

LRWA Watershed Report

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Opinions expressed herein are not necessarily shared by LRWA



UPCOMING WORKSHOP: AFTER THE RAIN

SATURDAY, APRIL 18, 10am - 3pm, Castell, TX

COST: \$25 includes a delicious lunch by the Castell Store Restaurant

Sponsored by the LRWA and the LaCuna Center

You can [pre-register via this link](#) and also a brief onsite registration 9:30-10 am

The Texas Hill Country's aquifers are at risk due to decades of overgrazing and unsustainable land management. These practices have degraded native grasslands and reduced the land's natural ability to capture and store water. Without a shift toward regenerative grazing and restoration, both water security and ecological health in the region will continue to decline.

THE SPEAKERS:

Steve Nelle is a Wildlife Biologist with the Natural Resources Conservation Service working out of San Angelo. Learning from some of the very best land and wildlife managers in Texas, Nelle has a 35 year history of working with private landowners in the Rio Grande Plains, Trans Pecos and Edwards Plateau. His primary work involves helping landowners plan and carry out comprehensive range /wildlife/ watershed management, and promoting responsible land stewardship. He is a graduate of Texas Tech and is actively involved in the Society for Range Management and the Texas Wildlife Association.

Michelle Bertelsen is the principal senior ecologist of the Blackland Collaborative, that matches landowners with organization and design teams and science driven management plans to restore healthy, native, plant communities. Her goal: to bring back biodiversity and ecological function such as forage production, carbon sequestration, heat island mitigation, improving air and water quality, and creating habitat. Previously she oversaw the Lady Bird Johnson Wildflower Center's long term management and research program for 10 years. Education: B.S. in Ecology, Evolution and Conservation at UT-Austin, and is presently a MS candidate in Recreation, Parks & Tourism at Texas A&M.



Brian Wright is ranch manager and oversees the habitat restoration on the White Ranch in Mason County. He has successfully and safely used prescribed fire projects to remove brush and enhance the soil, and reversing the negative effects of years of overgrazing by cross fencing, rotational grazing and various conservation methods to provide water throughout the ranch. Wildlife has also exploded on the ranch from his management.

Carol Flueckiger is a Professor of Art at Texas Tech University where she was awarded Integrated Scholar status for her interdisciplinary approach to art. Educational partnerships that influence her classroom include Ogallala Commons leadership organization, Flower Power Wind Turbine corporation, Lubbock Arts Alliance and Elsewhere Studios art residency. She delivers outreach and engagement workshops geared for STEAM* audiences that link drawing strategies to conversations about sustainability.

*Science, Technology, Engineering, Arts, and Mathematics

EVERY DROP COUNTS: WHAT PRIVATE WATER SUPPLIERS CAN DO TO CONSERVE OUR WATER RESOURCES IN THE HILL COUNTRY

Suzanne Williams, Conservation Manager of the Texas Water Company, gave the *March Water Wonks lecture** about what private water suppliers can do to promote water conservation in our increasingly dry times. * *Water Wonks: monthly online presentations sponsored by GEAA (Greater Edwards Aquifer Alliance).*

The Texas Water Company provides water and also collects wastewater (to sell to other utilities) for customers in seven Hill Country counties between San Antonio and Austin.

Their largest resource has been Canyon Lake, but it is steadily dwindling from persistent drought, despite a slight recovery after the July 2025 floods. (TWC estimates a deficit of 60 inches affecting both the Edwards and Trinity aquifers.) And it's not just the Hill Country. Just read recent headlines about Lake Corpus Christi also drying up (for a variety of reasons), causing the city of Corpus Christi "to be headed for a 'water emergency' within months and to fully run out of water next year." ([See Inside Climate News articles from March 8](#)).

Here are some of the responses by TWC to their water shortage problem...

Number One is addressing LEAKY PIPES. It is estimated that **186 billion gallons of water annually is wasted**, an amount that by itself is water supply for Austin, El Paso, Ft. Worth and Laredo combined!

As we already know, Texas Governor Abbott declared a water emergency last year that led to Senate Bill 7, that was passed last November, namely, for \$1 billion a year to be put in the Texas Water Fund.

S.B. 7 was a very good step, but it takes times to implement: defining, getting

approved, and implementing proposals, so TWC is proactively pursuing multiple strategies, such as pausing new housing development agreements for services (a difficult decision for a utility company).

Meanwhile, TWC has also created a new tool, known as a "developer's agreement." The new "developer's agreement" (somewhat based on city-ordinance conservation methods), include instigating requirements for wastewater land dispersal: type and location of irrigation, and the quality of irrigated topsoil. The agreement was created by a TWC Conservation Advisory Committee composed of members from public and private sectors. Some details:

1. Drought Contingency Plans (DCPs) are to be updated almost annually instead of the former 5-year schedule.**
2. Educational Outreach: through social media, providing customers information about every conservation practice. Also: Presentations to conservation groups and the customers of HOAs.
3. For those not engaged in social media, maintain a "public information wall" in local libraries, full of brochures, etc. that demonstrate the effectiveness of even small everyday changes, such as reducing plastic by using bar soap instead of body wash... **also see the DO YOU KNOW next page.**
4. Educating all employees to teach conservation methods.
5. Promote **OneWater** ideas. With One-Water, ALL water has value whether it's stormwater, wastewater,



etc. Strategic placement of rain gardens (essentially depressions in the landscape). **Example:** include in the medians of parking lots that regularly receive a lot of stormwater because of location at the base of hills.



6. Another idea: new décor! Instead of hiding the **purple pipes** that carry reclaimed wastewater, have them exposed where possible as a form of advertisement and to demonstrate to observers how many ways we can reclaim and reuse water. (See picture above.)

7. **Successful Enforcement****, that first begins with education. For instance, some customers may have moved to our area from a “water-rich” state and are simply unaware. Others just make simple accidental mistakes.

TWC automatically sends email alerts for detected leaks that need repair. Yet some customers may have their alerts turned off, or they might be unaware because they just moved in and the Hill Country karstic ground makes leaked water disappear quickly. **If emails don't work, then phone calls ensue. Eventually: termination of services.**

Note: terminations are seldom necessary for individual customers. Instead, most terminations are to Builders – usually bad practices on a larger scale (!), such as leaving on the water in vacant homes.

**** Senate Bill 2662 (89th Texas Legislature), enacted May 30, 2025, enhances the enforcement of Drought Contingency Plans (DCPs) by water and sewer utilities. The bill, by Charles Perry (Lubbock), requires DCPs to be part of an Investor-Owned Utility's (IOU) tariff, allowing for the enforcement of mandatory water restrictions and empowering the Public Utility Commission of Texas to oversee compliance. This legislation addresses increased demand on water resources during persistent drought by ensuring water suppliers can effectively reduce customer usage.**

****DID YOU KNOW? (how to check if your toilets are leaking water?) Drip several drops of food coloring in the toilet tank, wait 10-15 minutes and if the food coloring appears in the toilet bowl – you have a leak.**



JUST HOW MUCH WATER WILL DATA CENTERS USE?

HARC's (Houston Advanced Research Center) white paper warns that current state water planning creates a "blind spot" for the rapidly growing data center industry, and calls for transparency and modernized forecasting to protect Texas resources.

THE WOODLANDS, Texas (January 21, 2026) – HARC released a new white paper today revealing the significant and largely unaccounted-for pressure that the rapid expansion of data centers places on Texas' water resources.

The physical backbone of artificial intelligence, cloud computing, and modern commerce, data centers are surging in Texas. Though the energy demands of these facilities have garnered mainstream attention, HARC's paper brings a critical, under-discussed issue into focus: their massive water footprint.

The report, *Thirsty Data and the Lone Star State: The Impact of Data Center Growth on Texas' Water Supply*, indicates that without modernized planning and policy updates, the state faces a collision between finite water supplies and one of the world's most resource-intensive industries.

"Texas is no stranger to industrial booms, having ridden waves of oil, gas, and manufacturing. But the data center surge presents a unique challenge that requires immediate attention," said John Hall, President and CEO of HARC. "Our analysis makes one fact unavoidable:

When we talk about data centers, we must talk about water. We have a rare window to shape how this industry grows and how Texas prospers. We can either plan now with foresight and transparency, or we will be forced to react later with our backs to the wall."

Key findings from the HARC paper:

- **Current State:** Existing data centers in Texas consume an estimated 25 billion gallons of water annually for electricity generation and cooling systems.
- **2030 Outlook:** By 2030, that figure could rise to between 29 and 161 billion gallons per year, potentially representing up to 2.7% of the state's total water use.
- **Planning Gaps:** The Texas State Water Plan, the primary tool for funding water infrastructure, relies largely on historical data. Consequently, it does not currently account for the forward-looking growth of data centers, leaving local communities to manage water security without adequate state-level support.

"Texas' water planning process has a structural blind spot," said Dr. Margaret Cook, HARC's Vice President of Water and Community Resilience and the paper's primary author. "ERCOT has begun developing processes to manage large load interconnections for energy, but no parallel process exists for water planning. This leaves utilities and city managers to negotiate individually with multinational technology firms, often without the data or leverage necessary to protect local resources and residents."

Continued next page...

Continued... The paper outlines a road-map for turning this challenge into an opportunity for state leadership. Recommendations include requiring large industrial users to report expected water and electricity use, integrating forward-looking forecasting into the State Water Plan, and incentivizes “water-lean” technologies such as dry cooling and brackish water reuse. “The resource footprint of data centers is not a future challenge; it

is already here,” said Cook. “By requiring transparency, incentivizing efficiency, and prioritizing alternative water supplies, Texas can accommodate the digital economy without compromising the reliability and affordability of resources for its residents.”

To read the full analysis and recommendations, [download the white paper at Thirsty Data and the Lone Star State: The Impact of Data Center Growth on Texas’ Water Supply.](#)

GOOD IDEAS

B2U Storage Solutions repurposes electric vehicle batteries which have reached the end of their automotive lives to provide power to the grid. By Arcelia Martin/Inside Climate News, Feb. 17, 2026

In the midday hours, prices plummet. An excess of energy produced across Texas, largely due to the state’s solar and wind fleet, signals it’s a good time to buy. It’s then that 500 batteries, which once fueled General Motors’ electric vehicles, charge up.

The batteries, now in their second careers, are kept in staggered steel mesh containers, powered by electricity sent across miles and miles of transmission lines until it reaches a site just east of San Antonio.

Then, as renewable energy production across the state dips as night rolls into morning and Texas begins to draw more energy from dispatchable fossil fuels, these retired EV batteries can sell power back to the state’s electric grid when the price fits.

The 24 megawatt-hour battery project is the first site online in Texas for B2U Storage Solutions, a California-based company. The firm plans to get three more battery sites connected to the Texas grid, bringing the total capacity to 100 megawatt hours of storage across Texas. The company estimates it’s enough energy to power some 3,300 homes for a day.

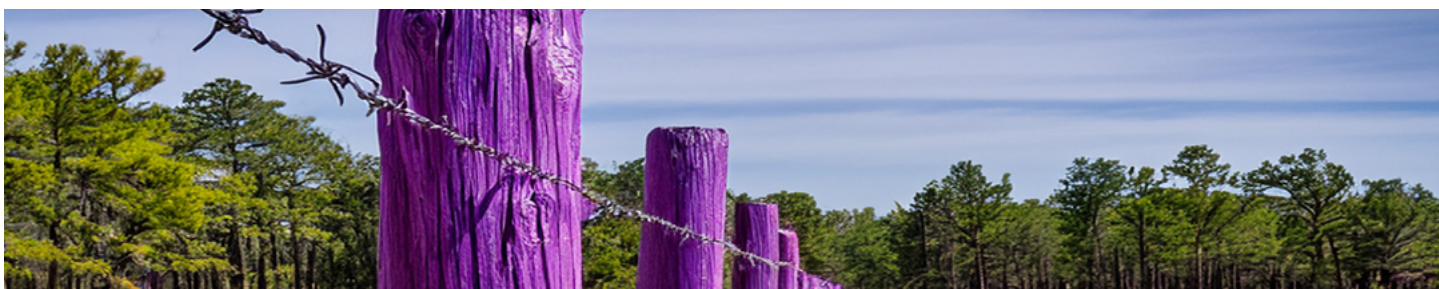


GOOD DEEDS

A huge shout-out to Pax Essential for supporting Junction’s Dark-Skies Initiative. Formally Pax Cedar Fiber, a Berje owned company, the facility has covered its new lighting fixtures with the Dark Skies compliant covers needed to protect one of Junction’s greatest assets. A special thanks to Beno Nelson and Adam Goodman for leading this initiative. So far, both of Junction’s new truck stops, Gordo’s and Pilot have also participated.

GOOD EVENT

(Wish I had gone!) **Roots of Conservation**, held in Mason at the Eckert Memorial Library on March 19 and sponsored by the Hickory Underground Water Conservation District. The event had speakers, tables, and raffles, and a ribbon-cutting ceremony on the Library's newly renovated Camp Discovery. Speakers included: **Brian Wright**, Central Basin Prescribed Burn Association and Winner of the SWCD 2025 Wildlife Conservation Award, **Mark Moseley**, Chairman of the McCulloch County SWD, **John Davis**, 2022 Texas Raincatcher Award, **Kory Perlichek**, TWPD Wildlife Biologist, **Rachel Farrington**, La Cuna Center, **JD Kidwell**, Habitat For Humanity, and **Austin Kelly**, Texas A&M University

**HAVE YOU EVER HEARD OF THE PURPLE LAW ENACTED BY TEXAS IN 1997?**

Did you know the color purple painted on fence posts or trees in Texas means no trespassing? Most people don't. Since 1997, Texas has had this unique law on the books. According to Texas law, a no-trespassing notice "can be in the form of readily visible purple paint marks of proper size and placement on trees or posts spaced no more than 100 feet apart on forest land or 1,000 feet apart on non-forest land."

The law also requires the purple paint markings be vertical, at least 8 inches long, at least 1 inch wide, with the bottom of the mark between 3-5 feet above the ground. The markings must be in a place visible by those approaching the property. In Texas, trespassing is a Class B misdemeanor, unless the intruder is carrying a firearm, which is a Class A misdemeanor. [From the Texas Trophy Hunters website.](#)

WANT TO PROTECT ALL OR PART OF YOUR LAND AFTER YOU'RE GONE?**CONSERVATION EASEMENTS in TEXAS**

They are a voluntary, legally binding agreement between a landowner and a qualified entity (like a land trust) that permanently restricts specific development rights on private land to protect its natural, agricultural, or scenic value. The landowner retains ownership, can sell, or pass the land to heirs, while often qualifying for significant tax benefits.

For further information, you can contact the following:

[Texas Land Trust Council](#)

[The Nature Conservancy in Texas](#)

[Texas Agricultural Land Trust \(youtube video\)](#)

[Natural Resources Conservation Service \(NRCS\)](#)

CHILLING HOURS FOR PEACH TREES by Glen Coleman

Nothing on earth can beat a summer peach, picked fresh and dripping with liquid sunshine.

Peaches do well along the Llano, shrugging off our alkaline soil and getting by on a few deep waterings a month during our hot months.

Sadly, as I go through the line at Home Depot or Tractor Supply, I see a lot of people buying young peach trees that will seldom, if ever, bear fruit. **The key to success with the Hill Country's most iconic fruit is understanding something called a "chilling hour."**

Chilling hours are the number of hours experienced over a given winter where the temperature is roughly between 45 degrees and freezing. It's how the plant counts the days until it's safe to blossom. Blooming too late will cost the plant growing time, but blooming too early risks damage by a late frost. Each variety of peach is bred to have its own preferred number of chilling hours. Each will break bud around the time they receive that number. In this manner, a breeder can time the bud break to maximize spring growing weather, but avoid getting nipped by the year's last frost.

To enjoy a good crop most years, find out the number of chilling hours for your area and match the variety of peach to your local number. For example, the Redskin Peach needs around 750 chilling hours; it's a perfect match for Junction. Whereas the June Gold, with 600 hours, is a popular peach in slightly warmer Fredericksburg.

A Florida King needs about 300 chilling hours; it thus breaks bud too soon, and those buds would always be nipped by February frost up here on the South Llano.

My Harvester and Loring peaches would really prefer over 850 chilling hours, so most winters their blooms are pretty anemic. With a good cold winter, they are the stars of the show.

My Early Elbertas need 750 chilling hours, and most years that's a perfect match for my orchard. Big box retail chains are supplied by wholesalers based on the lowest cost, not based on what is right for your area. One supplier in an eastern state may send thousands of saplings off to be purchased by consumers hundreds of miles away who think they are getting something viable for their area. Stop and check.

Google your chilling hours. Google the variety of peach on the tag. If the two numbers mostly overlap, you should be good to go. Local gardening shops typically sell what they know to be best for the community. But in either case, check the variety against your local chilling hours. **It's easy, and there is no substitute.**





HOW DO FLOWERS KNOW IT'S SPRING? A BOTANIST EXPLAINS

(By Gregory Moore, School of Agriculture, Food & Ecosystem Sciences, The University of Melbourne, Australia)

For many plants, spring is just a really good time. They have endured a cold, dark, hard winter and in some places, winters can be murderously tough for plants. It makes sense that when spring comes around, plants are ready to take advantage of warmer temperatures, longer days and more sunshine. They resume growth after their winter dormancies and many rapidly produce flowers.

You've probably been spotting the sudden springtime explosion of flowers everywhere on your neighborhood walks, your commute or in your own garden.

But why exactly do flowers go crazy in spring, and how do they know exactly when to show up for duty? Here's the science.

Letting loose in a big rush

For many plants, the conditions for growth in spring are close to ideal. Water, warmth and sunlight are suddenly readily available. Plants don't have to hold back anymore. They can resume almost unconstrained growth and have the energy and resources to invest in flowering.

Your garden (or a patch of natural bush) is, in fact, a highly competitive environment. Plants will rush to produce masses of flowers in the hope this will give individual plants an advantage in the reproductive race that ultimately might lead to seed and reproduction. This, after all, is the universal goal of biological success.

There is another factor, however, that also influences spring flowering.

The birds and the bees (and other insects)

Flowering plants (known as angiosperms) are relatively recent arrivals on the evolutionary time line. They first became significant during the Cretaceous Period, about 100 to 120 million years ago. By then, insects had already been on the scene and evolving for millions

of years. Birds had evolved more or less at the same time as these flowering plants, becoming more common during the Cretaceous Period too, but a few million years earlier. These creatures, the plants noticed, were excellent at dispersing pollen and seeds. Many flowering plants evolved to use their helpful services.

Before the angiosperms, ancient plants used spores for reproduction. Conifers, which had evolved hundreds of millions of years before angiosperms, used wind to disperse their pollen. Seed dispersal was often limited, unreliable and slow. Flowering plants needed to attract pollinators and seed dispersal vectors, such as insects and birds. Many developed flashy and showy flowers: the epitome of good advertising.

So flowering in spring coincides with the return of migratory birds and the life cycles of insects (insect activity usually declines over winter). It makes great sense that many plants flower when the insects and birds so vital to their reproductive success are also getting active (and getting busy). It is a matter of great timing that benefits all involved.



Timing is everything

The way flowering plants time their flowering is superb biology.

Many people assume warmer temperatures trigger spring flowering. But temperature is renowned for its variability and unpredictability. Temperature is not a good indicator of season or time.

So most plants measure day length using a green pigment called phytochrome (literally plant colour). This exists in two forms, one of which is active in triggering plant metabolism.

This phytochrome system enables plants to measure, with remarkable accuracy, both day length (also known as photoperiod) and the night length. (Phytochrome system: a photo-receptor mechanism in plants that acts as a biological light switch, monitoring light quality (red vs. far-red) to regulate growth, germination, and flowering. It cycles between 2 forms: inactive Pr (absorbs red light) and active Pfr (absorbs far-red light). The ratio of the two forms allows plants to measure time like a biological clock.

Photoperiod is a very accurate and reliable measure of time and season and so plants nearly always get their flowering times in spring right. (photoperiodism: the response of an organism to seasonal changes in day length (for flowering, mating, or migrating, etc). Like a biological calendar.)

In some plants there is an extra feature that can affect flowering, where the plants produce an inhibitor (abscisic acid) before winter that keeps them dormant.

Abscisic acid is cold-sensitive. So when spring comes, the inhibitor level is low. This, combined with photoperiod, helps initiate flowering. The two mechanisms combined are a very reliable and consistent trigger for flowering.

Advantages to being a flower in spring

Flowering in spring means plants can use insects and birds to facilitate pollination and disperse seeds.

The pollen can be spread effectively and in a targeted way to other flowers of the same species. Less valuable pollen is wasted than if you're relying on wind dispersal.

The seed can spread over much greater distances. The seed for many species will germinate during spring when growth conditions are highly favorable.

It's not a coincidence flowering plants with this type of reproductive biology spread around the globe very quickly after their emergence during the Cretaceous Period.

They are highly efficient and successful plants.

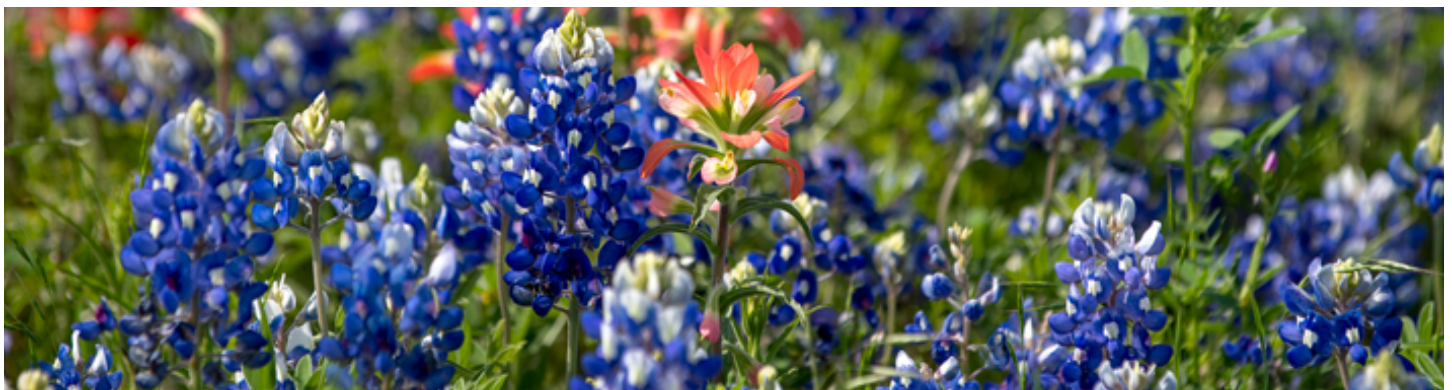
Not everyone can be a flower in spring

So why don't all flowering plants bloom in spring?

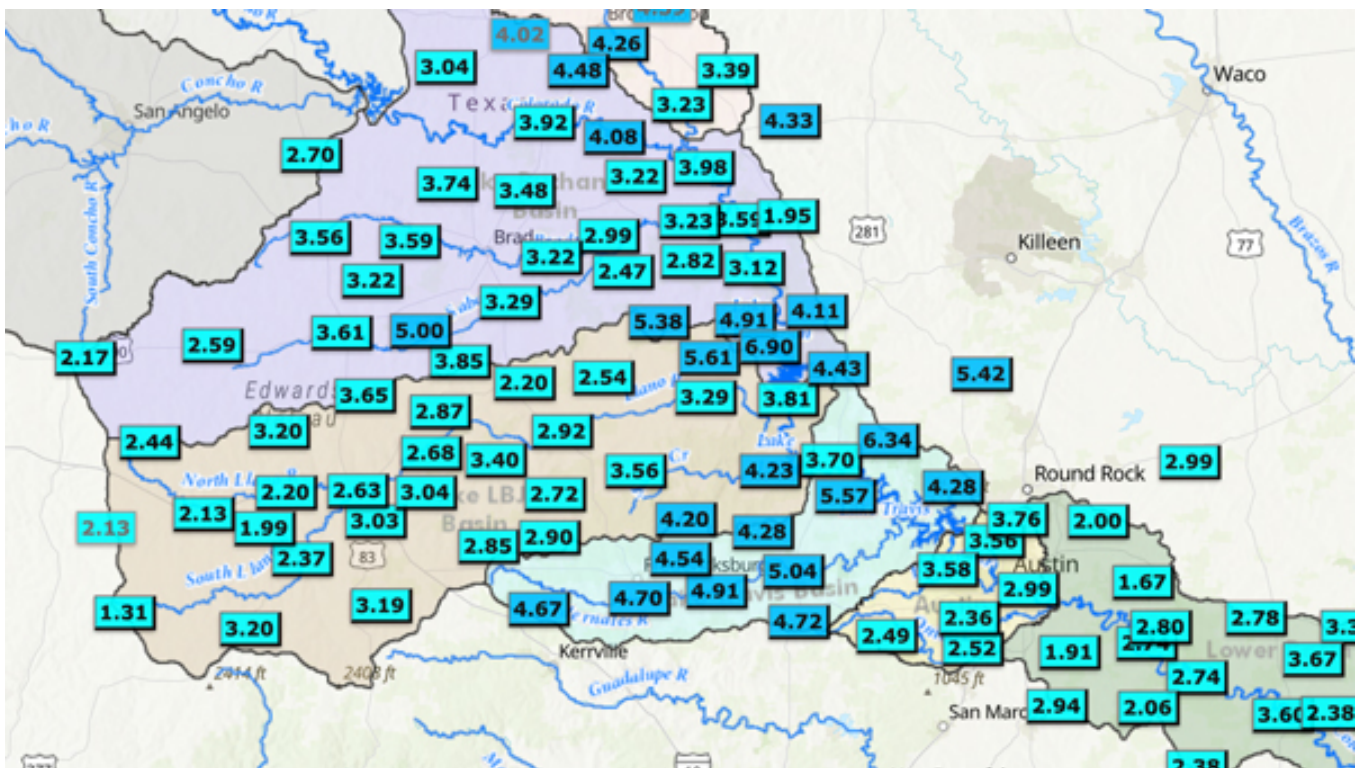
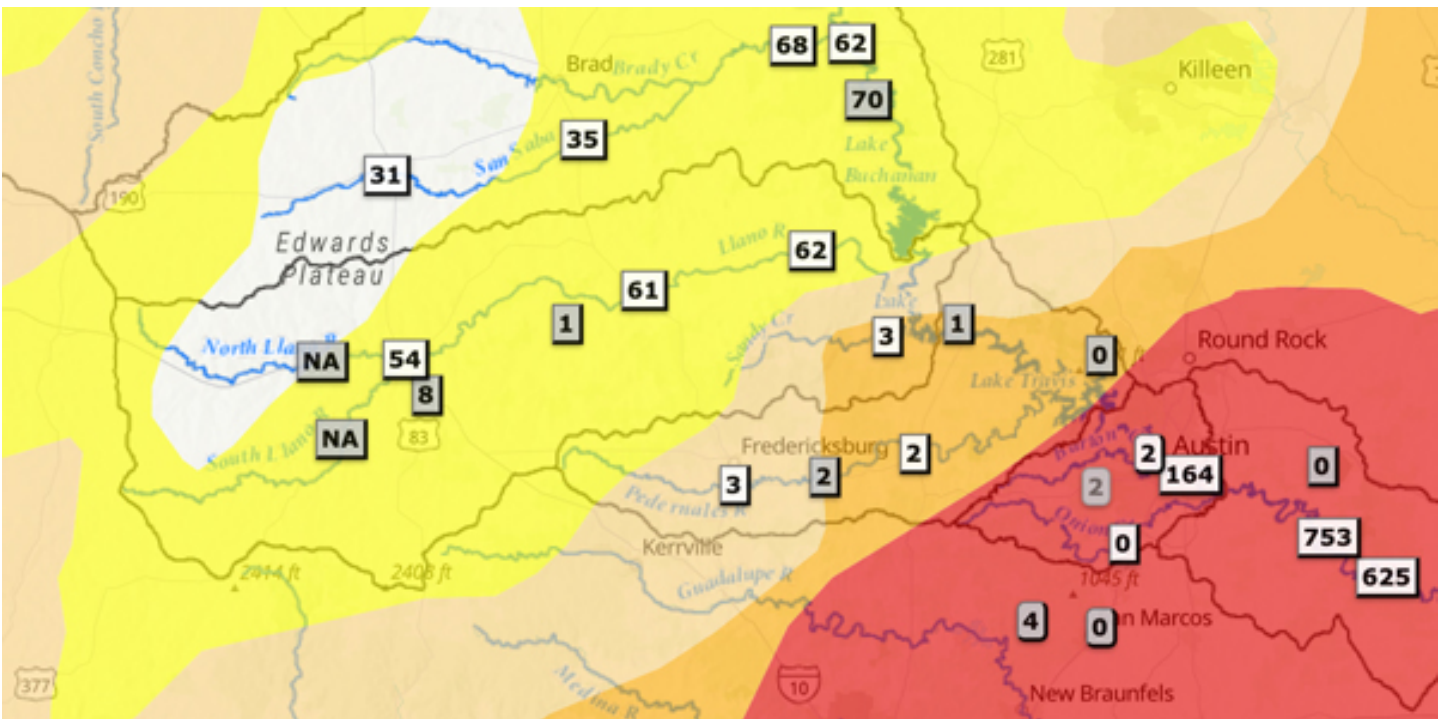
It is one of the delights of biology that there is nearly always room for contrarians and exceptions. Some plants flower in autumn or perhaps during winter and some in summer, but there is always advantage in them doing so. Sometimes it's to avoid the fierce competition from all those other spring flowers in attracting pollinators. Sometimes it's because they are focused on a particular insect or bird vector that another season suits better. Sometimes it's because the plants can only survive in a highly competitive environment by not flowering in spring.

In the complex web of plant biology, a one-size-fits all approach never works.

Spring flowering has a lot going for it – as the current profusion of flowers attests – but many plants have simply made success of being different.



TOP: LCRA Hydromet River Stage and Drought Monitor for this year as of 3.30.26
BOTTOM: Rainfall this year as of 3.30.26



Lower Colorado River Authority’s Hydromet is a system of more than 275 automated river and weather gauges throughout the lower Colorado River basin in Texas. The website displays gauges maintained by the City of Austin and USGS. The Hydromet provides near-real-time data on stream-flow, river stage, rainfall totals, temperature and humidity. <https://hydromet.lcra.org>

INVASIVE SPECIES IN TEXAS

ARUNDO DONAX IMPAIRS CREEK HEALTH.

Invasive species like *Arundo* (giant cane), privet and others can harm Texas creeks and rivers. They devastate habitat and keep our waterways from providing essential ecosystem services, such as recreation, fresh water supply, and drought and flood protection.

DOCUMENTED IN

136+

Texas counties,
most problematic in several Hill Country rivers and along the Rio Grande.

Arundo can grow up to **2 INCHES PER DAY**, crowding out and replacing native plants.

FISHING & BOATING IMPACTS

Arundo and other invasive plants degrade habitat for fish such as Guadalupe bass, the official state fish of Texas.

Blocks access for bank, wade, and kayak fishing, a **\$14-32 million industry** in the Hill Country.

DAMAGE TO RIVER BANKS

Arundo roots are very weak below the surface, causing river bank erosion.

They crowd out native grasses whose roots reach more than **6 times** deeper, stabilizing banks. An unmowed native buffer acts as a sponge and helps absorb water.

DROUGHT & FLOOD RISK

Arundo's high wax content makes it a wildfire hazard—particularly during drought.

Can increase the area impacted by flooding up to **10%**

Keep our creeks healthy. Prevent invasives:

1 **Don't mow, let it grow**
2 **Let woody debris be**
3 **Plant natives**

Join the Healthy Creeks Initiative: tpwd.texas.gov/HealthyCreeks

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Healthy Creeks Initiative to Combat Invasive Arundo

FOR COMPLETE INFORMATION, Please go to <https://www.llanoriver.org> and then click on the link that reads: **Healthy Creeks Initiative to Combat Arundo**