational trends often show up first in urban centers; urban forest managers have a unique opportunity to study new trends and to test responses. Moreover, research suggests that students who learn in outdoor settings are more likely to recycle, conserve water and energy, and value forests for their noneconomic benefits.

### **Forests: A Precarious Future**

27. The United States is blessed with an amazing variety of forest ecosystems. We have long understood how remarkable our forests are—how many benefits we get from them, such as clean water, habitat for wildlife, and opportunities for outdoor recreation. We have long understood the need the health, resilience, and productivity of forest resources for future generations. What we have not well understood until fairly recently is the scope and scale of the challenges we will face

in the 21<sup>st</sup> century. The future of our forests is precarious unless we act, and act decisively, and soon.

28. Climate change is perhaps the greatest challenge, partly because it will affect our water supplies, our most precious natural resource. We must be prepared—and we must prepare our children—to meet the challenge. Partnerships will be key. In particular, America's urban areas, where 80 percent of our population lives, are vast untapped reservoirs of potential partnerships in pursuit of conservation. The Forest Service is beginning to tap those reservoirs by building environmental literacy through conservation education—by taking urban Americans of all ages into the woods to learn about the land and by bringing forests to growing metropolitan areas through urban forestry. The challenge for the future will be to integrate these efforts into a cohesive program of urban natural resource stewardship for generations to come.