

**The Society for Range Management Conference
Wildfires and Invasive Plants in American Deserts**

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Good morning.

It's a special pleasure for me to participate in this important forum. Wildfires and invasive plant species are a critical issue for the West, one that demands large scale and integrated solutions.

Being a weed scientist, invasive plants are of special interest to me. Such plants are a particular challenge. From *Melaleuca* in Florida to Kudzu in many of the Eastern States to cheatgrass in the West

Since a large proportion of lands in many western states are under public ownership, managed by—the Forest Service, the Bureau of Land Management, the Department of Defense, and other agencies—the Federal government has a substantial interest in protecting and conserving western rangelands and forests on behalf of its many stakeholders including the general public.

However, invasive plant species and wildfires don't recognize boundaries so it's also important that we work with private landowners as well as State agencies and other interest groups to find solutions.

No one group or agency can tackle the challenges posed by wildfires and invasive plants alone. There are simply not enough resources for one entity to do it all. Clearly, managing the natural resources of the Nation's forests and grasslands requires the complex integration of resource assessments, management actions, and cooperative partnerships.

Cooperation and partnerships are also imperative to finding solutions to problems such as this which involve many different stakeholders across a wide geographical area. Although interests may sometime seem conflicted, there is usually some way to find common ground. The American public expects all Federal agencies and Departments to work together to solve problems.

It's a good sign to see so many federal agency scientists, university researchers, interested groups and NGOs coming together to share their knowledge and learn from each other on this topic. This is an important first step to a successful effort to address the issue.

As USDA's Chief Scientist and one of seven Under Secretaries in one of the Government's largest Departments, I've learned a thing or two about cooperating.

I would like to share with you how I think we can be more effective partners in developing solutions to the issue at hand.

- 1) We must recognize and respect the views and interests of all potential partners to build an effective partnership.
- 2) Partnerships that are successful involve lots of trust and integrity.
- 3) Information sharing is a major part of keeping partnerships together.
- 4) We must keep the public informed of our progress or lack of it in addressing major problems or issues.
- 5) We should celebrate success and be generous with the giving of credit to all parties for the successes.
- 6) And we should recognize that partnerships involve true collaborative decision making.

As you know, over the last couple of decades, wildfires have increased both in terms of their frequency and in their intensity, causing damage to human lives, property, and ecosystems. As a Georgian, I got a taste this past year of the devastation that fires can cause when we had major fires in Georgia.

The year 2006 was a record year for wildfires. The area burned, 9.9 million acres, was 125% above the 10-year national average.

The fire season was so bad that international firefighting teams from as far away as Australia and New Zealand came in to help. The Federal cost of fire suppression in 2006 was \$1.5 billion. Between 2000 and 2006, 49.2 million acres of wildlands burned.

Great Basin woodland expansion, particularly the encroachment of pinyon and juniper in the past several decades has contributed significantly to wildfire problems in terms of increased fuel loads and fire intensity. From 1996 to 2007 over 12 million acres of BLM lands burned in the Great Basin alone, a very substantial increase from earlier years.

Economically feasible methods of pinyon and juniper removal not only would ameliorate the wildfire problem, but also would be a valuable bio-energy resource. Bio-char, a product of bio-energy production, may be possibly used as a soil amendment to sequester carbon and improve damaged nutrient cycling in weed-infested soils. This may improve the odds of success in re-establishing native vegetation. We must search for a cooperative approach to investigating this alternative.

Today, the Nation's forests and grasslands face serious threats to their long-term health, productivity, and diversity. Foremost are non-native invasive weeds, altered disturbance regimes, and climate change.

The rapid spread of invasive weeds adversely affects rangelands in many ways. A shift to lands dominated with annual weeds can increase fire risk by 500 times. Carrying capacity for livestock, wild horses, and wildlife is reduced between 35 to 90 percent. There is increased potential for flooding, soil erosion and air pollution.

These diverse threats affect aquatic and terrestrial ecosystems in virtually every region of the country. Concern by land managers and the public about these threats has led to the National

Fire Plan, Healthy Forests Initiative, Healthy Forests Restoration Act, Invasive Species National Strategy, and various administrative actions to help facilitate restoration actions.

Investments under these programs help reduce the probability of fire incidences by reducing fuel loads and restoring the fire-prone areas of our ecosystems. These efforts will pay off in future years by reducing the incidences of wildfires and thus reducing the cost of fire suppression and sparing our communities from loss of life and property.

However, new approaches are needed to clarify and focus policy for ecosystem restoration. We need to focus on much broader issues that affect wildfires in the West and develop better mechanisms for monitoring change and improvement.

Climatic changes are an important element of this broader issue. Global climate change will affect precipitation levels in some areas; changes in the timing of snow-melt, availability of water both for forage growth and maintaining water quality and thus altering competitiveness between weeds and desirable plants, thus affecting fuel loads.

Water is also key to how we should approach restoration. Where precipitation is adequate, re-vegetation using native plant species with proven success in getting them established can be an effective strategy.

At elevations where rainfall is 12 inches or less, such as in dry temperate grassland and desert environments, native plants may struggle to establish themselves. At 8 inches and below currently available native plant materials may not compete well with annual grasses such as cheat grass. Nevertheless, our scientists are developing new native plant materials that are better adapted to such stress conditions.

Another compounding effect is the changes that occur to the soil structure after a wildfire. Depending on the temperature of the wildfire and soil structure the soil can change dramatically such that native grasses have trouble establishing themselves.

The hotter the fire the more damage that is done to the soil composition so that if the soil organic matter goes below 0.3 percent, desirable perennial plants have great difficulty establishing themselves.

If left for many years unattended, the top soil will erode substantially since there will be limited ground cover. Soils in desert environments are very fragile and thus are very susceptible to wind and water erosion.

Restoration with native plants is clearly the ultimate goal, however, we have to recognize that interim measures are sometimes necessary in order to stabilize and conserve the soil.

For example, certain introduced Asiatic species germinate, emerge, and mature under extreme climate conditions. An example of such a grass is Crested Wheatgrass which became widely used in the Great Basin in the 1940s. This grass stabilized soil erosion and helped to restore the soil health in many instances.

Crested wheatgrass may be able to assist ecological succession. In this scenario, it may be planted initially after a wildfire to stabilize the soil and deter cheatgrass invasion and later removed with herbicides to facilitate establishment (reintroduction) of native plants.

There is much published, peer-reviewed evidence that the use of ecologically appropriate plant material after wildfires will decrease erosion, increase vegetation for wildlife, and act to reduce the chances and/or frequency of subsequent wildfires. In order to retain the needed soil texture and composition such plants must be used in the re-vegetation process. These plants typically have deep root systems (dryland yellow-flowered alfalfas), stay green through the middle of the summers (forage kochia), and/or work to improve the nutrient composition of soils (native and introduced forbs and legumes).

It is also important to maintain “green strips” of improved plant materials (koshia, grasses) that stop wildfires because of their comparatively high water content and tendency to stay green through the fire season.

USDA scientists and others are working on improvement of native plants, such as bluebunch wheatgrass, basin wildrye, western wheatgrass, bottlebrush squirreltail, and native legumes like basalt milkvetch and western prairie clover, for re-vegetation after wildfires.

These improved plants have been selected to germinate better, emerge more rapidly, and establish themselves more effectively under environmental stress conditions such as low water and nutrients; and less than optimal soils.

More collaboration is necessary to address the mix of complex issues associated with the varied eco-types found in the 17 western states.

We also need to work together on long-term evaluation and demonstration of alternative restoration and conservation strategies addressing all the major natural resource values, particularly grazing, water and biodiversity.

These are areas that cry out for our best science. This is such an important area, we must be guided and take action only on the basis of good science and sound research.

Monitoring range and desert conditions as affected by our interventions and other ambient conditions are also important elements of designing appropriate research and policy to effectively deal with wildfire and invasive species issues.

Cooperation to develop monitoring and decisions-support tools and systems to aid private industry and public-land managers is vital to developing a winning strategy.

Given the ecological diversity and complexity, socio-economic conflicts, and the scope and scale of resource issues, a truly long-term, regionally integrated research effort is needed. This should include all Federal agencies, state and local agencies, universities and private NGO groups.

It will be important in restoring our land resources for future generations. We must address these issues collectively and in a way that uses the best available science to assure success.

Before closing, I want to mention some of the changes taking affect within USDA's Research, Education, and Economics mission area under the provisions of the new Farm Bill.

First, the Department now has a Chief Scientist. The Under Secretary for Research, Education, and Economics also carries the title of Chief Scientist.

The National Institute of Food and Agriculture will replace the Cooperative State Research, Education, and Extension Service (CSREES) by 1 October 2009.

The Institute will be headed by a distinguished scientist appointed by the President and confirmed by the Senate, who will report to the Chief Scientist and Under Secretary for REE.

The Institute will administer research funds and programs that have been administered by CSREES.

As part of the effort to further coordination between the REE agencies, the Institute, and other research organizations, the Farm Bill also mandated the formation of the Research, Education, and Extension Office (REEO).

The REEO will assist the Chief Scientist USDA/Under Secretary for REE in identifying emerging research needs and opportunities; promoting broad collaboration; and fostering communication to enhance coordination and appreciation of agricultural science.

I have selected six very capable career employees, through a competitive process, to serve as the first Division Chiefs.

The Division Chiefs have now been in place for a couple of weeks and they are already hard at work. They are working on a roadmap for agricultural research, education, and extension as mandated by Congress in the Farm Bill.

REE's recently published Strategic Plan for Energy is serving as a template for the new roadmap—stay tuned!

I am confident that the new organizational structure will foster the kind of collaboration we need to tackle the many challenges we face including wildfires and invasive plants.

Thank you for the opportunity to share some of my views and participate in this symposium. Your collective effort is critical in solving this problem that is important for people today and, indeed for the well-being of our planet in the future.

Again, thank you.