United States Department of Agriculture
Natural Resources Conservation Service

Helping People Help The Land

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The Reverchon Naturalist

Recognizing the work of French botanist Julien Reverchon, who began collecting throughout the North Central Texas area in 1876, and all the botanists/naturalists who have followed ...

DESMODIUM PANICULATUM

(Panicled tick-clover)

Story by Dr. Jim Muir
Stephenville Texas AgriLife Research Center

Desmodium paniculatum, Dr. Jim Muir of the Stephenville Texas AgriLife Research Center has collected accessions of tick-clover (*Desmodium* spp.) for potential domestication and seed production. If you run across any of these in your field visits, please send seed to his address below. He is particularly interested in panicled tick-clover (*D. paniculatum*) because of its many wildlife uses.

It flowers late in the season so its leaves stay green longer into the annual summer drought. These leaves are readily browsed by white-tailed deer and domesticated stock because of its high protein concentrations, and its condensed tannins, the latter associated with natural gastro-intestinal parasite control. It is an unusually prolific seed producer for a perennial, deep-rooted legume so we suspect that its value to seed-eating birds is also high.

Also, pods are segmented and will readily adhere to clothing, hence its name "tick-clover." According to Diggs et al. (1999) it can be found from east to west Texas, including the Rolling Plains and Edwards Plateau. The program in north-central Texas seeks to domesticate herbaceous, native legumes with potential commercial applications, including prairie restoration, rangeland rehabilitation, wildlife food plots, pastures, Texas Department of Transportation roadsides, and soil stabilization. So far, besides tickclovers, we are looking at Lespedezas, Desmanthus, and Strophostyles species with ease of seed harvest, establishment, and persistence as primary selection criteria. Panicled tickclover does well in all these areas.

If you collect seed or have questions, please contact Dr. Jim Muir, Texas AgriLife Research Center at (254) 968-4144 ext. 207 or j-muir@tamu.edu or at the mailing address of 1229 North U.S. Hwy 281, Stephenville, Texas 76401.

Demodium paniculatum *(Panicled tick-clover) is an usually prolific seed producer for a perennial, deep-rooted legume, and is readily browsed by white-tailed deer and domesticated stock. The pods (right inset) are segmented and will adhere to clothing, hence its name tick-clover.* Photo Credit: Dr. Jim Muir

See You Down the Road

By Ricky Linex
NRCS Wildlife Biologist

This issue marks the first time the Reverchon Naturalist can be accessed via the Texas NRCS web site using this link: http://www.tx.nrcs.usda.gov/technical/bio/bio_pubs.html and then clicking on *Reverchon Naturalist*. This is a great step forward for easily distributing the newsletter to a wider audience. We are working to have previous issues of the newsletter available to read from this Web site as well. It is quite a leap in technology from the time of Julien Reverchon and other early botanists, who were out there with a pack mule or wagon, trying to gather plants and get them dried out while avoiding thunderstorms, mildew, Indians, and other hardships. They had few roads or maps, and were without GPS while navigating the wilds of Texas.

In this day and age, we can mark plants with GPS to return to that exact spot at a later date and gather seeds, take digital images of unknowns, and quickly and easily send them to a hundred people to help identify the plant. We can lay fresh plants on a flatbed scanner, and scan them electronically to form a plant collection rather than drying them in a plant press the traditional way. Plus, we gather all of this new knowledge and send it out in electronic newsletters by e-mail or by accessing the Internet. So, technology is great but remember you can learn more by getting out on the ground, getting your boots on the ground as the saying goes, and observing plants and different range ecosites as compared to staring at plants on a computer screen. Get out and enjoy the great outdoors. There is a meaningful quote by J. E. Weaver, a famous prairie ecologist, which reads: *"Nature is an open book for those who care to read. Each grass-covered hillside is a page on which is written the history of the past, conditions of the present, and the predictions of the future."* We should all strive to get out and learn to "Read the Land."


Photo Credit: Stasney's Cook Ranch

Let's Talk Turkey

Story by Kimberly A. Burr
NRCS Soil Conservationist

For most of us, the most glorious season of the year is upon us: Spring! This spring has brought an abundance of moisture, resulting in lush, green vegetation bursting with magnificently colored wildflowers that brighten the landscape in a feast for the eyes.

As for the Rio Grande turkey, the abundance and diversity of native plant species is rivaled only by the increase in insect populations. Although diet studies of the Rio Grande turkey in Texas vary across the state, all indicate the resourceful turkey can survive on a variety of food items, including insects, grasses, forbs, woody plants, fruit, seed and even prickly pear cactus.

Like most wildlife, turkey diets differ throughout the seasons and across the state. Plus, lush forage growth, seed production, and insect populations are important for the spring and summer turkey diet with bumelia berries, prickly pear and tasajillo fruit as additional sources of nutrition during the summer months. During the fall and winter seasons, dominant foods can include woody mast, such as pecans, acorns or hackberry fruit as well as vegetation, seeds and cactus fruits. Also, wild onion, rescuegrass and filaree appear to help carry the turkey through the winter and back into the spring season.

Overall, the Rio Grande turkey is a hardy bird that will consume what is available at different times of the year. One would be hard-pressed to find a starving turkey in our region of Texas.

Texas

Adoption of the Texas State Flower

Did you ever wonder how the bluebonnet became the state flower of Texas? Perhaps inspired by the National Garland of Flowers of the 1893 World's Columbian Exposition in Chicago, Texas began the work of naming an official state flower in 1901. Historical records note three serious contenders for the position.

The open cotton boll was promoted by Legislator Phil Clement of Mills, Texas. Cotton was king in Texas in 1901 and he referred to his nomination as the "white rose of commerce." Though cotton was big business, the cotton boll as state flower didn't receive big support in the Legislature.

State Representative John Nance Garner of Uvalde would become Vice-President of the United States under Franklin Delano Roosevelt in 1932. But in 1901, he was promoting the flower of the prickly pear cactus as the best choice for the title of official state flower of Texas. He praised the hardy durability of the cactus and the "orchid-like" beauty of its flowers. John Nance Garner's nomination did not win the approval of the Texas Legislature, but his enthusiasm for the plant earned him the nickname of "Cactus Jack" which stayed with him his entire life.

John Green, of Cuero suggested the bluebonnet. His nomination was clarified by a group of Texas women.

The chapter of the National Society of the Colonial Dames of America in Texas suggested that the bluebonnet would represent the State of Texas most appropriately as its official state flower. To punctuate their suggestion, they acquired a bluebonnet painting by Miss Mode Walker of Austin and presented it to the Legislature.

The bill designating the blue bonnet or buffalo clover (*Lupinus subcarnosus*) as the official state flower of Texas was approved by the Regular Session of the Twenty-seventh Legislature, convened at the City of Austin and was signed by Governor Joseph D. Sayers on March 7, 1901. On this day, a seventy-year debate over which species should really be the state flower of Texas began.

The debate centered on the species of bluebonnet chosen to represent the state. The Legislators that approved *Lupinus subcarnosus* as the official flower were not aware that several varieties of *Lupinus* grew in the state. The variety adopted grows in the sandy, rolling hills of coastal and southern Texas. It was not as common as other varieties and some thought that its small, dainty blossoms were not the most attractive.

The issue was debated for 70 years. Favorites

emerged, among them the *Lupinus texensis*, common throughout central Texas and producing big, bold deep blue blossoms in the spring. The Legislature took their time. When they finally did get around to addressing the issue in 1971, they amended the 1901 statute, on March 8, 1971, to include *Lupinus texensis* and, gunshy, " any other variety of bluebonnet not heretofore recorded."

Essentially, all bluebonnets found in Texas are now considered the official flower of the state. Ostensibly, this would also include the pink and white varieties found in the state and under development. The bluebonnet is also known as buffalo clover, wolf flower and *el conejo* (Spanish for "the rabbit").

Source: Texas Statutes, (http://www.capitol.state.tx.us/statutes/statutes.html), September 12, 2005
Source: Texas Legislature Online, (http://www.capitol.state.tx.us/), September 12, 2005
Source: Texas Bluebonnets - Texas Pride, (http://aggie-horticulture.tamu.edu/plantanswers/flowers/bluebonnet/bluebonnetstory.html), September 12, 2005
Source: State Names, Seals, Flags, and Symbols: A Historical Guide, Third Edition - Benjamin F. Shearer and Barbara S. Shearer, Greenwood Press, 2002
Source: State Names, Flags, Seals, Songs, Birds, Flowers and Other Symbols: Revised Edition (Reprint)- George Earlie Shankle, Ph.D., The H.W. Wilson Company, 1938

Botanical Glossary Six Pack

Introducing a few descriptive words needed to understand plant talk

Leaf Shapes – with examples of plants having that leaf shape

Cordate: Heart-shaped, with a notch at the base and ovate in outline. *(Redbud, Indian mallow)*
Elliptic: Shaped like an ellipse, with widest part at the middle; in the form of a flattened circle usually more than twice as long as wide. *(Pokeberry, Coralberry)*
Lanceolate: Lance-shaped several times longer than wide, tapering at both ends, widest about a third above the base. *(Maximilian sunflower, Indian blanket)*
Linear: Resembling a line, long and narrow, with margins parallel to one another. *(Trailing Ratany, White milkwort)*
Oblanceolate: Lanceolate with broadest part above the middle and tapering toward the base. *(Bumelia, Toothed spurge)*
Ovate: Egg-shaped with widest part at the base. *(Horehound, Hairy tubetongue)*

Source: Shinners and Mahler's Flora of North Central Texas Web site: http://www.brit.org

Texas Mulberry: The Desirable One

Story and photos by Ricky Linex
NRCS Wildlife Biologist

Have you ever been considered guilty by association with a less than desirable party? Then you should be able to relate to the native and desirable Texas mulberry when compared to the introduced and detested White mulberry and its spinoff, the Fruitless mulberry. Texas mulberry, *Morus microphylla*, is found across the western two-thirds of Texas. Many sources suggest its range is generally west of the Colorado River, but it has also been found north and east of the mighty Colorado in Fisher, Jones, Haskell, Palo Pinto, Throckmorton, Somervell and Dallas Counties. It ranges from a shrub to a scraggly tree up to 20 feet in height. Texas mulberry will normally be found on dry upland sites on thin limestone soils, but the late Benny Simpson also reported finding it on igneous soils in the Chisos, Chinati, Vieja, Davis, and Hueco Mountains. Other common names include Mountain mulberry, Mexican mulberry and Wild mulberry.

The leaves provide the first clue that this small tree is not a Netleaf hackberry, for which it might easily be mistaken. The leaves are small, considering it's a mulberry with blades 1 ½ - 2 ½ inches long and ¾ - 1 inch wide, oval in shape with a very coarsely toothed margin. The leaves are very rough, almost sandpapery to the touch on both upper and lower surfaces. The leaves

(Continued on page 5)

What Do You Think?

Test your knowledge utilizing the above photograph and the following questions—answers are on page 7

1. Identify the plants in this photo.
2. Are cattle predominantly grazers of grass?
3. How does excessive and heavy grazing by livestock and exotic animals affect wildlife habitat?
4. How can proper stocking rates impact food supplies for wildlife?

(Continued from page 4) Texas Mulberry: The Desirable One

also show three prominent veins on the underside of the leaf at its base. A quirk of this species is the variability of leaf shapes ranging from an oval to one showing 3 lobes. The leaves also exhibit some curling; during hot, dry summers the leaves tend to or may curl upward like the brim of a western hat.

The bark of the Texas mulberry is light gray often tinged with red, and it is smooth with shallow broken scales. Twigs first have white hairs then become smooth with a light reddish brown to gray color. The wood is dark orange or brown with lighter sapwood. Native Americans used the wood for making bows and ate the small red to black fruit produced in May. Flowers are so small they are normally described as inconspicuous. Many species of wildlife utilize Texas mulberry including white-tail and mule deer which will browse small trees sometimes to the point of death. Game birds, including all of the quail species in Texas and song birds such as mockingbirds and cardinals, are fond of the small fruits.

Management of Texas mulberry can include putting a cage around an existing shrub or tree to prevent browsing by deer, cattle or exotics. Gathering of ripe seed and scattering where you want it to grow is one option to increase the amount of Texas mulberry on your land. Germinating the seed and transplanting as one-year-old seedlings is possible. Semi hardwood cuttings can be taken in late summer through early fall, treated with rooting hormone and kept in well drained potting soil under mist. The difficulty of getting young plants established underscores the importance of taking care to preserve and protect the Texas mulberry plants you find on your ranch.

Texas mulberry is rare enough to be considered a desirable jewel that adds diversity to the habitat you manage. Next time you are walking on a thin limestone soil be on the lookout for Texas mulberry, the desirable mulberry.

Blowers, Throwers, Floaters, Rooters, Pooters, and Clingers: Mechanisms of Seed Dispersal

Story by Steve Nelle, NRCS Wildlife Biologist
Photographs by Ricky Linex, NRCS Wildlife Biologist

Native plant communities are constantly changing. The vegetation on any given piece of land changes in response to weather, grazing, fire, wildlife populations and other factors. Major disturbances such as flooding, drought, wildfire or extreme overgrazing cause bigger and faster changes. Most changes, however, are too slow and gradual to even be noticed unless one is a careful observer.

Understanding some of the ways that plants disperse and spread makes us more aware of the dynamics of vegetation change. The title of this article describes several of the most common ways that seed and plants move from place to place, and gives insight into how such change takes place.


Blower: Old Man's Beard

Blowers are those plant species designed to disperse their seed by the power of wind. These plants produce light fluffy seed that can be picked up by the wind and blown for some distance. Grasses that produce wind dispersed seed include many of the bluestems, pappusgrass, trichloris, some species of chloris, and possibly some of the grama grasses. Unfortunately, this technique was formerly used to hasten the spread of K. R. bluestem. Ranchers, desperate for a grass that would grow on denuded ranges following the drought of the 1950s, would take saddlebags full of K. R. seed and ride along windswept ridges throwing out hand-full's of seed. Many thousands of acres in the Hill Country were reportedly seeded this way. Other grasses such as tumblegrass, plains lovegrass, and tumble lovegrass are designed for the entire seedhead to break off and tumble across the ground, and blown by the wind as seeds are scattered along the path. This is similar to the well known way that tumbleweed or Russian thistle is spread.


Thrower: Violet ruellia

Forbs that spread their light feathery seed by blowing include heath aster, gayfeather, goldenrod, ironweed, windflower, prickly lettuce, goldaster, milkweeds, milkvines, skeletonplant, thistles, basketflower and bluestar. These forbs, as well as some of the more include both highly desirable climax blow seed include mountain mahogany, weedy species. Some woody plants that low, black willow, and cottonwood. A old man's beard, baccharis, desert wil- seed that occurs on maple and ash. As variation of blowing seed is the winged canopy, they may get blown some dis- the seed helicopters down from their tance on a windy day.

Throwers are those plants that have the interesting ability to fling seed from spring loaded seed pods. Several plants that em- ploy this method of seed dispersal in- clude bluebonnet, various wild beans, native vetches and some other legumes, anisicanthus, ruellia, and hairy tubetongue.


Floater: Eastern gamagrass

Floaters are those plants that produce light seed easily floated down slope during heavy rain or downstream during flooding. Upland species whose lighter seed might be easily washed downhill include menodora, engelmanndaisy, winecup, rain lily, sideoats grama, green sprangletop, and tridens. Lowland and riparian species often have floating seed to aid in dispersal to downstream floodplains. These species include eastern gammagrass, rice cutgrass, button bush, pecan, walnut, oaks, elms, cypress, sycamore, bois 'd arc, salt cedar, sumpweed, and ragweed. Willow and cottonwood mentioned above as blowers, are also floaters, as the windblown seed that falls into creeks floats downstream until it rests upon a freshly deposited sandbar for quick germination.

(Continued on page 9)

What Do You Think? (*Answers from page 5)*

Top Row
Left to Right: Prickly ash, Gayfeather, White milkwort, Live oak, Redseed plantain, Redbud, Vetch, Fringed Puccoon, Frogfruit, Spiderwort.

Middle Row
Left to Right: Skunkbush sumac, Engelmann's daisy, Yellow wood sorrel, Texas bindweed, Missouri primrose, Bush sunflower, Scurf-pea, Bundleflower.

Bottom Row
Left to Right: Fragrant mimosa, Elbowbush, Greenbriar, Lindheimer copperleaf, Inland ceanothus, Carolina snailseed, Knotweed leaf-flower, Rock daisy, Indian mallow, Cobaea Penstemon, Catclaw sensitivebriar.

2. Although cattle primarily graze upon grass, they do consume forbs and leaves of woody plants. While cattle cannot be as precise in selecting what they eat compared to the narrower jaws of deer, sheep and goats, the manner of wrapping their tongue around and tearing off the vegetation causes some forbs to be eaten by cattle.

3. Consider these numbers: An 1,150 lb. cow consumes 2.6 percent of its body weight (air dry weight) in forage each day = 30 lbs. of grasses, forbs and browse consumed daily. A cow taking in 10 percent of her diet in forbs and browse will consume 3 lbs. daily (85 percent of one deer's food needs). In overgrazed situations where grass is in short supply, cattle will consume more forbs and browse to meet their 2.6 percent level. In extremely overgrazed situations or droughts, up to 50 percent of the diet may be forbs and browse = 15 lbs. (equivalent to the food needs of 4.29 deer).

4. An accurate count of all livestock, native and exotic wildlife should be taken into consideration when determining the proper stocking rate. A forage inventory of your land will tell how much forage is available. Dividing the available forage by the total animal units that will be grazing can tell you whether or not you have sufficient forage to be properly stocked. Also, animal numbers must be flexible annually and based on available forage. Contact your local NRCS or TPWD office for assistance in determining how much forage your land is producing. You will probably be amazed at what proper stocking really is. Livestock and wildlife can co-exist on healthy rangeland, only if the animal numbers are in balance with the forage produced. Livestock grazing is good for rangelands when numbers match available forage. Even ranches managing only for wildlife can use a short period of grazing by cattle every few years to remove accumulated grass production allowing forbs and young woody plants room to germinate and grow.

What the HECK is BRIT?

Story by Ricky Linex

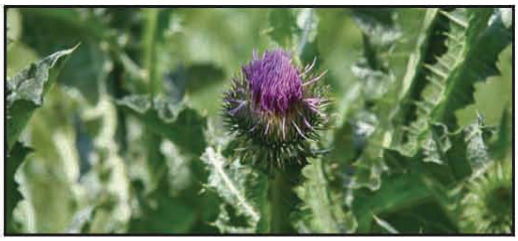
Visitors to The Botanical Research Institute of Texas (BRIT) in Fort Worth, Texas, will be given a glimpse into the history of early-Texas botanists, and the treasure trove of botanical history housed at BRIT. The staff at BRIT has researched the earliest plant collectors, who traveled across the rich diversity of Texas in the early 1800s, collecting plants that were unknown to the botanists of Europe and the early-American colonists. These early botanists, with names you often recognize as a genus or specie, including Berlandier, Drummond, Lindheimer, Wright, Reverchon, Boll and Roemer. Imagine the perils and hardships of traveling across an untamed Texas during the period of 1820-1840 collecting plants.

BRIT employees are diligent in protecting and preserving existing and new specimens that are part of the 1.1 million plant mounts in the BRIT herbarium. Joe McIntire, retired Texas Soil Conservation Service area conservationist, who toured the facilities during the 2005 International Society of Rangeland Management meeting, was shown one of approximately 150 specimens he had collected in 1958 and donated to the herbarium. These mounted plants contained Mr. McIntire's original collection label.

The BRIT library contains thousands of rare, out of print plant taxonomy books and periodicals. The library is available for use by those seeking information on plants. BRIT is available online at www.brit.org, so visit this Web site to expand your knowledge of plants.

WANTED

SCOTCH THISTLE a.k.a "Onopordum acanthium"



WANTED FOR ENCROACHMENT INTO TEXAS RANCHES, NATIVE OF EURASIA

HAS BEEN SEEN IN

Coryell, Denton, Erath, Gillespie, Johnson, Kerr, Parker, Wichita & Young County. Be on lookout in other North-Central and West Texas counties. Introduced Biennial first seen in Texas at Fort Worth Stockyards in 1938 Will be found with purplish flowers and armed with sharp spines over all surfaces Normally first spotted on shoulder of roads and high-ways then spreads into pastures

APPROACH WITH CAUTION

Prevent seed production at all cost. Easily controlled in rosette stage with conventional weed control herbicides such as a mixture of 2,4-D + Picloram.

United States Department of Agriculture
NRCS Natural Resources Conservation Service

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(Continued from page 6) Blowers, Throwers, Floaters, Rooters, Pooters, and Clingers: Mechanisms of Seed Dispersal

Rooters are those plants that can reproduce without seed. These plants also produce seed, but often they spread more efficiently by root. This vegetative reproduction can take place either from above ground stolons or runners or from below ground rhizomes and root sprouting. Some of the more well know rooter grasses include buffalograss, curlymesquite, vine-mesquite, knotgrass, western wheatgrass, big bluestem, false switchgrass, Texas bluegrass, inland saltgrass and of course johnsongrass and bermudagrass. A large number of riparian sedges and rushes also spread this way. Rooter forbs include heath aster (also a blower), Mexican sagewort, prairie acacia, snakeherb, hairy tubetongue (also a thrower), low menodora (also a floater) and Mexican evening primrose. Woody plants that spread by rooting include wild plum, bumelia, western soapberry, Eve's necklace, greenbriar, shin oak, live oak, flameleaf sumac, trumpet vine, and roughleaf dogwood.


Rooter: Mexican sagewort

Pooters as you might guess are those plants that disperse their seed in the droppings of animals. Animals that participate in this method of seeding include livestock, deer, small mammals, such as raccoons, rabbits, coyotes and fox, along with many kinds of fruit eating birds. Mesquite may be the most famous for this. After the tasty beans are eaten by cattle, the hard seeds are deposited in nice, wet, nutrient rich cow pies. Another well-known pooter type plant is juniper whose berries are eaten by robins, waxwings, bluebirds and thrashers. The birds quickly pass out the undigested seed to perpetuate the next generation of juniper. Other pooters are snailseed, hackberry, wolfberry, pokeberry, bloodberry, yaupon, possum haw, mulberry, bumelia, prickly pear, lotebush, Texas nightshade, sumac, greenbriar, dewberry, hawthorn, black cherry, Virginia creeper, passion flower, grape, algerita, persimmon, and many kinds of cacti. Various hard-seeded plants such as panicums, bristlegrasses, and many kinds of legumes that can withstand the digestion process are also spread in this manner.


Pooter: Mesquite seedlings

Clingers are the plants that have developed various appendages or hooks that allow the seed to become easily attached or entangled in the haircoat of passing animals for a free ride until they fall off or are dislodged. Several of the most hated plants that use this method of seed dispersal include cocklebur, horehound, devil's claw, beggars lice, sandbur, and field ragweed. Plus, other clingers include threeawn, Texas wintergrass, several brome grasses, hooked bristlegrass, bottlebrush squirreltail, mentzelia (stickleaf), bedstraw, tick clover, bur clover, sensitivebriar, and some species of mimosa. An obnoxious variation of clingers are certain types of cactus such as dog pear, cholla and tasajillo. The needle sharp spines, that have minute barbs, stab passing animals. Once the spine sticks into an animal, the animal actually pulls off part of the plant. When the cactus joint finally falls off the animal, it has the ability to root and form a new plant. Yet another type of clinger plant is gummy lovegrass, as well as several kinds of spiderling that use sticky residue on the seedhead and seed to loosely tack themselves to passing animals.


Clinger: Bedstraw

You may be asking, "What practical significance is there in all of this botanical trivia?" Admittedly, maybe very little. But for those who are willing to think in non-traditional ways, there may be some helpful hints to use to aid in the spread of certain desirable plants. For example, a seeding of blower grasses could be done in a series of long narrow bands crosswise to prevailing wind. Or, when some mechanical type of brush control is done, the slash and dead brush can be left scattered across the pasture, forming thousands of perches for birds that will be dropping seeds on fresh, newly disturbed ground. Many observers have noticed the speed and success of natural revegetation when dead brush is left laying on the ground rather than being raked up. Many desirable species that

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Plants of North Central Texas

Three-Flower Melicgrass (*Melica nitens*) is a somewhat uncommon grass that everyone should be on the lookout for in order to make a seed collection for the NRCS Plant Materials Center (PMC) located just outside of Knox City, Texas. The following link gives a good description of the grass, and the purpose for the seed collection. The seed heads are out now, but will not be mature enough to strip until mid-June to mid-July. The address for Knox City PMC is located in the link:
http://www.tx.nrcs.usda.gov/technical/pmc/species/threeflower.html

Habit - Three-flower melicgrass is a perennial, cool-season bunchgrass that grows 24 - 36 inches tall. This grass reproduces by seed mostly April to June.
Leaves – leaf blades may be smooth or with hairs, flat, 3 - 10 mm broad.
Inflorescence - panicle is mostly 10 – 26 cm long with lower branches usually compound, spreading or ascending.
Spikelets – much longer than broad (8 – 15 mm long)
Habitat and Range – Three-flower melicgrass is found from Pennsylvania to Iowa and Kansas, and south to Virginia, Arkansas, Oklahoma and Texas. In Texas, it is most often found in the Edwards Plateau and the North Central regions, but can be found west to the Trans-Pecos and East to the western portion of East Texas. It grows in open woods, on moist canyon slopes, in canyon bottoms, on rocky grasslands, as well as along stream banks and along roadsides. Three-flower melicgrass tends to prefer partial shade and calcareous or sandy loam soils.
Other - Three-flower melicgrass requires partial shade and medium amounts of water. This bunchgrass is excellent for wildlife and the enhancement for water quality. *(Photo Credits: Ricky Linex and NRCS Texas)*

Three-flower Melicgrass
(*Melica nitens*)

Adoption of the Texas State Flower

The Real Debate in Texas

Excerpt from Shinners and Mahler's Flora of North Central Texas

Did you ever think where the battle over the state flower of Texas came from? In 1901, the Texas legislature was in the process of adopting a state flower. "… in the House, debates were flying fast and furious as one legislator launched his appeal for his favorite, to be followed by more eloquent protestations of the virtues of yet another. Phil Clement of Mills pleaded the case of the open cotton boll, which he likened to 'the white rose of commerce'. John Nance Garner, later vice-president of the United States, jousted in behalf of the prickly-pear cactus flower. …Then up to the podium strode John M. Green of Cuero. As Green made his appeal for the beautiful bluebonnet, calls came from the floor asking, 'What the devil is a bluebonnet?'. …'You must mean 'el conejo'. "The rabbit" was a name used by the Mexicans because the waving white tip reminded them of the bobbing tail of a cottontail rabbit. 'No, no, no' roared another. 'He's referring to what some have called 'buffalo clover'.' … At this point, a group of stalwart Texas women rose to the cause. …The National Society of the Colonial Dames of America in the state of Texas … had originated the idea of using the bluebonnet as the state flower and they were not going to let their favored blossom be left by the roadside for a cactus bloom or cotton boll just because a bunch of representatives didn't know what it was. …A bluebonnet painting was sent for, and one painted by Miss Mode Walker of Austin was carried into the chamber. We are told by Mary Daggett Lake that 'deep silence reigned for an instant. Then deafening applause fairly shook the old walls.' The bluebonnet had won hands down." (Andrews 1986).

Unfortunately, due to confusion about common names and the fact that the legislators probably didn't know there were six bluebonnet species in the state, *Lupinus subcarnousus,* which some felt was the least attractive of the bluebonnet species, was officially designated as the state flower, rather than the more beautiful and widespread *L. texensis*. As a result, "For seventy years the argument kicked up dust in the halls of the state Capital until the politically astute representatives … decided to correct their oversight. In 1971, in order to make certain that they would not be caught in another botanical trap, they covered all their bases … by offering an additional resolution that would include 'any other variety of Bluebonnet not heretofore recorded'." As a result, because there are six *Lupinus* species in Texas, there are six state flowers.

**References: Shinner's 1953; Erbe 1957; Turner 1957; Andrews 1986; and Turner and Andrews 1986.*

(Continued from page 9) *Blowers, Throwers, Floaters, Rooters, Pooters, and Clingers: Mechanisms of Seed Dispersal*

spread from bird droppings are often found growing in these settings. Some have even suggested the stretching of wire across areas to encourage more perching by seed carrying birds.

For the one who may be willing to experiment to see what can be done, a series of small plantings can be established specifically for the purpose of seed dispersal. Desirable plants that employ several seed dispersal methods should be used. For central Texas ranges, where the objective may be a combination of improving grass cover as well as improving wildlife habitat and plant diversity, the following species might be planted in blocks and fenced to aid in establishment and seed production: little bluestem, Indiangrass, sideoats grama, vine-mesquite, buffalograss, gayfeather, heath aster, old man's beard, anisicanthus, showy menodora, Engelmanndaisy, winecup, Carolina snailseed, bloodberry, hackberry, prairie acacia, Mexican sagewort, and Eve's necklace.

Sites should be chosen that currently lack desirable vegetation, on slopes, with good wind movement and near to likely habitat for birds and small mammals. If the planting is fenced or caged, it should be constructed where the fence can be laid down as needed to allow livestock and/or deer to enter for further spreading of seed. Since many of these species are not commercially available, digging and transplanting from other locations may be required. While this may not be practical on a large scale, just remember that restoration begins one step at a time and one new idea at a time.

Many plants don't seem to fit neatly into any of these categories. There are other known methods of seed dispersal and there may be methods we have yet to discover. There is still much we have to learn about plant ecology, but one thing is for sure – it's more complex and more interesting than we ever imagined. Always continue learning.

Operation Pulse

Story and photos by Dr. Dale Rollins
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Operation Pulse is an attempt to document the presence and relative abundance of quail across Texas. It's not rocket science. You, and several buddies, drive along your property (or less-traveled county roads) and stop at one-mile intervals. You step outside the vehicle and listen for the number of **different** bobwhites heard whistling during a five-minute period.

Then you move on to the next stop, until you've made a minimum of six stops. Counts should be conducted during the last half of May, which is about the peak date for calling across most of Texas. More details on protocols and data sheets are available at the Rolling Plains Quail Research Ranch's web site, which is located on at (www.quailresearch.org).

When analyzing whistle counts, I think in multiples of three. If your average count finds less than 3 whistling cocks per stop, you're in the lower quartile; six cocks would be an average property; nine would be above average; and 12 would be exceptional. Now, anytime your counts exceed about 10 cocks calling, you'll be hard-pressed to differentiate among them, but that's a great problem to have! Sometimes it's easier to count the total number of whistles heard and not even try to differentiate among various roosters. Hearing a whistle about every ten seconds would be an average count. Hearing more than 100 bobwhite whistles (one every three seconds) in a five-minute period is excellent.

An El Nino weather pattern has blessed most of Texas' quail range with ideal fall-winter moisture, and a resulting green landscape of winter weeds which generally bode well for quail nesting. But the weak link in the quail equation may be the number of breeding birds available. Operation Pulse will be a good way to estimate one's breeding capital.

Participants are encouraged to report their data to me via e-mail so we can summarize trends from across the state. Results will be posted at our website on a county-basis, so your data will remain anonymous. Operation Pulse is sponsored by Texas AgriLife Extension Service's Quail Decline Initiative, Park Cities Quail, Bobwhite Brigade, Quail Masters, Texas Wildlife Association, Rolling Plains Quail Research Ranch, Caesar Kleberg Wildlife Research Institute, Texas Audubon and other conservation partners.

The perfect count team would involve a representative of all of the above, plus interested landowners. Remember that younger ears will likely yield higher counts than those dulled by repeated shotgun blasts and blaring dog whistles.