TESTIMONY OF HERBERT C. FROST, ASSOCIATE DIRECTOR, NATURAL RESOURCE STEWARDSHIP AND SCIENCE, NATIONAL PARK SERVICE, DEPARTMENT OF THE INTERIOR, BEFORE THE HOUSE NATURAL RESOURCES COMMITTEE, SUBCOMMITTEE ON NATIONAL PARKS, FORESTS, AND PUBLIC LANDS REGARDING THE CHALLENGES POSED BY THE SPREAD OF INVASIVE SPECIES ON FEDERAL LANDS IN THE DESERT SOUTHWEST

APRIL 10, 2010

Chairman Grijalva and members of the subcommittee, thank you for this opportunity to testify on behalf of the Department of the Interior (Department) on the challenges posed by the unprecedented spread of invasive species on federal lands in the desert Southwest. We appreciate the subcommittee's interest and support of efforts to address the impacts invasive plants are having in the Sonoran desert ecosystem.

My testimony will focus on three main areas: the current threat from invasive plants to native ecosystems, the Department's response, and how we are addressing the threat posed by buffelgrass through cooperation and collaboration with our partners.

Background

Executive Order 13112 defines an invasive species as "an alien [with respect to the ecosystem under consideration] species whose introduction does or is likely to cause economic or environmental harm or harm to human health." Invasive species proliferation is considered one of the greatest threats to our natural and cultural resources, food-producing systems, agricultural commodities, and human health. The United States is experiencing an increase in the number of invasive species crossing our borders through various pathways, and, given the global nature of our economy and transportation systems, we expect this trend to continue. EO 13112 charged all federal departments and agencies to prevent and control invasive species and created the National Invasive Species Council (NISC). NISC provides high-level interdepartmental coordination of federal invasive species actions. NISC is co-chaired by the Secretaries of the Interior, Agriculture, and Commerce.

The introduction and spread of invasive species is fundamentally changing our natural and cultural landscapes. Isolation and careful management do not insulate our public lands. Collaborative efforts among federal, state, and local entities and willing private landowners can be highly effective in managing a shared problem when we recognize that invasive species cross geographic and jurisdictional boundaries.

Our protected areas are no longer protected; over 39 million acres of land managed by the Department are infested with invasive plant species (US Department of the Interior, 2010). Managing invasive species is one of our most significant challenges, and preventing the introduction of additional invasive species and controlling the spread of those already present is an important focus of the Department.

Buffelgrass (*Pennisetum ciliare*), is a fire adapted, perennial bunch grass introduced from the African savannah. Buffelgrass grows in dense stands, producing large quantities of seed that readily germinate and is able to invade both disturbed and undisturbed desert sites. It is spreading rapidly across Arizona's deserts, threatening the ecological integrity of the Sonoran desert ecosystems and public as well as private lands.

Conversion of the Sonoran Desert into non-native grasslands will significantly affect biodiversity, including not just threatened, endangered and at-risk plant and animal species, but also iconic species including the saguaro cactus. Species dependent on the desert community and threatened by buffelgrass invasion include cactus ferruginous pygmy-owls, desert tortoises, lesser long-nosed bats, and many other species common to desert life. Effects include loss of habitat as the desert converts to grassland, the inability to move through dense stands of buffelgrass, and the direct effects from fire (Rice et al, 2008; Flanders et al, 2006; Esque et al, 2003; Burgess et al, 1991; Morales-Romero and Molina-Freaner, 2008; Wilson et al, 1995; Williams and Baruch, 2000; Clarke et al, 2005; and Búrquez-Montijo et al, 2002).

Unlike some other areas in the U.S., fire is an infrequent occurrence in the Sonoran desert, with fire frequencies estimated to be greater than 250 years (Humphrey, 1974; McLaughlin and Bowers, 1982; Schmid and Rogers, 1988; and Schussman, Enquist, and List, 2006). Buffelgrass and other invasive grasses like red brome increase the combustible materials or fine fuels, which help carry fires through the desert. Buffelgrass stands can burn at over 1,400 degrees – almost three times hotter than fires generated by native vegetation. A low intensity fire in 1994 in Saguaro National Park killed 11 desert tortoises and 25% of saguaros (Esque and Schwalbe, 1994-1996); mortality is expected to be much greater from fires where buffelgrass is present. In addition, buffelgrass reestablishes readily with each burn at the expense of less-fire adapted native species, inducing a grass-fire cycle that progressively increases the frequency, intensity and extent of wildfires (Cardille et al, 2001; D'Antonio et al, 1992; Thomas, 1991; Esque et al, 2007; and Búrquez-Montijo et al, 2002).

Climate induced changes in temperature and precipitation patterns will further stress native communities and will likely increase natural disturbances, such as drought, flooding, fire and temperature extremes. These disturbances can weaken the ability of native ecosystems to compete with invaders. We are already beginning to see some of these changes in the southwest, where buffelgrass has been able to respond more quickly to recent variations in climate (Ward, Smith, and McClaran, 2006).

Buffelgrass Impacts and Management Response on Lands Managed by the Department of the Interior

National Park Service (NPS)

Buffelgrass is impacting most parks in the southwest, but effects are the most pronounced at Organ Pipe Cactus National Monument (Organ Pipe) and Saguaro National Park (Saguaro) in Arizona. It was first detected at Organ Pipe in the mid 1980s, but was initially dismissed by southern Arizona land managers as primarily a roadside weed, not well adapted to expanding to the native desert environment. In the early 1990s, an active management program based on

manual removal was launched in response to the rapidly expanding bufflegrass population. Despite early success, the populations continued to expand along with other invasive grasses. It is now viewed as one of the most serious threats to natural and cultural resources in the park.

Buffelgrass was first observed at Saguaro National Park in 1989, and NPS land managers estimate that buffelgrass populations are doubling in size every two years. Inventories between 2002 and 2004 indicated that buffelgrass covered 175 acres of the park and was expanding. Buffelgrass is now found on 2,000 acres of park land (or 2%), and current estimates have buffelgrass increasing in area by 35 % per year and potentially covering 60 % of the park's desert habitat by 2020.

In response, the park developed an aggressive management control program, by using a combination of manual and chemical methods. In 2009, these treatments included 3000 hours contributed by local community volunteers. The park has also joined with the local communities, the University of Arizona, the Forest Service and BLM in investigating aerial and other state-of-the-art application methods.

US Fish and Wildlife Service (FWS)
Buffelgrass is an existing and potentially widespread threat to FWS refuges in Southern Arizona and beyond. The introduction of a cold-adapted variety in Texas and Mexico is expected to begin to impact desert grasslands and woodlands upslope and in higher latitudes, and climate change may exacerbate this spread. Specific threats include the saguaro cacti, the iconic symbol of the Sonoran Desert landscape and the Arizona tourist industry. Imminently threatened are the Sonoran Desert and desert grassland refuges in Arizona and New Mexico including the Cabeza Prieta, Kofa, Leslie Canyon, San Bernardino, San Andres National Wildlife Refuges and refuges and protected areas throughout the borderlands region into south Texas. The Service has responded to this threat on many levels through increased interagency and partner coordination, monitoring for early detection, integrated buffelgrass control measures (e.g., herbicide, mechanical and manual removal), and through buffelgrass Burned Area Rehabilitation projects to restore sustainable native habitats. Effective control continues to be a challenge due to the abundance of buffelgrass seed sources that invade from adjacent lands and Mexico.

Bureau of Land Management (BLM)
The BLM is working to control infestations of buffelgrass which occur on an estimated 14,750 acres within the Tucson Field Office. Most of this is on the Ironwood Forest National Monument. The need to control and manage these existing infestations is part of the BLM's early detection and rapid response program, which is coupled with control and management of the species. To do so, the BLM applies an integrated pest management approach using various treatment methods such as manual, mechanical, and chemical control methods. Even more importantly, prevention is of the highest priority to ensure that infestations of buffelgrass and other weed species are not introduced or spread into other fragile parts of the Sonoran Desert and north and west into the Mohave Deserts. Control of buffelgrass is important to prevent its movement to the north and west where the BLM is trying to control and manage other invasive annual grasses that have become detrimental to the Mohave Desert and the Great Basin.

On Ironwood Forest National Monument, the BLM, along with local volunteers, Friends of the Ironwood Forest, Sonoran Desert Weed Whackers and other groups conduct regular buffelgrass removal projects. For example, The Waterman Mountains, which contain rare and unique vegetative communities, have been the target of the "Save the Watermans" project. This project has nearly eradicated buffelgrass from the Waterman Mountains following a concerted three-year effort which is aimed at completely controlling the species in this area by the end of 2010. In recognition of the remarkable success of the project, and their unrelenting efforts, John Scheuring and the Friends of the Ironwood Forest have been selected to receive the BLM's 2010 "Making a Difference" National volunteer award.

Building on the "Save the Watermans" success, the BLM and its partners have now begun planning for a new "Save the Silverbells" campaign, which will target buffelgrass in the nearby Silverbell Mountains, also located on the Ironwood Forest National Monument. The BLM will treat 285 acres of buffelgrass on the Monument in 2010. This is a combination of first-year, second-year and third-year treatments. Forty of the 285 acres of buffelgrass eradication treatment planned for 2010 will be a third year treatment, and we expect to have buffelgrass completely eradicated from this 40 acres by the end of 2010.

Bureau of Indian Affairs (BIA)

The Bureau of Indian Affairs, along with Arizona tribes, has the responsibility for managing invasive species on over 3 million acres within the Sonoran Desert region. In addition to the Tohono O'Odham Nation, consisting of 2,789,047 acres, there are five urban tribes with a land base of about 350,000 acres susceptible to buffelgrass invasions within the vicinity of Phoenix. The Sonoran Desert Museum 2006 Buffelgrass Survey Report stated that distribution of buffelgrass is along all major highway routes including Interstate 10 west of Phoenix to the California border. It is present north and east of Phoenix near several Indian reservations (Van Devender, Thomas, and Dimmitt, 2006). Since 2006, the spread of buffelgrass has increased and weed specialists are concerned. Recent rains in Phoenix have turned vacant lots and disturbed areas into carpets of buffelgrass (Morrison, 2010).

Foresters and range specialists align the buffelgrass invasion with the cheatgrass problem on tribal and public lands. Both are extreme fire hazards, disturb the natural ecosystem and are serious problems within the wildland/urban interface.

United States Geological Survey (USGS)

USGS scientists have been studying the impacts of invasive plants to native species and lands in the Southwest desert. In collaboration with the National Park Service and Bureau of Land Management, USGS researchers have determined that there are increased risks to the survival of saguaros and tortoises by exposure to the more frequent fires caused by nonnative grasses. Fires are a rare occurrence in the saguaro-palo verde plant communities that characterize this desert and losses are considered to be catastrophic among long-lived species (Esque and Schwalbe, 1994-1996; Esque and others, 2007). Researchers are only beginning to understand the changes in Southwestern deserts that result from these plant invasions and fires. The problems of nonnative plant invasions, increased fire frequency, and restoration are interrelated and require an integrated research program to gain valuable information for managers. In addition to fire related impacts, researchers are also studying the seedbank characteristics of buffelgrass and

native plant species to assist in restoration efforts following successful buffelgrass control efforts.

Interagency Cooperation

The growing concern for buffelgrass invasions has galvanized area land managers, scientists and local communities into action, forming the Southern Arizona Buffelgrass Coordination Center and Buffelgrass Working group. On February 9, 2007, more than 120 representatives from state and federal agencies (including NPS, FWS, BLM, USGS and USDA-Forest Service), county and municipal governments, academia and private conservation organization from across southern Arizona joined concerned citizens at the first Buffelgrass Summit. Together we developed and are implementing a 5-year Southern Arizona Buffelgrass Strategic Plan for regional buffelgrass control that includes identification of buffelgrass sites using GPS mapping for purposes of monitoring, control, management, and eradication. In addition, the Invasive Species Advisory Committee (ISAC) which is the Federal Advisory Committee Act chartered group of nonfederal stakeholders that advise NISC, met in Tucson, AZ in May of 2009. This group toured buffelgrass areas and had extensive discussion of this issue within the larger context of invasive plants contributing to the frequency and severity of wildfires.

In 2005, Arizona declared buffelgrass a noxious weed. Local governments followed with ordinances to encourage utilities, developers, and private landowners to control buffelgrass on their properties and right-of-ways. Both the public and private sectors are quickly ramping up to meet the buffelgrass challenge, and, over the past decade, control efforts have accelerated, culminating in treatment of thousands of acres on public lands and right-of-ways in 2008. In spring 2009, over 100 volunteers pulled buffelgrass in the Tucson Basin each month, and a similar volunteer effort is well under way in Phoenix.

The non-profit Southern Arizona Buffelgrass Coordination Center was established in November 2008 to educate the public about buffelgrass infestation and eradication. Other collaborative efforts include local Cooperative Weed Management areas, local weed management organizations, Bureau of Indian Affairs and tribal partnerships, and partnerships between DOI and the US Forest Service on management, aerial mapping and research projects.

Ongoing Challenges

The ecological transformations we are experiencing in the southwest are also occurring across the border in Mexico. Buffelgrass has been widely planted as pasture grass in Mexico and populations are expanding north across the border. In addition, a new variety of buffelgrass (Frio) that can withstand colder temperatures was jointly released and planted in South Texas and Mexico. This cold tolerant variety is adapted to a much wider geographic area and could expand invasive buffelgrass populations northward into northern Arizona and beyond (Hussey and Burson, 2005).

Illegal border activity and associated national security measures have resulted in conditions that make control of buffelgrass more difficult. Movement of goods and people and increased border

activity creates ground disturbances and pathways for dispersal of buffelgrass and other invasive species along the border, and increasing security concerns make it difficult for land managers to detect and control border buffelgrass populations. Finally, even if we can eradicate the invasive plant species from an area, the damage they cause together with the extremely arid environment makes restoring native species very difficult.

Conclusion

While this hearing is focused on buffelgrass we must consider the many invasive species that threaten desert ecosystems in the southwest. Species such as red brome, schismus, fountain grass, and Sahara mustard threaten upland sites, while other species are impacting riparian areas along rivers and streams. More than 100 non-native species have been recorded in parks in the southwest and more than 10% of the flora is not native to the parks. The explosion of buffelgrass and these other invasive species is a major concern to land managers in the Sonoran desert ecosystem.

There are current and developing tools that will allow us to address this growing problem, but only with a sustained and increased commitment to the problem. All solutions must be based on a coordinated landscape approach that includes all the land owners and jurisdictions in the area. The approach must include all invasive species and look past control to restoration of sustainable native plant communities. Southern Arizona has already organized around the issue through cooperative efforts involving local businesses, citizens, academia, conservation organizations, fire departments, and local, state and federal governments. The Department will continue to actively participate in this regional effort.

Thank you for the opportunity to testify and I welcome any questions you or the subcommittee members may have.

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