Buffelgrass Invasion in the Sonoran Desert:
Imminent Risks and Unavoidable Mitigation
The Problem
Buffelgrass (*Pennisetum ciliare*), a fire-prone grass introduced from the African savannah, has quickly gained a foothold in Central and Southern Arizona. Left undeterred, it will irrevocably alter the Sonoran Desert. Buffelgrass grows in dense stands, crowds out native plants and can fuel frequent and devastating fires in what has been generally a fireproof desert. Competition for water can weaken and kill desert plants, even larger trees and cacti, while dense roots and ground shading prevent germination of native seeds. Buffelgrass can kill or exclude most native plants by these means alone; wildfires will only hasten the process.

In the past two years, buffelgrass invasion has been the subject of considerable outreach, extensive media coverage and nearly unanimous consensus. Despite this increased awareness, the heroic efforts by a few volunteers, and growing public agency engagement, control activities have yet to keep pace with buffelgrass spread. Because this spread is exponential—populations of this grass and the costs of controlling it may be doubling every year—time is of the essence. Collaborative and decisive action is needed now.

The Risks of Inaction
Without a concerted and sustained regional effort to control further spread, Southern and Central Arizona will soon face recurring grassland fires, loss of our existing natural desert environment and costly economic impacts.

Increased Fire Risk
Since the late 1950s almost 3 million acres of desert have been converted to buffelgrass pasture in the state of Sonora, Mexico. Buffelgrass has expanded from these pastures into surrounding natural and urban areas, and is now driving wildfires throughout most of the year. Fires occur almost daily along roadsides in and around Hermosillo, a city protected by just a few dozen firefighters.

Given similarities in climate and vegetation, Tucson, Phoenix and other southern Arizona municipalities also will be challenged by more frequent and devastating fires in the near future. Since February 2004, when stands planted on the tailings of the Duval Mine near Green Valley caught fire, a spate of buffelgrass fires have plagued southern Arizona, including one in November 2005 that resulted in a Tucson fatality and another that charred a Phoenix city park.
In Southern and Central Arizona, urban fire departments traditionally fight few “brush fires.” Instead, they are focused on house fires and paramedic response to 911 distress calls. Among other expected measures, adequate protection from buffelgrass fires will soon require:

- escalating fire department budgets
- retraining of firefighters to suppress spreading grass fires in urban and suburban areas, and along highways and roadsides
- rising fire insurance and suppression costs (more fire hydrants) for homeowners
- development of extensive firebreaks to keep ignition fronts in the desert from sweeping up the mountains to become forest fires
- aggressive public education and strict ordinances aimed to stem the rate of human ignitions and distribution of buffelgrass in natural as well as heavily populated areas (think Smokey Bear in the desert)

**Threats to Conservation Efforts**

Buffelgrass is an equal opportunity invader that respects no boundaries. It already compromises the integrity of several parks and monuments, and other publicly maintained open spaces devoted to Sonoran Desert conservation and ecological research. Imagine Saguaro National Park without saguaros, Picacho Peak State Park without wildflowers, or charred parklands in Phoenix’s mountain reserves (Papago, Peistewa Peaks, North and South Mountain, Mummy and Camelback Mountains). The Sonoran Desert Conservation Plan acknowledges buffelgrass and other invasive species as important threats to Pima County’s rich biodiversity. And clearly, buffelgrass invasion poses serious threats to the 100-year legacies of ecological research carried out at the Desert Laboratory on Tumamoc Hill and the Santa Rita Experimental Range.

**Economic Impacts**

The tourism and hospitality industry, and its associated tax base, will suffer greatly if the buffelgrass invasion continues undeterred. As this water-guzzling, fire-prone grass colonizes rocky slopes, palo verde-saguaro communities that characterize our popular destinations and viewscapes will be converted into disturbed grassland. Fires are becoming prevalent during the mild tourist season when buffelgrass is chronically dry and flammable. Wildfires could disrupt some recreational activities for decades or more. Saguaro-studded sunsets and spring wildflower displays could become a thing of the past. Degradation of viewscapes and the prospect of frequent fires may also discourage businesses and private citizens from choosing southern Arizona as a permanent destination, further slowing economic growth.

Ecotourism is a cornerstone of the Tucson and Pima County economies. Places like the Arizona-Sonora Desert Museum, Saguaro National Park, Sabino Canyon, and Tucson Mountain Park attract tourists from around the world and also are visited repeatedly by local residents. According to the Metropolitan Tucson Convention and Visitors Bureau, and based on studies conducted by the University of Arizona,
3.5 million visitors pump $2 billion a year into Tucson's economy, including $20 million of tax revenues for Tucson and Pima County. Tourism accounts for nearly 40,000 jobs, about 12 percent of total wages in Pima County.

**Buffelgrass Management: Some Early Successes**

There is both public support and some early successes for buffelgrass control in Southern Arizona. Late in 2005, Arizona Statute R3-4-244 approved listing of buffelgrass as a Regulated and Restricted Noxious Weed, while in 2006 the Governor's Invasive Species Advisory Council identified it as one of Arizona's most problematic invasive species. In Fall 2005, the Pima County Board of Supervisors adopted Resolution No. 2005-165 to manage invasive species, with buffelgrass as the first target.

Both Organ Pipe and Saguaro National Parks have supported buffelgrass eradication efforts since 2000. Arizona Department of Transportation regularly sprays and conducts manual removal in infested areas along interstates and other state rights-of-way. Beginning in 2005, Pima County Department of Transportation routinely has instructed its landscape contractors to remove buffelgrass and its close relative fountain grass, from road rights-of-way. The City of Tucson has begun treating large stands of buffelgrass in the Avra Valley and Sentinel Peak Park, with support from U.S. Fish and Wildlife Service. Next to Sentinel Peak on Tumamoc Hill, the University of Arizona has been using funds from Kinder Morgan, Inc., the National Resources Conservation Service, and Pima County to control buffelgrass. The Starr Pass Environmental Enhancement Fund has been instrumental in organizing mapping and coordination of buffelgrass management in the Tucson Mountains. The BLM and Sierra Club have organized buffelgrass control efforts in Ironwood Forest National Monument. And in 2006, a new Cooperative Weed Management Area was established for Pima County and the Santa Cruz River Basin with buffelgrass control as the initial focus.

One of the more successful initiatives has been organized by Sonoran Desert Weedwackers, a volunteer organization managed by the Southern Arizona Native Plant Society and funded by Pima County Parks, Natural Resources and Recreation. Meeting every third Saturday of the month, Sonoran Desert Weedwackers has managed to eradicate buffelgrass from much of Tucson Mountain Park. A parallel volunteer organization, Phoenix Weedwackers, is now focusing on buffelgrass eradication in the Phoenix Mountain Reserves. Meanwhile, homeowner and neighborhood associations also are rallying to control buffelgrass. Clearly what is needed are more resources and better coordination to regionalize and sustain these initial efforts.

**So what’s next?**

**A Buffelgrass Management Plan for Southern and Central Arizona**

In early 2007, government and community leaders will begin developing a Buffelgrass Management Plan for Southern and Central Arizona, initially focused on public lands and rights-of-way. Successful mitigation of buffelgrass impacts over the region will require that citizens, agencies and all levels of government cooperate across jurisdictional boundaries. Finally, a Regional Buffelgrass Management Program will provide a unique collaborative framework for mitigating invasive species and solving other spatially extensive environmental problems in Arizona.