



Water Works

A monthly newsletter for friends of Jacob's Well Natural Area

May 2011

JW Volunteers to trek through Canyon Gorge on May 14

The Hill Country floods of 2002 took enormous slices off the top of the Canyon Lake spillway. The result is a "Geologist's Delight" -- a dramatic gorge with a myriad of layers. It is open to interested people through special guided tours, and volunteers from Jacob's Well are invited to a special tour on May 14.



The Canyon Lake Dam was completed in 1968 and kept the water in place until 34 inches of rain dropped on the lake within one week in 2002. With 1.5 times the normal volume of water being added to the lake, the decision was made to evacuate people below the dam and open the spillway. Flood waters crested at 7 feet, spilling over at 67,000 cubic feet per second, tearing off the top of the terrain and eroding to depths as great as 40 feet.

Limestone layers in the Gorge were deposited over 100 million years ago. A shallow sea existed in Central Texas at that time, and calcium carbonate skeletons and shells of ancient marine life became

the limestone we know today. Springs and seeps throughout the gorge give evidence to the fractures and faults in that limestone

Canyon Lake and its gorge are part of the Guadalupe River, with headwaters north of Kerrville and a run of 420 miles to the Gulf of Mexico. The Guadalupe River Basin is part of "Flash Flood Alley," one of the most flash-flood prone river basins in the world.

Today the Gorge wends its way from the lake for approximately one mile, at an average width of 130-200 feet, revealing rock strata, sculpted walls and inner channels. There are also thousands of fossils, including small crustaceans and the footprints of dinosaurs.

The JWNA tour group will be guided by Jamie Kinscherff, with Deb Bradshaw as docent. To sign up, e-mail Deb at debradshaw@yahoo.com. She will reply with an e-mail containing times and instructions.

Jacob's Well Frog Walk Saturday, May 7, 7:30-9:30 p.m. Speaker: Lee Ann Linam

Amphibians around the world are disappearing, but Texas Amphibian Watch is checking to make sure that doesn't happen in Texas. Join TPWD biologist Lee Ann Linam for an introduction to the frogs and toads of the Wimberley area, and find out how you can become a "citizen herpetologist."

A brief Powerpoint presentation will be followed by a hike to Cypress Creek to listen for the calls of local amphibians. This will be an easy walk along the flat side of creek on an ADA designated trail. Following the first part of the presentation, anyone with mobility issues can take their car to the beginning of the trail. Participants should bring flashlights.

*Water is the driving force of all nature.
- Leonardo da Vinci*

Greg Tatum, Dive Master -- Jacob's Well Science Dive Team

by Louis Parks, JWNA Volunteer

A late spring Saturday morning at Jacob's Well. It is already warm here in central Texas, but perfect.

Granted, considering the latest drought, perfection should include dark rain clouds, but it's hard to deny the rugged beauty of the well's rocky surroundings as they warm in bright sunlight from a wide, blue Wimberley sky.

It is what lies below, not above, Jacob's Well that lures diver Gregg Tatum this morning. Gregg is about to descend for his, oh, something like 100th dive into the cold, clear water of this natural treasure.

"The curiosity is so intense, like a magnet," says Gregg, a tall, lean Austin biologist with an easy-going manner and confident voice. "The first thing you notice when you go to Jacob's is just how stunningly beautiful the setting is. The rock cliffs and the creek and that yawning hole of water. It just draws me in. What's down in there? The farther I go, the more I want to see."



(c) Jesse Cancelmo

Suited up in several thousand dollars worth of specialized cave diving equipment, Gregg, co-director of the Jacob's Well Exploration Project (JWEP), is already waist deep in water. He's standing on the well's lip, where aquifer flow becomes the water of Cypress Creek, life blood of Wimberley. Just behind him, as he checks his gear one more time, looms that huge, compelling, descending rock funnel that has tempted countless swimmers to jump in – many from the accommodating rock ledges -- probably since the first Native Americans discovered this spot.

It has also lured many divers, some to their doom. With a treacherously unstable gravel slope at the bottom of the entry shaft, a tight restriction (small opening) into the main conduits, an enticing but fraudulent exit chimney that can deceive divers desperately seeking the way out, and long passages so narrow that divers can easily touch walls, ceiling and floor, this is a dangerous maze where only experienced, cave-trained divers should venture. As recently as 1979, two divers failed to find their way out.

"We hope that's the last time," Gregg says. "Recreational divers want to find out what's down there. That's a really poor idea. Recreational divers do not have the extensive training or specialized equipment to deal with an overhead environment, like a cave."

Gregg and his dive companions for today – David Moore, a new member of the JWEP dive team, and Jesse Cancelmo, a professional dive photographer – have extensive dive experience as well as specialty certifications necessary for cave diving. Gregg, with 30 years of diving, has 11 certifications.

Today, Cancelmo is shooting for Texas Parks and Wildlife. After the photos, shot in the entry shaft cavern, Gregg and Moore will do what they usually do in Jacob's Well: work on expanding the scientific and practical knowledge of the well and the aquifer. And maybe some housekeeping. That will mean going past the initial restriction between entry cavern and cave, and working as much as 137 foot deep in one of the cave's two main conduits.

The JWEP 8-member team members are all volunteers working at their own expense. Many are also with the older Goodenough Springs (deep cave) Exploration Project. JWEP is one of three dive teams authorized to enter the well; one team does research

on the cave's biology, another is doing high-definition video of the site. The JWEP team is surveying and mapping the entire accessible cave, a slow, painstaking process that will take hundreds of dives to complete.

"Its most important use is for land-use planning. You can't preserve what you don't know about," Gregg says. "You have to characterize what's there in order to preserve it. You need baseline information and the most basic information is: Where is the cave? Where does it go? What water quality is in the cave?"

Major survey excursions are big projects. A survey team will consist of two people, but there are also support divers who take some of the mountain of equipment and deposit it at various locations throughout the cave. "It's similar to mountaineering, where you move gear from a base camp to the summit," Gregg says.

"Cave diving is very gear-intensive. For our rigs this weekend, we'll have five tanks, five regulators, three lights. We carry multiple everything. We have redundancy."



For the long dives, up to five hours under water and underground, the divers breathe a very specific "tri-mix" of oxygen, nitrogen and helium, to offset the effects of the nitrogen, which can cause the bends in divers.

"We start decompression gasses (when they get back to a depth of) 70 feet and switch from our tri-mix to 50 percent oxygen," Gregg says. From 70 feet, they have to ascend at 10 foot increments, stopping to decompress for longer times at each stop. "The longer you are in the cave the more decompression time you have. At 20 feet, we switch to pure (100 percent) oxygen. That (wait at 20 feet) can be well over an hour. We'll exchange messages on our underwater notebooks or look for coins and trinkets people throw in the well. Anything to pass the time."

The team also assists the other teams, works on cave equipment maintenance, and even hauls out the large amount of junk (towels, bottles, even a tricycle) visitors continue to drop into the well.

Being submerged for several hours, especially if the well has a flow, is exhausting, but it has compensation.

"You burn a lot of calories, from both swimming and from the thermal regulation, just trying to stay warm," Gregg says. (The water is a constant 68 degrees in the well, very cold even in their special suits.) "But, it is exhilarating because you've done a highly technical dive and managed all the risks appropriately."

Watch out for the **Urushiol!**

Urushiol is the oily chemical found in **poison ivy**. It is located within ducts in the leaves, flowers, stems, and roots of this weed, and contact with it will usually lead to inflammation, blistering, and itching of the skin. Although not one of the most prevalent plants found at Jacob's Well, it is there in some places and is being eradicated by the Restoration Rangers.

Poison ivy often appears as ground cover, but given a nearby host tree, it also becomes a vigorous climbing vine. There is one leaf at the end of the stalk and two leaflets opposite each other below the first, in a trifoliate pattern.

Although hated by humans, birds eat the small, round fruit and deer eat the leaves. It is a host plant to the dusky-blue ground-streak butterfly.



It takes about 20 minutes for urushiol oil to penetrate the skin. During that time, it can be rinsed off to prevent ill effects. Barbara Attwell of JWNA suggests this treatment if you fail to get rid of it in time: "Run the affected area under the hottest water you can stand. This uses all of the histamines in the area, resulting in at least 4 hours of relief from itching. This works much better than cortisone."

*Leaflets three, let them be.
Hairy rope, don't be a dope.*

Jacob's Well Elementary Descends on JWNA for a Visit

Our namesake school started their adventure with a pre-visit in the 5th grade classrooms. The students viewed a slide show of Jacob's Well, including maps, an elevation of the cave and underwater photos, and they began a conversation as to why the spring is stressed. The current flow is below 1 cfs (cubic feet per second).

The 150 students visited over a 2-day period, spending time at 3 stations, spread out around the site, that addressed non-point source pollution and how aquifers recharge, the limited availability of fresh water and how to conserve that water, how to test for water quality, and favorite stories about the famous spring.

One of the stations was under a huge and beautiful oak tree, from which an occasional bug fell. This instigated discussion about how each of them felt about bugs, and led to the realization that they were the guests, albeit giant ones, in the bug's world.

Linda Lang tackled non-point source pollution with the watershed model. Cypress Creek suffers from an overload of pet fecal coliform - average size dog dropping contains 3 billion fecal coliform bacteria. Linda unabashedly taught the kids how to clean up after their dog by using a short, fat stick and a plastic bag. One student volunteered to do the demonstration for the group himself. He skillfully pretended to be out on a walk, tossed out the stick and jumped to pick up the "waste" with his plastic bag.



Linda Lang tackles non-point source pollution.

The kids sat on the weir at Jacob's Well to listen to Deb Bradshaw telling stories about the spring, describing events such as the flood which floated a sheriff's car down the creek while its lights were on. She told them about the years of Native American

presence, and about scuba diving. One would never have guessed that Deb had returned from a trip to Africa the day before. She jumped right into engage



Deb Bradshaw tells stories to the students.

the elementary school kids. Sitting on the rocks across on the high side of the well, she commented that in her jet-lagged state, she might be falling in and to be sure and get her back out.



Jeff Vasgaard talks about water conservation.

Jeff Vasgaard was seen wearing a pile of hats at one point, and eating lunch with his grandson who is a 5th grader at the school. Jeff taught the group about how much fresh water we have for our use, along with how much water use is hidden – such as the 2900 gallons of water used to make a pair of blue jeans.

New volunteer Don Wallace had the kids calling him "Pawpaw" and was seen "struggling" with three kids who were all trying to take him down at once in an arm wrestling match. At his station, Don got them to put on their thinking caps -- and sunglasses -- to add up how many gallons of water they used in a day.



Don Wallace talks about water usage.

Don led stimulating conversations about water conservation with humor, and at times, courage -- especially with suggestions

such as "don't shower at all" and "pick a tree" as ways to save water. Cinde Thomas-Jimenez, the Education Coordinator for the Guadalupe Blanco River Authority, traveled all the way from Seguin to participate the first day, and added her extensive teaching experience to the activity.

The Stream Team, headed by Jennifer R. Mandel Buratti, engaged the students in making scientific calculations to unravel a hypothetical fish kill. They measured water



Jennifer Mandel Buratti teaches water testing.

clarity, temperature and conductivity, and observed the flow rate. Margaret Baker helped the team's new crew get their feet off the ground. Bob Mobley, Mark



Ray Franklin shows native grass.

Chonko, and staff Chrystal Kubala served as trail guides and the support team.

Hays County Master Naturalist Ray Franklin mesmerized the classes as usual with his rainfall demonstration, revealing the value of those long rooted grasses.

Shelly Buse dropped in to help at the end of the visit with a rowdy and very loud game called "Crows and Owls," a tag game that tested the students on their new found watershed knowledge. The vocal level during these games was impressive.

After the kids left, the volunteers fell towards their cars mumbling something about imminent naps, but with a smile on their faces -- knowing that they had just given their volunteer time to make a major impact on protecting water for future generations.

Thanks to them all!

Restoration Rangers weed, move rocks, build baffles

The work crew that meets every other Friday calls itself the "Restoration Rangers," and restoring the natural area is exactly what they do as they range around the property.

In April, this work included weeding various sections of Camp Jacob and clearing unwanted plants on the granite path to the well. They dismantled fire rings to discourage potential fire builders, tackled Johnson Grass and Golden Bamboo down by the creek, and placed rocks as baffles to prevent gully washers



Garry Child and Mark Chonko take apart a treehouse that had been constructed on the property.

when Wimberley again experiences a heavy rain. After removing a bucket of beer cans in a treehouse, they dismantled the three-tier hangout, which required the removal of some ring shank nails.

On the April 2 workday, 16 people from this year's Master Naturalist class, and members of the MN Train-

ing Committee, joined the work crew. They tackled invasives on the new tract of the property, cut down the Chinaberry tree and went after intrusive Poverty Weed.

Fresh Water

Jeff Vasgaard handled a crowd of 29 visitors by himself on last Saturday's tour (April 23)! Jeff wins the "Volume Award" as a JWNA tour guide.

David Baker and **Ellen Evans** were married at Dancing Waters Retreat in late April. Congratulations!

A thunderous applause to our new **Spring 2011 JWNA graduates**. Some of you newbies have already jumped in to volunteer. Please welcome:

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|---------------|---------------|
| Alicia Nelson | Helen Foster |
| Barbara Rosen | Jeri Porter |
| Dave Cadriel | Larry Foster |
| Dell Hood | Leigh Sebera |
| Don Wallace | Nancy Russell |
| Evan Kornacki | Robert Carrie |
| Gerin Hood | Sarah Ryan |
| Helen Bowie | Shelly Buse |

Volunteer **Meg Inglis** has almost finished taking our 5 different plant lists (some of them handwritten) and compiling them into an Excel spreadsheet. We will soon be able to reorganize or add to the list as needed. The Wildflower Center has generously

offered to house it for us, and we will have a link on the website to access it.

Need to make up a class? **Shelly Buse** is working on a CD and we will let you know when it is available.

Water Aid

Please sign up to be a Saturday Tour guide this summer. These tours are our main events throughout the summer months, along with the Austin Nature Summer Camps.

New JWNA graduates, please jump in. "Shadowing" a tour beforehand is helpful. Email Barbara Attwell at battwell@earthlink.net.

Wish List

We need a volunteer to keep our Jacob's Well fliers stocked around town. We already have them at the Wimberley Visitors Center, but need them at other sites like the Woodcreek POA, the Chamber of Commerce, and stores in the square. Contact: Barbara Attwell at battwell@earthlink.net.



JWNA Current Calendar - Spring/Summer 2011

(Does not include public tours, each Saturday at 10:00 a.m.)

To volunteer at these events, e-mail Barbara Attwell: battwell@earthlink.net.

Volunteer and Advanced Training Opportunities

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| May (TBA) | Jacob's Well Elementary 2nd grade water cycle activity (at the school) |
| May 7 | Frog Walk with Lee Ann Linam (7:30pm - 9:30 pm) |
| May 14 | Canyon Gorge trip |
| June 11 | CAMN (Austin's Capital Area Master Naturalists) Tour |
| June 14 | Austin Nature Center Science Camps: "Wilderness Wise - Conservation and Leave No Trace" |
| June 22 | Austin Nature Center Science Camps: "Caves and Life Underground" |
| July 4 | Wimberley Parade |
| July 15 | Austin Nature Center Science Camps -- "Science Safari - General Science, Anything Goes" |
| July 28 | Austin Nature Center Science Camps -- "Water Conservation and Aquifers" |
| August 9 | Austin Nature Center Science Camps -- "Caves and Aquifers" |



Lee Ann Linam will guide the Frog Walk on May 14