

Grass Roots

Photo by Jeff Goodwin



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*Providing Leadership for the Stewardship of Rangelands
Based on Sound Ecological Principles*



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President's Notes



Jerry Payne
President, TSSRM

What a wonderful year this has been for me. We have such a progressive and active Section that promotes the stewardship of our native plant resources. The Texas Section actively participates and influences our parent Society, and we must continue to take this responsibility very seriously. We must be educated on multiple issues and opinions, but also remember to respect views that may be different from our own. One of my favorite sayings is: "If we both agree on everything all the time, one of us is not thinking." Thoroughly researching items and then making our own informed decisions is the best solution.

One thing that most of us have in common is our love and dedication to the stewardship of our natural resources. Most of us have just celebrated Thanksgiving. What a great celebration with family, friends, and feasting! One of our profession's fringe benefits is getting to work outdoors with the Supreme Architect's creation. I never cease to be amazed at how the pieces of this great jig-saw puzzle fit perfectly.

I sincerely appreciate all the help, advice and encouragement each of you has given me, not only this year as your president, but for the 40 plus years I've been in this Society. It would be impossible to thank everyone who deserves special recognition, however, four presidential appointed officers deserve a special word of gratitude. The personal sacrifices that they give to our Section are immeasurable. Thank you: Jan Weidemann, Robert Moen, Bruce Healy and Jeff Goodwin. Also, we would be "dead in the water" without our directors, future and past presidents and committee chairs.

This has been one of those memorable years. As the song says, "thanks for the memories."

Doris and I hope to see you along the trail. Continue to keep us informed of your tours, field days and symposiums, and we just might show up dragging our 5th wheel.

Jerry Payne



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Address inquiries to Jeff Goodwin, Editor

Salt Cedar Research

A new study questions accepted beliefs

(excerpts from a story from University of Arizona, permission, Ed Glenn), subsequently published in the El Desoplado newsletter

For every acre of saltcedar eradicated, it was estimated that as much as 10 acres of water would be salvaged," Ed Glenn of the Environmental Research Laboratory of the University of Arizona said. "The actual number is nearly zero because saltcedar uses three feet of water, not 10 feet. With the soil bare, something else will come in and take over, or erosion will set in." Glenn worked on a series of saltcedar studies with Pamela Nagler, who initially participated in the NASA-funded study as a UA graduate student and is now an adjunct assistant research scientist at the UA and a research scientist with USGS. The most recent study measured the water use of saltcedar and native plants at sampling sites in the Cibola National Wildlife Refuge on the Lower Colorado River and compared those figures with water use in a field of alfalfa adjacent to the refuge.

Measuring plant water use in riparian areas only became possible in the early to mid-1990s, when moisture flux towers were introduced and installed at intervals along various rivers in the Southwest, including the San Pedro, the Lower Colorado and the Rio Grande. Flux towers precisely measure the moisture passing from the leaves of the plant canopy into the atmosphere. "We've combined the data from the flux towers with the new satellite images that can measure the actual area of the river," Glenn explained. "It's like somebody pulled a window shade open and you can see the whole thing. Before, people would use cement catchments or pots, but those aren't actual measurements of real stands of saltcedar. For the first time, we're getting an accurate look at what the real vegetation use of water is along the river."

It turns out that saltcedar isn't inherently invasive. It runs rampant only when human activity diverts river flows. Studies reveal that saltcedar moves into riparian areas and displaces native species at the same time that dams and levees have reduced the water coming out of rivers. The reduced stream flow alters the ecosystem, making the area drier and saltier than it was historically, according to Glenn. Native trees no longer thrive under those conditions. "The trees disappear and the saltcedar moves in," he said. "It's easy to look at it as an invasion problem, but scientists go in and just get the facts, and it's not necessarily what you think." The UA scientists conducted surveys in pristine streams in Mexico and the natural riparian areas around them. What they found was that saltcedar doesn't enter river systems with a natural ebb and flow over seasons. Instead, it spreads in the areas where the river has been diverted into channels from dams and the soil becomes salty.

Willows and cottonwoods remain firmly established where free-flowing desert rivers periodically overflow and flood their banks, leaching the salt

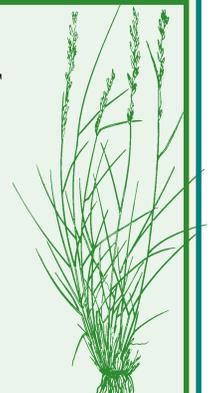
Upcoming Events

Feb. 8-12, 2009

**SOCIETY FOR RANGE MANAGEMENT
ANNUAL MEETING**
Albuquerque, NM

2009 TSSRM Meeting
Beaumont

2010 TSSRM Meeting
Odessa



from the plants. Saltcedar doesn't compete with them under those conditions.

"The best kind of ecosystem you could create on disturbed river systems like the Lower Colorado River would be about 10-15 percent native trees and some standing water or wet soil nearby. Saltcedar is great in combination with those trees. The birds like the multilayered canopies," Glenn said. Saltcedar also benefits agriculture by surviving in the saline brines created by return flows when farmers irrigate crops. "It's much more feasible to live with the saltcedar and recognize that it doesn't use much water and does provide habitat for native species, rather than trying to eradicate it and replace it with plants that are no longer suitable for the environment we've created," Glenn said.

"What we and scientists at other universities have done is a total rethink on the specific ways plants use water, and how you manage it," Glenn said. "We did have resistance at first, and the restoration community has been slow to change their minds about this, but eventually the story gets out. That's why science still does drive these processes. Eventually the practices catch up to the science." "We've sort of gone full circle from the saltcedar being added to the landscape, then being regarded as a nuisance, and now being recognized for its value."

Memorial Honoring Jerry Stuth

Dear Friends and Colleagues of Jerry,

Jerry always said that if he got the introduction done the rest of anything he wrote came easy. I'm a bit wobbly on an introduction so I'll jump right in.

It has been brought to my attention that some of Jerry's colleagues, former students and friends might want to help erect a memorial for Jerry in College Station.

As you may or may not know, Texas A&M University and the City of College Station are opening a new cemetery/memorial park which will include two sections designated as the Aggie Field of Honor. Several months ago I bought an option to select a space to erect an A&M memorial for Jerry. At that time I was not certain if the specifications and format allowed for a stone marker that would be suitable. I am pleased to say that the markers are to be a good size, shape and color to put up a memorial similar to Jerry's headstone in Moody. Plus, when my name came up in the lottery to choose a specific plot, I was able to reserve the last space left in the front row. I hope you and others will agree that it would be most appropriate for there to be an "Academic Hero" honored in the front row.

The cost of the space and stone are high but not astronomical, and I would greatly appreciate any contributions to the memorial. If by chance there are extra funds, I will look into donating them to increase the endowment of the Dyksterhouse Lecture Series or a Range Science scholarship fund. With all the departmental changes, I will have to see what kind of alterations may have been done to the Series and/or scholarships awards.

The rough plans for the marker's design are:

Dr Jerry W Stuth, PhD
born Nov. 4, 1947 - died April 24, 2006

Professor of Range Science (the name of the department when he came to A&M)
Aug 1, 1975 to April 24, 2006 (dates of tenure at A&M)

Beloved Family Man, Mentor and Friend,
Distinguished Research Scientist, Professor and International Rangeman (the Rangeman because Jerry referred to himself as just an "Ole Rangeman" when introducing himself)

If room... a line drawing of a Sideoats Grama plant in lower left corner and up the lower left side labeled with the scientific name as well as the common name plus State Grass of Texas.

Foot stone: "Everyday was a Gift" (a quote from Jerry)

The back will be STUTH as the Aggie Field of Honor requires.

The city plans to be ready to open in January, and I would like to make Jerry's memorial one of the first to be put in place. I know Jerry considered it a privilege and one of the great joys of his life to know and/or work with each and every one of you. Thank you so very much for helping honor him this way.

Sincerely yours,

Nadine R. Stuth
506 West Dexter Dr.
College Station, Texas 77840

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Donations:	Jerry Stuth Memorial Fund Aggieland Credit Union 501 Southwest Parkway E College Station, Texas 77840 (976) 696-1440
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Rob and Bessie Welder Wildlife Foundation Announces Retirement of Director Dale Lynn Drawe, Ph.D.

Update: December 3, 2008

*For more information, contact: Dr. Selma N. Glasscock, Assistant Director,
361-364-2643 (sglasscock@welderwildlife.org)*

The Rob and Bessie Welder Wildlife Foundation announces the retirement of long-time **Director D. Lynn Drawe, Ph.D.** Lynn will spend the first several years of his retirement writing a book and conducting independent research. Although no longer on staff at the Foundation after December 31, 2008, Dr. Drawe will continue supporting the work of the Foundation as a volunteer and *Director Emeritus*, lending advice as needed. He has also accepted the position as Chairman of the Foundation's forthcoming capital campaign to construct a new *Education Facility* on the grounds of the Welder Wildlife Refuge. Another former Director of the Foundation, **James G. Teer, Ph.D.** of College Station, will serve as Honorary Chairman of the *Education Facility* campaign.

Foundation Trustee **John J. Welder, V**, remarks, "Lynn Drawe has led the Welder Wildlife Foundation admirably as Director for ten years. Prior to that, Lynn served as Assistant Director, joining the staff in July 1974, or 34½ years ago. His accomplishments are numerous, and his outstanding reputation in wildlife and range research and education state-wide, nationally, and internationally has lent great prestige to the Rob and Bessie Welder Wildlife Foundation. We are grateful for Dr. Drawe's leadership and while sad that he is retiring, we are delighted he will continue his association with us as a volunteer."

The Trustees are also pleased to announce **Terry L. Blankenship, Ph.D.** will become Director of the Welder Wildlife Foundation on January 1, 2009. Dr. Blankenship has been a member of the staff since 1990, first as the wildlife biologist, and for the past ten years as an Assistant Director. **Selma N. Glasscock, Ph.D.** will continue as Assistant Director and lead the Foundation's nationally acclaimed conservation education programs.

Mission

Education lies at the heart of the mission of the Rob and Bessie Welder Wildlife Foundation. The Foundation was established 55 years ago in 1953 by the late Rob H. Welder (1890-1953). The Foundation's mission as set forth by Mr. Welder is:

"To further the education of the people of Texas and elsewhere in wildlife conservation and in the knowledge of the breeding and living habits of our wild creatures, and in the relationship of wildlife to domestic livestock on our ranches and farms; to afford students and others interested in wildlife betterment and propagation and in the raising of wildlife along with domestic animals, a place for research and an opportunity for the study thereof; and to develop scientifically methods of increasing the wildlife populations of the state and nation for the benefit of future generations of our people who may not have the opportunity to know and appreciate our wildlife, as I have, unless methods of increasing and conserving our wildlife are scientifically developed. For these purposes I here create a foundation to be known as the Rob and Bessie Welder Wildlife Foundation."

Today, the Foundation has three governing trustees: **H. C. "Chuck" Weil** of Corpus Christi; **John J. Welder, V** of Victoria; and **Hughes C. Thomas** of Sinton. **Dr. James G. Teer** of College Station serves as a Director Emeritus. The Foundation sustains its daily operations through an endowment created by its first Trustees, John J. Welder, IV, M. Harvey Weil, and Patrick H. Welder. As a non-profit organization, the Foundation also seeks and accepts charitable donations to enhance its mission and educational activities which will expand in the years ahead.

The Rob and Bessie Welder Wildlife Foundation is perhaps best known for its graduate research fellowship program, launched in 1956. The program promotes the education of exceptionally qualified graduate stu-

dents and provides research information to manage wildlife populations. The scientific breadth of the program is suggested by the academic units of previous fellowship recipients, among them: animal behavior, biology, botany, conservation education, ecology, genetics, mammalogy, ornithology, parasitology, range science, veterinary pathology, and wildlife sciences (for more information, see the Foundation's website: www.welderwildlife.org).

In addition, the Foundation is renowned for providing exemplary programs to school and public groups from throughout the United States. Between 2002 and 2005, over 9,500 youth and adults participated in the Foundation's *Conservation Education Programs*, which strive to enhance the public's knowledge, appreciation, enjoyment, and desire to conserve our wildlife and shared natural resources.

A Distinguished Legacy: Dale Lynn Drawe, Ph.D.

D. Lynn Drawe is a fifth generation Texan born in the Lower Rio Grande Valley at Mercedes. He was raised on ranches near Mercedes, Asherton, Hebronville, and Hallettsville. He and his wife, Kathleen (Kay) Kious Drawe of Weslaco, have two daughters and four grandchildren. Lynn obtained his B.S. degree (1964) in Agricultural Education at Texas A&I University (now Texas A&M University-Kingsville), his M.Sc. (1967) in Range Management at Texas Tech University, and his Ph.D. (1970) in Rangeland Ecology at Utah State University. He taught range and wildlife management in the College of Agriculture at Texas A&I University from 1970 to 1974.

Lynn's research interests include wildlife/livestock interactions, plants of south Texas, vegetation change, prescribed fire, and rangeland hydrology. Since 1974 he has been involved in more than 20 consultancies on South Texas ranches from Laredo to the Rio Grande Valley to the Coastal Bend, including King Ranch, Kenedy Foundation Ranch, and Rockefeller Ranch.

His active professional memberships include The Wildlife Society, Society for Range Management, and the Conference of Southwest Foundations. He is a member or honorary member of eight additional organizations including the advisory board of the King Ranch Institute for Ranch Management at Texas A&M University-Kingsville. He has done peer reviews of numerous articles for seven professional journals. Lynn currently serves as Chairman of the Texas Prescribed Burning Board. His civic activities include Sinton Independent School District Board of Trustees, Sinton City Parks Board, Sinton Chamber of Commerce Board of Directors, Sinton Rotary Club (President 1989, 2000), Sinton ISD Vocational Educational Advisory Council, and San Patricio County Range and Livestock Management Committee of Texas Cooperative Extension. Lynn currently serves as Chairman of the San Patricio County Groundwater Conservation District Board of Directors. He was named *2005 Citizen of the Year* by the Sinton Chamber of Commerce. He is a member of the Sinton First United Methodist Church and is currently chairman of the Finance Committee.

Lynn's professional honors include: *Outstanding Alumnus*, Texas Tech University, Department of Range and Wildlife Management; *Professional Achievement Award*, College of Natural Resources, Utah State University; and *Outstanding Alumnus*, Texas A&M University-Kingsville.

Lynn is an avid sportsman who enjoys fishing, hunting, wilderness camping, shooting sports, and spoiling four grandchildren. He owns a "weekend hobby herd" of commercial cows that he manages on 380 acres. He has authored or co-authored more than one hundred scientific journal and symposium proceedings articles and articles in popular magazines; seven books or book chapters primarily on the vegetation of South Texas, six technical bulletins, edited two symposium proceedings, and eight technical reports. He has presented more than sixty papers at professional meetings. Lynn holds adjunct professorships at Texas A&M University-Kingsville, Texas Tech University, and Texas A&M University-College Station. He has served as primary advisor to ten graduate students and committee member to 36 graduate students. Lynn is currently serving on two active graduate committees in which the students have not yet completed their degrees.

For More Information

For more information, please contact Dr. Selma N. Glasscock, Rob and Bessie Welder Wildlife Foundation, P.O. Box 1400, Sinton, Texas 78387 (telephone: 361-364-2643, or e-mail Dr. Glasscock at: sglasscock@welderwildlife.org). Thank you!

My Experience with Prescribed Burns

Hi, my name is Sterling Hall from Sonora, Texas, and this summer I had the opportunity to attend the 54th annual Youth Range Workshop in Junction, Texas, thanks to my sponsor the Edwards Plateau Soil & Water Conservation District. Throughout the camp, they taught us many types of management techniques that you could apply to your rangeland. However, there was one technique that I liked the most which was prescribed burning. We were lucky enough to burn 2.5 acres on the Blue Mountain Peek Ranch in Menard County with Keith Blair, who owns his own private burning company called Red Buffalo. It was very exciting, since it was my first burn, and after that burn I was hooked on the use of fire as a range management tool.

Prescribed burning is the application of fire to vegetative fuels in a pre-determined area under specified fuel and weather conditions in accordance with a written prescription plan on rangelands. It improves wildlife habitat, water quality and yield, carrying capacity for domestic livestock, and restores the land's historical diversity and productivity.

As I arrived on my second burn at the Francine and Mark Hardeman ranch located near Sonora, Texas, I was very excited as I pulled up and saw Colin Rosser, our burn boss. Colin works at the Texas A&M Experiment Station between Rocksprings and Sonora on Highway 55. He has recently qualified as one of two certified burn managers for the Edwards Plateau. Colin has participated in more than 30 prescribed burns acting as a burn boss on at least five of those burns. He also has just started a new prescribed burn consulting business called Dry Halla Rangeland Services. He specializes in helping ranchers plan and conduct prescribed burns. As a certified burn manager, one benefit that Colin possesses is being able to burn under a county's burn ban. This is very helpful to landowners because hot fire during summer burns can control invasive species such as Mesquite, Prickly Pear, and Cedar.

At the staging area at the ranch headquarters, Mr. Hardeman pulled up in his jeep and took me over to his house while the other 8 participants were unloading their sprayers and trucks to go out to the pasture. The pasture has been rested (not grazed) for over three years so there was abundant grass to fuel the fire. I went back over to the guys that I was burning with after I filled my hand sprayer with water. After all the spray rigs and fire trucks



were filled Colin gave all of us a written map and plan of the area to be burned. It was very confusing because I had no idea where we were on the ranch at first. We had high relative humidity which is the amount of water vapor in the atmosphere, so that means that the fire would not burn as hot as we wanted it to, but it was perfect for putting in a black line. The black line is the area that stops the head fire from jumping your fire guard and burning the area that you did not intend to burn. The fire guard is usually a small road around the perimeter of the area that has been bladed by a tractor, so there is no fuel left to burn.

Colin told me the importance of safety on a burn and that communication was very important; so we all had hand-held radios to talk to each other. Even though it wasn't hot outside, I

knew it would be hot because of the flames. I brought bottled waters, and Mr. Hardman had lots of drinking water available also. After we were all briefed on the burn plan Mr. Bob Brockman asked me if I had ever driven a standard shift vehicle before. I told him I did once, but I wasn't very good at it. He simply said, "Well, you're going to learn." So I laughed and went over to a jeep with a big water pump sprayer on the back. He showed me

how to work it, and we all lined up in our little convoy full of fire trucks, four wheelers, and of course my black jeep. We drove down the road until we all got lost, but then Colin came to our rescue (except that we had to turn around and go backwards), but somehow we all managed to get there.

We all set up in our own little spots, and when we were all ready Colin checked the wind speed, humidity, and gave us all the green light. I watched them burn strips against the wind with their drip torches. This is a torch filled up with 30% gasoline and 70% diesel or red farm diesel. I sat in my jeep by a small brush pile making sure no ambers started; what they call a spot fire. As it slowly burned down I drove around looking for spot fires most of the day. We had a few start when Colin lit a big dried up cedar pile. For those of you who have not seen a big cedar pile burn, it is so hot and the flames can reach more than fifty feet if it's a big enough pile! Then it seems that it turns to Christmas, because all these white ambers fall on you, and that's when you get problems with spot fires. However, with the experienced crew and teamwork that we had, we had no trouble at all. One pile caught a bunch of grass on fire right by our fire guard. By the time I had the motor on my sprayer turned on Mr. Bob Brockman had it put out with the big fire truck. That shows you how fast and good we were.

After a big lunch, served by Mark's wife Francine, it was my turn to carry the drip torch. We walked along and lit any unburned fuel that we didn't want the head fire to find. It was very hot and fun, and I had a good experience burning at the Hardemans' ranch.

For more information about my experience burning please call (325) 387-5553.

Passing of a Leader

Harold Theodore Wiedemann, 74, passed away on Thursday, October 9, 2008, at his home in College Station after a short but valiant battle with cancer. Visitation was from 5 to 7 p.m. Sunday, October 12, at Memorial Funeral Chapel, College Station. Memorial services took place at 2 p.m., Monday, October 13, at Grace Bible Church. Honorary pallbearers were members of the Caleb Sunday School Class.

Harold was born on May 10, 1934, in Mission, TX, to Ted and Delia Fisher Wiedemann. He had an exciting and educational childhood in the family's citrus groves in the Rio Grand Valley. He graduated from Sharyland High School in 1952 and then from Texas A&M University in 1956 with a Bachelor of Science in Agricultural Engineering. He served in the U.S. Army from 1956 to 1958 at Ft. Benning and Ft. Bliss, attaining the rank of Captain, then shortly thereafter returned to College Station to begin his career with Texas A&M. He received his Master of Science 1969, and worked 42 years for A&M as a teacher and research engineer, retiring as a Professor Emeritus in Agricultural Engineering in 2000.

During his research career at the Texas Agricultural Experiment Stations in Lubbock and Vernon, TX, Harold developed several notable implements that are still used today. His chaffy grass seed metering system is now the industry standard and manufactured by six companies. He developed a low-energy grubber that is an effective method of controlling brush species and is a concept that is used worldwide. The disk-chain-diker is a cost-effective and energy-efficient implement that won him the American Society of Agriculture Engineers "Engineering Concept of the Year" in 1990. He consulted on land clearing projects in Argentina and Australia, authored over 140 journal articles and papers during his career, and served as president of The Rangeland Technology and Equipment Council, Society for Range Management. That organization honored him with an Outstanding Achievement Award in 1997.

His civic and faith-based works have included serving as president of Vernon Rotary Club in 1991 and campaign chair for Wilbarger United Fund in 2000, being a member of The Gideons, and running a TYC Prison Ministry for 5 years. He's led numerous Bible studies in Vernon and College Station, based on his years of study of biblical creation, as augmented by study trips such as the one he completed through the Grand Canyon in 1993.

He is preceded in death by his father, Ted, in 1949, and his mother Delia in 2002. He is survived by his wife of 23 years, Jan, of College Station; son and daughter-in-law, Matt and Lisa Wiedemann of Austin; son and daughter-in-law Clay and Traci Wiedemann of Georgetown; daughter and son-in-law Lynne and Russell Simmons of Kiowa, Colorado; and daughter and son-in-law Carole and John Reed of Strasburg, Pennsylvania. He is survived by eleven grandchildren: Aidan, Jackson, Cam, Shayne, Cody, Mindy, Trey, Jarred, Kevin, Dominic, and Mark; and two great-granddaughters Madalynne and Makayla. He is also survived by sons Matt and Clay's mother, Sally Wiedemann of Austin, Texas; stepbrother and stepsister-in-law Fred and Charlotte Proudfoot of Bryan, and his beloved cat Nicholas.

Memorials may be made to Hospice Brazos Valley, The Gideons, and Institute for Creation Research.

A Tale of Three Rivers

By Stan Reinke

This article reflects the author's opinion and does not necessarily reflect the opinion or beliefs of the Texas Section, Society for Range Management.



Historical San Angelo lies at the confluence of three rivers, the North, Middle, and South Concho. The city grew up around the army post Fort Concho which was established in 1867 and closed in 1880. The location for Fort Concho was chosen because of the beautiful setting but primarily because of abundant water for soldiers, horses, and livestock found in the Concho basin.

As with most municipalities established in semi-arid areas of the west and southwest, water for thirsty urbanites is the critical issue. The Concho River system including its tributaries such as Dove Creek, Rocky Creek, Spring Creek and others provide most of the water required to meet the needs of the city.

The rangeland in Tom Green County and the counties making up the Concho basin including Cooke, Glasscock, Irion, Reagan, Schleicher, and Sterling Counties bears little resemblance to the lush pasturage present when Fort Concho was established. It is estimated that in the early 1880's, many of the ranches of the area were stocked at the rate of one cow per four acres. These animal numbers collapsed because of loss of forage due to overgrazing and drought and also because of several very severe winters. During the early part of the 20th-century, there was an explosive growth of sheep fueled by demand for wool during the two world wars. These latter stocking rates of one sheep per 2.5-3 acres lasted until about 1950. The decade of the 50's, was characterized by unprecedented drought which caused stocking rates to drop and they never really recovered. Between 1950 and 1992, stocking rates were about 40 percent lower than the pre-1950 peak. After 1992, livestock numbers fell again and post-2000 stocking rates are only about a third of their 20th-century high.

As the prairie lands became degraded by overgrazing, they began evolving toward the woodlands of today. Regional assessments for Texas and the Southwest document dramatic increases in woody plants from about 1900, all the way through the 20th-century. To summarize, vegetation in the Concho basin has undergone three major phases of change from a prairie savanna (pre-1880), to a degraded grassland/shrubland (1880-1960), and then to a woodland/savanna (post-1960). Because of declining grazing pressure since 1960, rangeland condition has improved especially since 1990.

According to the Upper Colorado River Authority (1998), streamflow has decreased dramatically in the past fifty or so years in the North Concho catchments. Because these decreases were attributed to woody plant encroachment, the State of Texas implemented a brush removal program in the North Concho Watershed with the expectation of tripling stream flow. Between 2001 and 2004, some 300,000 acres was cleared of woody plants with taxpayer dollars in an effort to increase stream flow. Dr Brad Wilcox and associates Yun Huang and John W. Walker all with the Texas A&M University System explore the validity of the brush removal program in a recent paper published in *Global Change Biology* (2008) 14.

To further understand water yields in the Concho basin, we rely on detailed records of streamflow and of precipitation as well as analysis of trends. Streamflow is made up of two components which include base flow and storm flow. Base flow is sustained runoff, not associated with a particular rainfall event but composed entirely from groundwater contributions. Storm flow is that part of runoff that is associated with a particular rainfall event, arrives at the channel quickly and is mostly overland flow. The distinction between base flow and storm flow is critical because the trend in each will be different depending on what is driving the diminishing stream flows.

For example, if the driver is higher extraction of soil water and groundwater by woody plants, then we would expect to find a downtrend in baseflow. However, if the driver is an improvement in rangeland condition (leading to higher soil infiltration capacity), then we would expect to see a downtrend in storm flow.

The analysis of extensive long term precipitation records and monitoring of stream flow on the North, Middle, and South Concho Rivers by Wilcox, Huang, and Walker have revealed some interesting conclusions concerning the North Concho Watershed.

The author's first conclusion is that the precipitation regime has not changed; in other words it is not raining less than it historically has. There are no detectable downtrends in precipitation for the period of record that would account for changes in stream flow, particularly the 70 percent reduction on the North Concho.

The second conclusion by the authors is that groundwater contributions have not declined due either to woody plant encroachment or groundwater pumping. If higher use of water (owing to the greater density of woody plants) or groundwater pumping were contributing to the drop in streamflow, there would be a corresponding drop in the baseflow component (baseflow being derived directly from ground water or soil water). Further, woody plants have increased in the Middle and South Concho watersheds as well but there was no drop in baseflow.



The author's final conclusion is that storm flows are lower on the North Concho because of improving range condition. Their analysis makes it clear that most of the stream flow in the Concho basin is produced by storm flow-episodic flooding events that fill reservoirs. They propose that the most likely explanation for the decreased storm flow is higher soil infiltrability; and the most probable reason for higher soil infiltrability is greater vegetation cover-both woody plants, grasses, and weeds.

From all the evidence, the authors conclude that in the Concho basin, the increases in vegetation cover-both woody and herbaceous-led to higher soil infiltration capacity, which significantly diminished the amount of storm flow in all three watersheds. In the final analysis, brush removal in the North Concho Project did not and will not result in greater stream flow in the North Concho and will not result in more water for the City of San Angelo.

At the outset of the North Concho Project and during public meetings held in several different locations, it was the popular belief by politicians, city planners and much of the urban public that extensive brush control on the Concho watershed would result in increased water for municipal and recreational use. Unfortunately that has not proven to be the case. As a professor of mine once said, "I wouldn't have seen it if I hadn't believed it".

When considering the North Concho Watershed Project, I am reminded of Hans Christian Anderson's delightful little story, "The Emperor's New Clothes". In the story, the emperor is conned into believing that two tailors will sew him a new set of clothes that all will admire except for the ignorant and inept. As the emperor parades down main street buck naked and his court and subjects ooh and ahh over the new clothes, one little boy in the crowd exclaims "but the emperor has no clothes". After the expenditure of millions of tax dollars, "the river has no water".

It would behoove us as range professionals and as SRM members to remember this lesson. At the time that the North Concho Project was in the planning phases, many of us said that brush control on the watershed would not result in increased stream flow nor would it provide more water for urban use and recreation (personal communication with Tom Thoreau and Brad Wilcox). However because of political pressure and popular beliefs, agencies, range professionals, and indeed Texas Section SRM, was not willing to present the scientific data that already existed and tell the public and the politicians that this project would not work and that public funds spent on the project would not have the desired results. In other words, the scientists and professionals did what was "politically correct" for the favor of the politicians and state agencies such as the Texas State Soil and Water Conservation Board that were in favor of the project.

In the future, range professionals should stick to science and scientific principles and let politicians be politicians. Brad Wilcox and associates are to be congratulated for their integrity and professionalism.