

Newsletter Highlights:

- Meet Your Local Conservationist: *Sadie Lister*
- Featured District: *Navajo Nation Soil and Water Conservation Districts*
- Conservation Corner: *Introduced Grasses in Arizona*



May 2021 Newsletter

ARIZONA ASSOCIATION OF CONSERVATION DISTRICTS
Conserve. Grow. Live.



Meet Your Local Conservationist
Sadie Lister, Little Colorado SWCD



**Tell me a little bit about yourself and your family.
What is the history of your ranch?**

My family's ranch goes back seven generations. Up until the 1940s, we were goat and sheep ranchers, but now we have cattle, goats, sheep, and horses. I received the ranch from my parents in 2005 and I share it with my siblings.



What type of animals do you raise?



Just cattle and Navajo-Churro sheep.

What kind of conservation work have you done on your operation?

In the early 1940s, the Bureau of Indian Affairs' Division of Natural Resources, then located in Holbrook, AZ, implemented several demonstration projects intended for forage production and to prevent soil/water erosion within a fenced area; these were seen in various locations within the Indian Wells Community. One was situated within our



customary land use area. Fencing in this area was in need of repair and we got EQIP funds to fix and restructure the fencing to include paddocks for rotational grazing in 1997.

We've done a lot of earthen dam repairs and have also made new earthen dams for the benefit of wildlife. In 2014, as a family utilizing the USDA's Farm Services Agency Livestock Forage Program funds, we decided to repair an earthen dam gone dry. Timing was excellent because that October we had an abundance of rain. The drought has been a challenge, but we are thankful for the precipitation we are getting now and pray that our forage will be abundant while we continue to implement projects to improve land conditions. We finally finished the project in January 2021.

How long have you been involved with NRCDs?



I became a member of the Little Colorado River Soil and Water Conservation District (LCR SWCD)/Navajo Nation in 2010. I am also an elected representative for the Community of Indian Wells which is one of 13 local governing Navajo Nation Chapters within the LCR SWCD. In my roles I have coordinated many outreach and education workshops with USDA Programs, Navajo Nation, BIA Natural Resources Programs, Cooperative Extension Programs, and land grant colleges.

Why did you get involved with NRCDs?

First involvement with the Districts came when my parents were recipients of EQIP. Years later I saw there was an open position on the board, so I decided to attend a community meeting and volunteered. I wanted to work in partnership with my neighbors and others to help with natural resource conservation.



Thank you, Sadie Lister!

Featured District
Navajo Nation Soil and Water Conservation Districts



The Navajo Nation Soil and Water Conservation Districts (NN SWCD) – comprised of the Fort Defiance, Chinle, Little Colorado River, Navajo Mountain, and Shiprock Districts – have been working hard to ensure every District represented within the NN SWCD has the support it needs to address natural resource conservation concerns at the local level. Part of ensuring successful conservation at the local level means working with multiple partners to source funds and people to make things happen on the ground! Here we take a look at how Districts can collaborate with partners to 1) get the technical help needed in order to get on-the-ground conservation work completed and 2) implement and complete natural resource conservation practices.

NACD Technical Assistance Grant

The NN SWCD successfully secured Technical Assistance Grant funds through a cooperative agreement with the National Association of Conservation Districts and the Natural Resources Conservation Service. Through this agreement, each District of the NN can hire a part-time administrative assistant. These staff members are vital additions to the Districts as they provide much needed help with identifying and prioritizing natural resource concerns, updating seven generation plans, developing annual work plans, implementing strategic plans, and developing/managing partnership agreements.

Livestock Forage Indemnity Program

It wasn't too long ago that a few NN SWCD representatives made the trek to Oklahoma to attend the Indian Nations Conservation Alliance (INCA) Annual Conference. It was there that they made the USDA Farm Services Agency (FSA) Administrator aware of an ongoing issue: producers could not obtain FSA Livestock Forage Indemnity Program (LFIP) funds via the Navajo Nation Department of Agriculture. The efforts of the NN SWCD to correct this issue has restored the ability of producers to obtain funds, and to work with FSA directly, in order to implement and/or complete practices to improve forage. A great example of how can be seen on the ranch of AACD's Tribal District Representative Sadie Lister, who also sits on the Little Colorado River SWCD Board. Sadie utilized LFIP funds on her family's ranch to repair an earthen dam to support livestock forage growth. (Read more about Sadie in the "Meet Your Local Conservationist" section of this newsletter.)

By working with the Navajo Nation Council, the Indian Nations Conservation Alliance, Conservation Districts, local producers, and agencies (both governmental and NGO), the NN SWCD is engaging in meaningful cooperative efforts to support agriculture and natural resource conservation in Arizona.

Introduced Grasses in Arizona

Written for the AACD by E. Lamar Smith, Ph.D.

There are many species of grasses in Arizona introduced, either intentionally or accidentally, from other continents. Some are considered invasive species (species that will invade into native plant communities and may reduce or replace the native vegetation by competition for nutrients and water). Some of these species have been declared noxious weeds by the State of Arizona and there are efforts to control or exterminate them. Some of the more prominent ones are discussed here.

Concern over invasion of exotic species, both plants and animals, is widespread within the natural resource and environmental interests. There is often good reason for these concerns, however, sometimes it seems that the main concern is that these species are not native to the ecosystem and therefore tend to upset the balance of nature. That view is questionable from a scientific perspective and also from a practical view.

Some ecologists consider that the introduction of a new species, or the extinction of an existing one, disrupts ecological functions such as nutrient cycling, water use, etc. This view is the basis for the balance of nature paradigm which assumes ecosystems have evolved into highly integrated systems and that any change will be disruptive to the functions in that system. It is true that the ecosystem will be altered by introduction or extinction of species, but that does not necessarily imply that ecosystem functions will be degraded. For example, the annual grasslands of California bear little resemblance to the original bunchgrass types due to invasion of exotic annuals after settlement by the Spanish, but they still provide sustainable soil protection, forage, and other values that are different but comparable to the previous vegetation. Whether a plant or animal species is desirable or not should be based more on its effects on ecosystem functions and usefulness than on its country of origin.

There are two basic situations with regard to invasive species. The first is where the populations of invasive species are localized, and the species do not spread rapidly. This is the case with some of the invasive thistles, saltcedar, etc. In these cases, these populations can be located and treated to prevent their spread. Spot treatments with selective herbicides are often used to control broad leaved plants without harming grasses. The second is where the invasion is extensive and the species spread rapidly and aggressively, such as Lehmann's lovegrass, red brome, Russian thistle, and probably, buffelgrass, and many others. There is no feasible way to eliminate these species or even reduce their range – at least not in any economical way. These plants are here to stay, and we must develop ways to manage them to our advantage. Many of them have very desirable and useful properties, e.g., forage, soil protection, wildlife habitat. Some of them are ecological equivalents of the native plants they replace.

Finally, not all invasive plants are exotics. Mesquite, juniper, rabbitbrush, and many other native species have invaded into plant communities where they either did not exist or were much less abundant in pre-settlement times. Overgrazing, lack of wildfire, changes in wild animal populations, etc. are variously believed to have caused these changes, but weather cycles (drought and wet years) and climatic cycles (e.g., the little ice age) are also no doubt involved. For example, creosote bush is thought to have invaded the United States over the past 10,000 years and may still be increasing its range for reasons unrelated to land use practices since European settlement.

How we deal with invasive or noxious species depends on our management objectives and the availability of effective and economical ways to achieve them.

Buffelgrass
(*Cenchrus ciliaris*, a.k.a. *Pennisetum ciliaris*)
(Photo by: Arizona Desert Museum)

Buffelgrass is a warm season, perennial grass that was introduced from Africa in the late 1930s to control erosion and provide forage. It is widely used to reseed rangelands in south Texas and Mexico. Early trials in Arizona were not very successful because the grass lacked cold tolerance. However, since the 1980s it has apparently developed more cold tolerance and has spread widely in the Sonoran Desert areas, especially in Pima County. The grass was used to reclaim mine tailings by the copper mines south of Tucson, and there is speculation that more cold tolerant strains were brought from Texas, where they had selected for cold tolerance. It is mainly found in the Sonoran Desert vegetation with rainfall less than 10 inches and elevations less than 3,500 feet. It is apparently limited by cold temperatures at higher elevations.



Buffelgrass is a moderately palatable forage grass for cattle, which is why it is planted in Texas and Mexico. In the Sonoran Desert it increases the relative amount of biomass produced by grasses. This increases the risk of wildfire and the intensity of fire when it occurs. Fire was not a common occurrence in the Sonoran Desert in pre-settlement times, as it was in the grasslands and woodlands at higher elevations, thus most of the desert plants are not well adapted to fire, especially the saguaro and other cactus.

There is concern that buffelgrass will continue to spread through the Sonoran Desert and increase fire danger, eventually eliminating most of the native species and producing a near monoculture of buffelgrass. This is happening in some places in the desert areas of Central Australia as well. Therefore, considerable effort is being placed on trying to control buffelgrass and, in some cases, to reseed with native species. At present most of this effort is based on hand grubbing, as is shown below in a recent cooperative effort between the Yuma and Laguna NRCs, the University of Arizona, the Bureau of Land Management, and the Yuma Marine Corp Air Station. (This is yet another great example of Conservation Districts working in partnership with others to conserve our natural resources).



(Photos provided by Mark Kuechel)

Other methods of control, e.g., herbicides and mechanical control, are generally not used because they impact the native species as

well. Apparently, there is no known biological agent (e.g., disease or parasite) to control this species. Seeding of native species is rarely successful in the desert due to low and unpredictable rainfall. Native desert grasses are adapted to survival of dry conditions, not to rapid spread by seeding.

The concerns about the hazard to native plant communities, especially shrubs and cacti, due to wildfires carried by buffelgrass are real. A most practical way to minimize these losses would be to use targeted grazing to reduce fuel accumulations. Grazing will not eliminate buffelgrass, but it can remove some of the biomass produced and thus reduce both the hazard of and intensity of wildfires (and make fires that do occur easier to control).



Lehmann's Lovegrass
(*Eragrostis lehmanniana*)

(Photo by: arizonensis.org)

Lehmann's lovegrass was introduced into the United States in the late 1930s by the Soil Conservation Service (now the Natural Resources Conservation Service), along with many other species of grasses and forbs as part of the effort to find species suitable for seeding to reduce soil erosion and improve forage production on rangelands depleted by the drought of the 1930s and uncontrolled grazing. The first trial plantings were on the Santa Rita Experimental Range south of Tucson. Lehmann's proved to be well adapted and has been seeded in numerous locations in Arizona. However, it has spread over large areas of southern Arizona (although it does occur in Mohave County)

and into New Mexico and West Texas due to its prolific production of very small seeds which are easily spread by wind and other means. In Arizona it mainly occurs in the rainfall zone of about 10-16 inches, i.e., in the desert grassland zone above the desert shrub and below the oak-woodland. It is limited by precipitation on the lower elevations and cold temperature at the higher elevations.

The main reason Lehmann's lovegrass has been widely used for reseeding is that the success of using native species in the rainfall zones from 8-12 inches, or even a little higher, has been very limited. In addition, seed of native species is expensive and often not available in required amounts. So, it became a question of seeding with Lehmann's lovegrass at a lower cost for a reasonable chance at results or seeding with natives with a much smaller chance of success at higher cost. For this reason, Lehmann's lovegrass has been widely used to reseed highway rights of way, pipeline routes, and areas effected by wildfires – and this has probably contributed more to its spread than use for rangeland treatments aimed at increasing livestock forage production.

There is little indication that the spread of Lehmann's lovegrass is caused by or can be controlled by livestock grazing management. Although it greens up sooner than many natives, it also grows during the summer. Thus, trying to reduce it by grazing it heavily in spring or fall would probably have little effect and most likely result in more damage to associated natives than to Lehmann's lovegrass. It is not particularly tolerant of drought or a hot fire, however, the prolific production of seed allows it to recover from either one rapidly. In this manner it acts something like an annual grass. Grazing can, however, be used to reduce the accumulation of fine fuels contributed by Lehmann's lovegrass and thus reduce the intensity of wildfires when they happen.

It is probable that drought will facilitate increase of Lehmann's lovegrass – not because it is drought tolerant, but because it can colonize bare areas where

native cover and litter have been decreased by drought. This has been observed in exclosures on the Santa Rita Experimental Range. There is not general agreement on whether Lehmann's lovegrass will actually cause the decline of associated native grasses or prevent them from increasing in response to good management and favorable weather. This may depend on the sites or other factors. On balance, Lehmann's lovegrass is probably a benefit to watershed condition and a benefit to livestock forage quantity – but not quality, and probably somewhat detrimental to some species of wildlife.

Fountain Grass (*Pennisetum setaceum*)

(Photo by: SEINet)

Fountain grass is a relative of buffelgrass also coming from Africa. However, fountain grass was imported as an ornamental plant and is not considered a good forage plant. It is sold in nurseries in Arizona and elsewhere. (It is not considered a noxious weed in Arizona according to the Park Service) Presumably some of these strains are sterile, i.e., they do not produce viable seeds. Fountain grass has become established in some areas in the Catalina



Mountains in the high desert or lower woodland zones. It also is present in Saguaro National Park and perhaps other locations. The concerns about the spread of fountain grass are similar to those for buffelgrass, but, so far, the area invaded is much smaller.

Control efforts are mainly hand pulling, as for buffelgrass. However, since the degree of infestation is much less, these efforts may have some possibility of reducing the spread of this species. Livestock will eat fountain grass if forced to do so by heavy stocking, but the possibility of using targeted livestock grazing to reduce fuel loadings from fountain grass do not seem promising.



Introduced Annual Grasses

(Photo by: University of Arizona
Cooperative Extension)

A number of introduced annual grasses occur in Arizona, especially in the desert shrub zones. The most common are red brome and Mediterranean grass (e.g., Sonoran Desert) and cheatgrass (e.g., Mohave and Great Basin Desert shrub, sagebrush, pinyon-juniper types). These are cool season annuals

introduced mainly from the Mediterranean and Middle Eastern areas in hay or gear of the early Spanish settlers in California and elsewhere. These and other similar species have completely replaced the native cool season bunchgrasses in much of California. A major concern in the Great Basin is the increased wildfires that threaten the sagebrush type and have converted it into a fire based annual grassland in large areas.

The potential for such conversion is present in Arizona in both the Sonoran and Mohave Desert areas, although it has occurred on such large areas as in the Great Basin (Nevada, Utah, Idaho). This may be due partially to less reliable

winter precipitation in the Arizona regions that reduces buildup of fuel. However, the potential exists and there is legitimate concern that increasing incidence of wildfire could reduce stands of cacti, palo verde, Joshua trees, and other iconic plants.

Livestock grazing is about the only tool that can be used to reduce either the amount of annuals or the risk of fire. Many of the desert rangelands are managed as "ephemeral allotments," which means that grazing is only permitted when winter rains produce enough annual grasses to provide forage. Where native perennial forage is sufficient there may be a low year-round stocking based on sustaining these plants, and additional stocking allowed when the annuals respond to good winter rains. Although targeted grazing shows promise in Nevada in reducing cheatgrass invasion, grazing will generally be useful to reduce fuel loadings when wet winters occur and thus reduce the risk of wildfire, the intensity of fires, or increase the ability to control fires.

Other Introduced Perennial Grasses

Two of the most common introduced perennial grasses that have become naturalized over much of Arizona and elsewhere are Bermuda grass (*Cynodon dactylon*) and Kentucky bluegrass (*Poa pratensis*). Bermuda grass is a warm season sod grass that is widely used for lawns, parks, and golf courses. It occurs practically all over the warmer portions of the earth. It is also widely used for seeded pastures in the higher rainfall areas of the U.S. or on irrigated farms. Arizona's rangelands are generally too dry for this plant to spread outside of riparian areas or periodically flooded stream courses in the warmer portions of the state. It provides excellent forage for livestock and good soil binding properties.

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**Arizona Association
of Conservation Districts**

7467 E. Broadway Blvd
Tucson, AZ 85710

www.aacd1944.com

**Have a story you would like to share in
our next newsletter?**

Contact: Brooke Gladden
brooke.gladden@aacd1944.com
(520) 668-3348



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