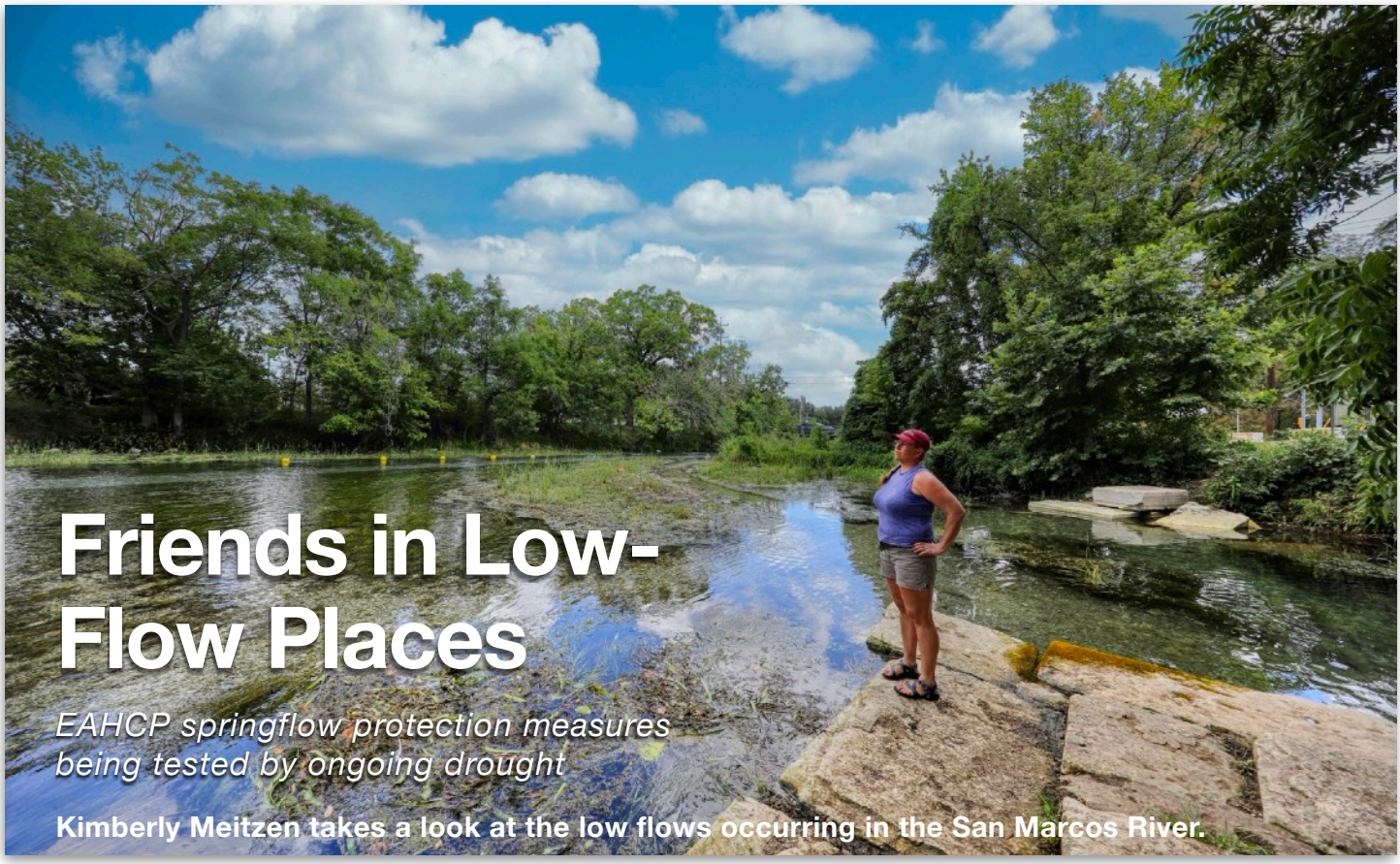
EAHCP STEWARD

News from the Edwards Aquifer Habitat Conservation Plan - August 2022



Friends in Low-Flow Places

EAHCP springflow protection measures being tested by ongoing drought

Kimberly Meitzen takes a look at the low flows occurring in the San Marcos River.

When submerged aquatic vegetation becomes not so submerged, you know you've got a problem at hand. And while the current drought is reducing flows from the San Marcos Springs, the situation is not only cause for concern but validation of EAHCP springflow protection measures as well.

"Drought has caused flows in the San Marcos Springs to fall below 100 cubic feet per second (CFS) which triggers some additional measures outlined in the Edwards Aquifer Habitat Conservation Plan (EAHCP) to be taken to protect endangered species living there," said Dr. Kimberly Meitzen, Associate Professor of Geography and Environmental Studies at Texas State University. "The unusual aspect of this year's relatively short drought pattern is that San Marcos springflows are already at low levels experienced during the year-long drought in 2009 and the more lengthy one in 2011-2014. In the 2011 timeframe, the entire state was experiencing exceptional to extreme drought conditions. This year, Central Texas is one of the places getting

hit the hardest. You just have to be ready to implement existing species protection measures and do your best to learn how the endangered species react in these dry conditions for future reference."

Low springflows create ankle-deep water in the San Marcos River and exposed Texas wild-rice.

In 2022, Texas State University, which manages the area around Spring Lake and the headwaters, adjusted their fences and allowed recreation to resume in the Spring Lake Dam reach of the San Marcos River. And as expected, the wading, canoeing and other recreational activities have caused a reduction in Texas wild-rice and other native submerged aquatic vegetation. This increase in recreation combined with decreasing springflows during drought conditions has caused a decrease in suitable habitat for endangered species such as the fountain darter.

"The Spring Lake Dam [area] is a favorite spot for people taking photos and groups camping out for the day," Meitzen noted. "But this area is also home to San Marcos salamanders and fountain darters. While there are several habitat areas in Spring Lake for the salamanders, once you get into the San Marcos River, there are two main areas for salamander habitat and one of them includes the eastern spillway just below the Spring Lake Dam. Salamanders live just under the rocky substrate of the river bottom and are not easily visible. Fountain darters hover just above the rocks and in the river's vegetation. The extra foot traffic in that area from visitors can harm or kill those species and take out a lot of the Texas wild-rice. So, while we understand the importance of recreation in the San Marcos River, we also need to balance that activity with our responsibility to protect the endangered species there."

Prior to implementation of the EAHCP, there was about 4,000 square meters of Texas wild-rice in the San Marcos River. After protective measures and active plantings began in 2013, that number grew to a very healthy 11,000-12,000 square meters of coverage system wide in 2019. Additionally, the expanded coverage of wild-rice creates increased ecosystem resiliency and capabilities to withstand drought pressures and recreational activity.

One of the ways the EAHCP accounts for the numbers of salamanders and fountain darters in the river is by measuring the amount of protective vegetation cover found there. Each spring and fall, an EAHCP contractor uses a kayak-mounted GPS system to measure the amount and diversity of aquatic vegetation coverage in the river. With the drought conditions and springflows hitting the 100 cubic-feet per second trigger, the EAHCP required mapping of the Texas wild-rice. This information will give program managers valuable data to use in implementing future protective measures as they learn how and where the river's Texas wild-rice recedes in lower springflows.

Low springflows triggered a provision in the EAHCP for additional sampling routines.

While this set of conditions is not ideal, Meitzen was quick to point out in the bigger picture, reductions of pumping from the Edwards Aquifer due to various drought stage requirements and new water resources for the region help maintain springflows during these drought cycles. Plus, she noted that the robust EAHCP refugia program will be available if the region faces another drought of record anytime soon. The refugia houses varying numbers of EAHCP Covered Species which would be reintroduced into the San Marcos (or Comal) ecosystem if any type of emergency situation were to occur.

“I’ve mentioned many of the efforts the EAHCP team is doing to protect endangered species during the current drought, but anyone who visits the San Marcos River and all water users throughout the region have responsibilities too,” Meitzen emphasized. “If you are enjoying the river, we encourage you to not only stay out of the marked areas but to read the signs and understand why these precautions are implemented. Likewise, every effort should be made to conserve water each day. This type of collaborative approach gives us the best opportunity to keep these unique springs flowing despite any prolonged dry spell."

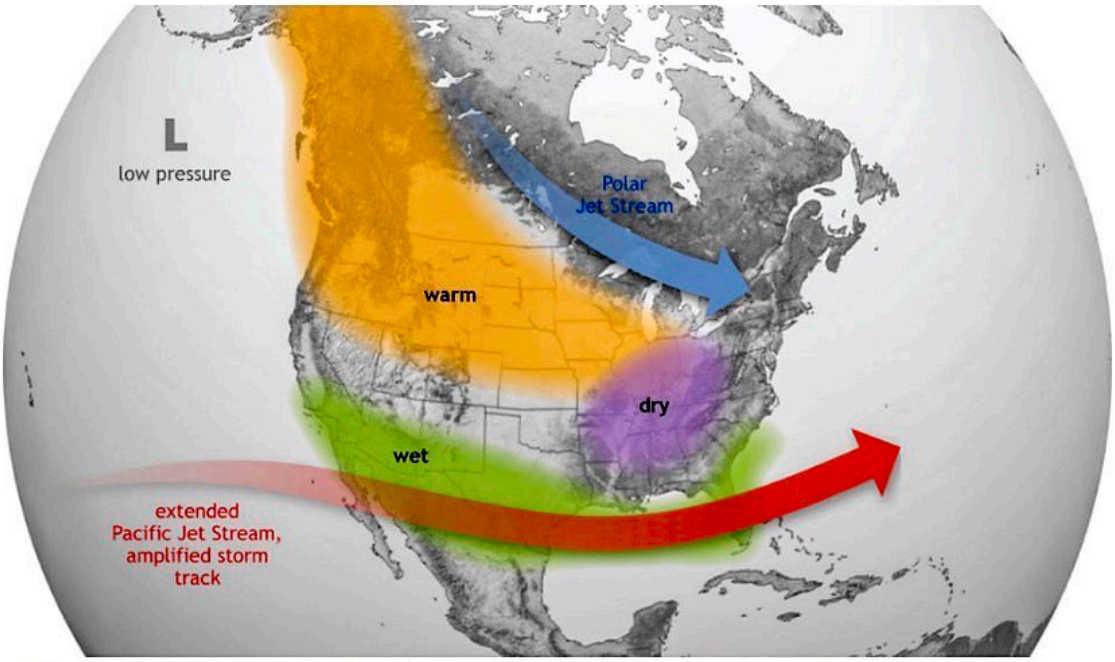
EAHCP
EDWARDS AQUIFER
HABITAT CONSERVATION PLAN

*On the following pages, you can read about the differences between **El Niño** and **La Niña.** Kimberly also prepared and interesting hydrography to compare this current drought with other recent droughts.*

Friends in Low-Flow Places - Extra Info

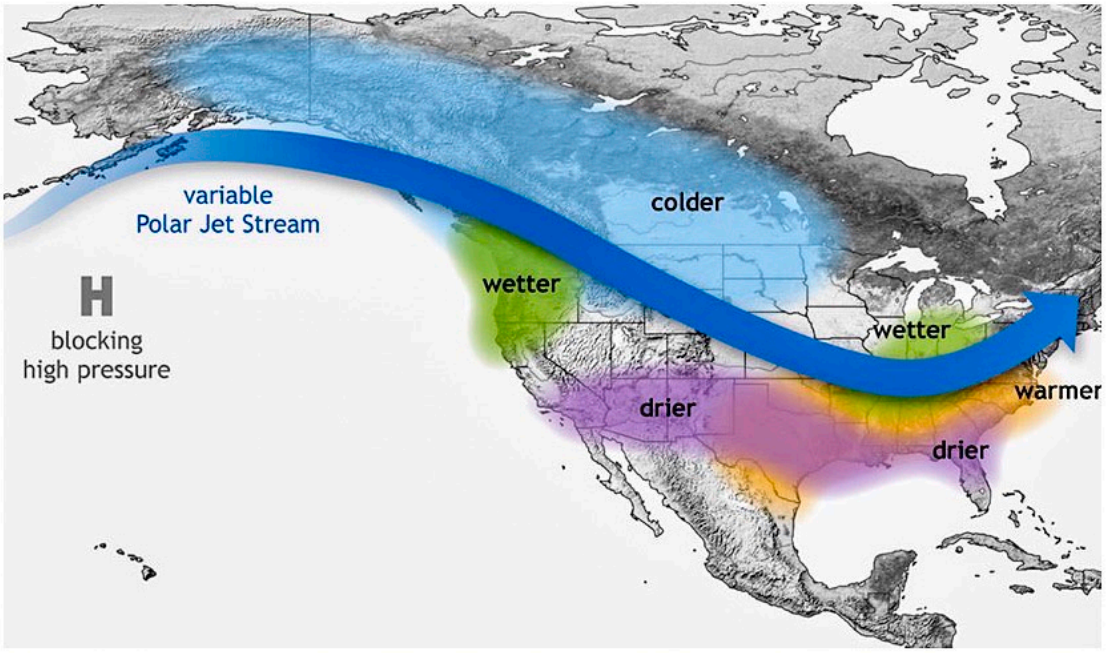
Current El Niño and La Niña Global Weather Patterns

According to the National Oceanic and Atmospheric Administration (NOAA), During **El Niño,** trade winds weaken. Warm water is pushed back east, toward the west coast of the Americas. The warmer waters cause the Pacific jet stream to move south of its neutral position. With this shift, areas in the northern U.S. and Canada are dryer and warmer than usual. But in the U.S. Gulf Coast and Southeast, these periods are wetter than usual and have increased flooding.



El Niño causes the Pacific jet stream to move south and spread further east. During winter, this leads to wetter conditions than usual in the Southern U.S. and warmer and drier conditions in the North.

La Niña has the opposite effect of El Niño. During La Niña events, trade winds are even stronger than usual, pushing more warm water toward Asia. Off the west coast of the Americas, upwelling increases, bringing cold, nutrient-rich water to the surface.

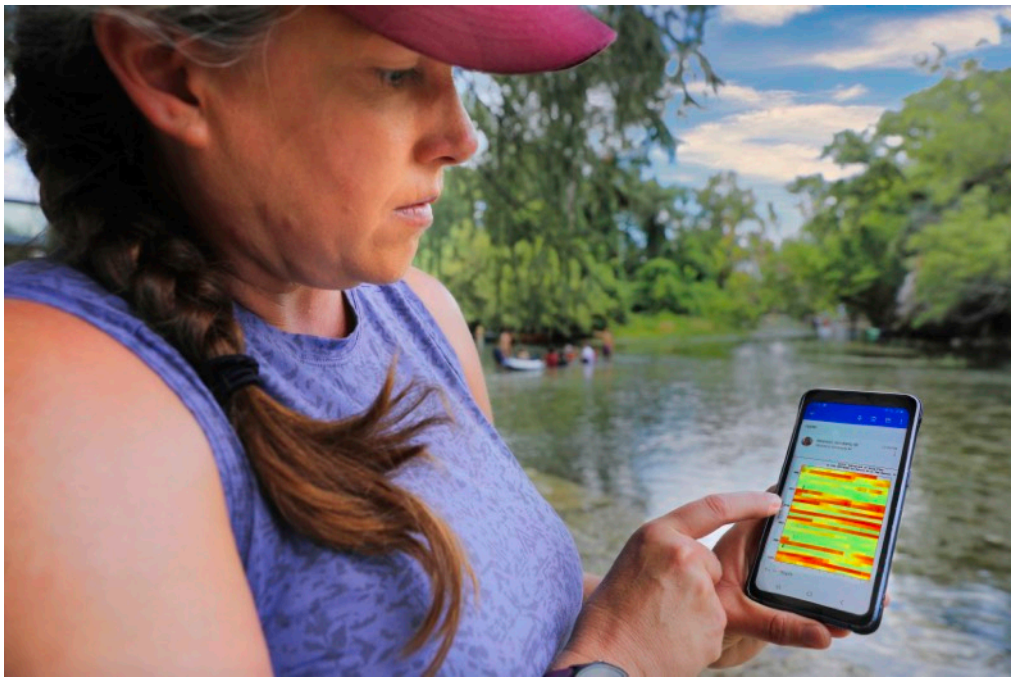


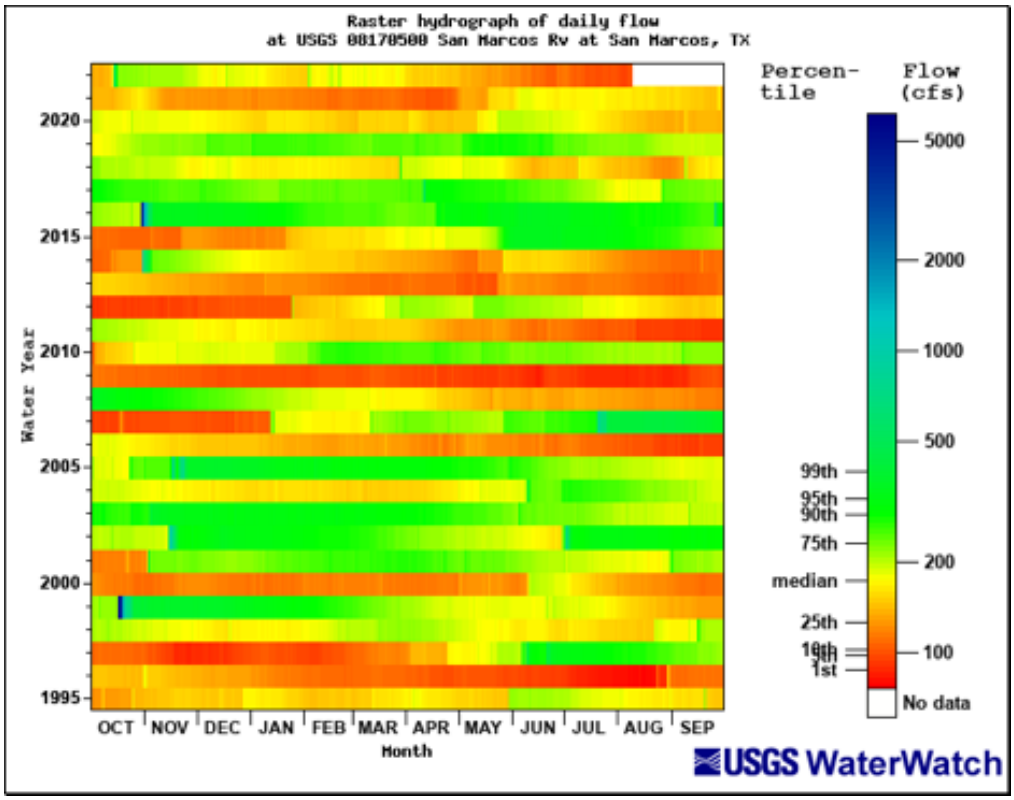
La Niña causes the jet stream to move northward and to weaken over the eastern Pacific. During La Niña winters, the South sees warmer and drier conditions than usual. The North and Canada tend to be wetter and colder.

These cold waters in the Pacific push the jet stream northward. This tends to lead to drought in the southern U.S. and heavy rains and flooding in the Pacific Northwest and Canada. During a La Niña year, winter temperatures are warmer than normal in the South and cooler than normal in the North. La Niña can also lead to a more severe hurricane season.

Friends in Low-Flow Places - Extra Info

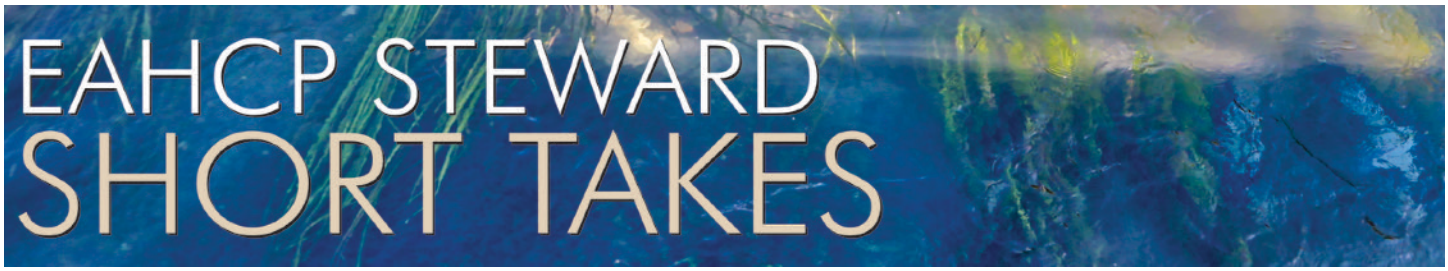
Kimberly Meitzen Explains a Great Chart in Comparing Drought Patterns





This raster hydrograph is one of my favorite ways to view period of record flow data. Each colored square represents a single day of mean flow and each row represents a water calendar year of flow. The water year runs from October 1st to September 30th, this timeframe helps illustrate different flow seasons, you'll notice for 2022 the data is incomplete because we are still in August. The color bar provides scaled contrast of flow magnitude and the percentiles provide duration statistics to interpret the percent of time a given flow has occurred through the record. For example, the light orange to light green color between the 25th – 75th percentile are considered "normal" conditions. The top row for 2022 from July to August is dark-orange to red, this is the 10th percentile low flow range which starts at 99 cfs. This means that in this 27-year period of record (1995-2022), flows have only been this low for less than 10% of the time. The next break at the 5th percentile will occur when flows reach 91 cfs, and the 1st percentile is reached at a flow level of 67 cfs, let's hope we don't experience that ever again! Several very pronounced dry years with flows below the 10th percentile occurred in 1996, 2000, 2006-2007, 2009, and 2011 – 2014.

These graphs can be made using the USGS WaterWatch toolkit (https://waterwatch.usgs.gov/index.php).



Upcoming Listen and Learn Workshops

Workshop 2: Biological Goals and Objectives
Tuesday, August 30, 2022, 3:30 PM – 6:30 PM
Medina County Fair Hall
733 FM 462 North, Hondo, TX 78861

Workshop 3: Climate Change and System Vulnerability
Thursday, September 22, 2022, 3:30 PM – 6:30 PM
Dunbar Recreation Center
801 W. MLK, San Marcos, TX 78666

You can view a slide show of photos from the first Listen and Learn Workshop in San Antonio at the EAHCP Steward website. You can learn more about the Listen and Learn series at www.eahcprenewal.org.

National HCP Coalition Conference Set for Oct. 24-27 in Austin Sign Up Today

The National HCP Coalition Annual Meeting brings together HCP practitioners from across the country, including federal, state, and local agency staff, consultants, stakeholders, policy experts, and scientists. Complete event information is available on the NHCPC website.

Conference Overview Itinerary:

- Evening Welcome Reception on October 24
- Day 1: October 25 - Welcome and lecture series
- Day 2: October 26 - Field Trip Day (Texas Cave Tour, Springs and Songbirds (ADA accessible), or Edwards Aquifer Tour)
- Day 3: October 27 - Lecture series and closing

You can read more about the agenda topics and keynote speakers at this link.

San Marcos Prospect Park Work Day Set for Saturday, Sept. 10

The next volunteer workday at Prospect Park in San Marcos is scheduled for Saturday, Sept. 10, from 7 a.m. - 9 a.m. Volunteers will continue removing nonnative invasive species – primarily ligustrum. Tools will be provided, but please bring a water bottle. The group will meet at 1410 Progress St. Additional parking will also be available on Columbia Avenue and Wall Street. Please RSVP **here**.