Around 2,800 years ago the people of Cayo del Oso (Watershed of the Bear) dug many graves into the clay dunes near the mouth of Oso Bay. There was little evidence of habitation, and the site was apparently devoted to mortuary use. The first published discovery of this site was made by George C. Martin in 1930. It became known as the Oso Creek Site, and also called the Callo del Oso, Oso Bone Pit, and False Oso Site.

It was common in the first half of the twentieth century to attribute burials from the site to Karankawas. However, all evidence points to much earlier, non-Karankawan peoples. There were very few burial offerings; these included freshwater mussel shell pendants, a bone awl, a deer-antler tool, an unstemmed projectile point, a hammerstone, several small conch shells, fragments of sunray clam shell, and a tube or bead made of human bone. The positioning of the bodies within graves was very consistent. Nearly 87 percent were placed on the left side, with the head oriented east to south (facing Oso Bay); on some, the hands had been placed over the face. Martin excavated as many as fifty-three prehistoric human remains at the site and also noted that burials had been dug from the clay dune by local collectors in the 1920s. In 1932 E. B. Sayles recorded the site during his archeological survey of Texas; he put in a test pit that uncovered nine burials. A University of Texas field session at the site in summer 1933 was led by A. T. Jackson. A total of 101 human skeletons was recorded by Jackson. (Excerpts taken from https://www.texasbeyondhistory.net/coast/images/ap2.html and https://tshaonline.org/handbook/online/articles/bbo02 on 6/27/17)
Swimming and wading are called “contact recreation” in the state’s standards for water quality; the term refers to all recreation in which people come in direct contact with the water. The goal of this project is to reduce bacteria concentrations to within acceptable risk levels for contact recreation.

The Oso Creek watershed is wholly contained within Nueces County in the Nueces-Rio Grande Coastal Basin. The creek is about 28 miles long. It flows south-easterly from near the western edge of Corpus Christi over flat to rolling terrain, emptying into Oso Bay. Economic activities in the area include oil and gas refining and production, agriculture, manufacturing, and tourism.

Since 2003, the TCEQ, the Texas State Soil and Water Conservation Board, and other agencies have conducted several studies of bacteria sources and quantities in the Oso Creek watershed. In 2013, based on results of those studies, the TCEQ began developing a total maximum daily load (TMDL) for the creek. A TMDL is like a budget for pollution—determining how much concentrations must be reduced to meet water quality standards. The Center for Water Supply Studies at Texas A&M University–Corpus Christi will complete several technical tasks in support of TMDL development.

The TCEQ and area stakeholders also assessed the oyster waters use of Oso Bay and have completed a TMDL for bacteria in Oso Bay. The work done to improve Oso Creek should also improve conditions in Oso Bay.
In the fall of 2016, Dr. Andrew Ropicki, et al. completed a report on the economic impacts of marine recreational fishing in the Corpus Christi Bay System. The estimates presented include only impacts associated with fishing trips and not spending on durable goods (fishing gear, rods, boats, etc.) related to fishing. The Corpus Christi Bay System, located in Nueces County, is approximately 192 square miles in size and is separated from the Gulf of Mexico by Mustang Island (Moretzsohn et al. 2016). The Corpus Christi Bay System includes Corpus Christi Bay, Nueces Bay, Oso Bay, and Redfish Bay. The bay system is fed by the Nueces River (by way of Nueces Bay) and Oso Creek (by way of Oso Bay) (Leatherwood 2016). The bay system contains a mix of oyster reefs, shoreline vegetation, and bottom vegetation that serve as gathering places for fish (Moretzsohn et al. 2016). The large size of the Corpus Christi Bay System along with its varied habitats allow for numerous recreational fishing opportunities. Species commonly targeted by anglers include spotted seatrout, flounder, sheepshead, and red and black drum.

The data used to estimate the economic impacts came from fishing effort estimates provided by the Texas Parks and Wildlife Department and a National Marine Fisheries Service study titled: “The Economic Contribution of Marine Angler Expenditures in the United States, 2011.” Their analysis indicated that Corpus Christi Bay System recreational fishing trips generates 611 jobs and $21.7 million in labor income in Texas annually. Trip spending by Corpus Christi Bay System recreational fishers is also responsible for $59.4 million of economic activity and contributes $33.8 million to the Texas economy each year. Shore fishing accounted for approximately 71% of all trips and 60% of all impacts. Non-resident fishing in the Corpus Christi Bay System accounted for a greater percentage of angler trips and economic impacts than any other Texas bay system.

These findings serve to further highlight the important economic impact water quality can have on the local economy and why the adoption of best management practices that can reduce bacteria levels within the watershed are vital.
Texas Riparian & Stream Ecosystem Workshop

Lower Nueces River

October 3, 2017
8:00 a.m. - 4:00 p.m.

Nueces County Emergency Services District #4
5781 FM 666, Robstown, Texas 78380

Online RSVP and Agenda: naturalresourcestraining.tamu.edu/schedule

For more information and to register please contact Nikki Dickson at 979-458-5915 or n-dickson@tamu.edu.

Continuing Education Units available: Continuing Education Units available: Texas Department of Agriculture Pesticide Application License – 3 CEUs; Texas Water Resources Institute – 1 CEU; Certified Crop Advisor – 7 CEUs; Texas Nutrient Management Planning Specialists – 6 hours; Texas Floodplain Management Association – 7 CEUs; Texas Board of Professional Land Surveying – 7 hours; Texas Board of Architectural Examiners “Acceptable for HSW credit”; and may also be used for CEUs for Professional Engineers.

The workshop will include both indoor classroom presentations and an outdoor field portion at the river to discover how they function and the role of riparian vegetation in properly functioning stream systems by viewing the river in action. A catered lunch will be offered for $10 cash the day of the event, but RSVPs will be required by Sept. 27, 2017 and please remember to select if you would like the catered lunch or if you will bring your own lunch. RSVP online at the link above or complete the form below and send to Clare.Entwistle@ag.tamu.edu.

First name: ______________________________________ Last name: __________________________

Email address: __________________________ Phone: __________________________

Org./Employer: __________________________ Lunch Options: _____ I would like the catered lunch

[Logos and affiliations]
TOURING OSO CREEK

By: Johnny Cotten, Architect

Most people would think we’re crazy - - Touring Oso Creek? Isn’t that the large drainage ditch west of Corpus Christi’s south side? If you had accompanied Steve, Gilbert and I this past month for several canoeing excursions, you’d be blown away. What a wonderful, intriguing, and beautiful tour.

Ignoring the crummy man made floatables of Styrofoam and plastic from the drainage ditch outfalls and the discarded old tires, the Oso creek channel is really an amazing waterway right in our backyard. (Capt Joaquin Orobio y Basterra must have seen it in virgin form around 1747). The observable wildlife ashore and in the water is alive, active, and plentiful. We observed tracks along the shoreline of raccoons, armadillos, coyotes, etc. and observed white & blue herons, red & green Jays, and many other birds in the trees along the banks. The waters were teeming with heavy schools of young mullet attracting numerous sizable alligator gars and beautiful Red Fish gouging themselves on the fingerlings. And, this is not some narrow, shallow dirty little stream. The narrowest part of the Creek was estimated at around 50 feet wide and varies up to several hundred feet with water depth averaging 4 to 6 feet deep. Water clarity varied with the obvious pollutants. But overall, the waters were semi-clear and only the mud bottom in some areas had strange odors. The shoreline banks varied in height from 1-2 feet to 12-15 feet mostly covered with south Texas vegetation and larger than normal trees (Oaks, Hackberry, Mesquite, Huiesache, Palms, etc).

Our explorations were surprising and stimulating at the discovery of a golden treasure hidden within the south Texas brush country right here under our noses in Nueces County. When cleaned up, master planned, and preserved, this little stream will make a great recreational and tourism attraction for all of South Texas.
You may not realize it, but if you have a septic system in your backyard, you are the owner of a small scale wastewater treatment system. As the owner you are responsible for maintaining a properly operating system to protect the health of you, your neighbors and the environment. A malfunctioning wastewater treatment system can release nutrients and pathogens which harm water quality and pose a threat to public safety.

The essentials for operating and maintaining a conventional septic system or an aerobic treatment unit start at the source of the wastewater stream. The occupants control the amount of water, organic material, and chemicals that enter the waste stream. A wastewater treatment system is designed to accept a specific volume of water and organic material. Exceeding these design volumes can have a significant impact on the performance of your system.

A wastewater treatment system relies on calm conditions to allow the separation of solids from the wastewater. These calm conditions are disrupted by excessive water usage or hydraulic loading. Doing several loads of laundry back to back in a single day can create a hydraulic overload and turn the calm conditions in the tank to whitewater rapids. When this happens, solids are not allowed to settle and will travel further down the system, possibly clogging pumps, spray heads, or drain fields.

Both conventional septic systems and aerobic treatment units are full of numerous microorganisms that are actively digesting and breaking down organic waste. These microorganisms are naturally occurring; therefore it is not necessary to pour additives, yeast or any other materials down the drains. Avoid excessive use of cleaners or toxic chemicals which can kill microorganisms.

The microorganisms in an aerobic treatment unit rely on the right mixture of food and air to stay alive and actively treat waste. The compressor in the yard supplies the air and the residents supply the food. A system is organically overloaded when there is more organic material than the microorganisms can treat and digest. This results in a quicker accumulation of solids and the need for more frequent maintenance. A kitchen garbage disposal can significantly increase the amount of organic loading and may reduce the pump out intervals by 1 to 2 years.

Even though an aerobic treatment unit contains a disinfection devise such as an ultra violet lamp or chlorine, the water exiting the spray heads may still contain potentially harmful pathogens. Maintaining a healthy vegetative cover in the spray field will remove excess water, nutrients, and allow the final treatment processes to occur in the soil.

Being mindful of what goes down your drain is a simple yet important step in managing your septic system or aerobic treatment unit. Maintaining your system will result in higher satisfaction, improved performance and protect environmental health.

**How often should a septic tank be pumped out?**

Have the septic tank cleaned before sludge or scum accumulates to the bottom of the tank’s outlet device (about every 3 to 5 years). If too much sludge accumulates, solids will leave the tank with the liquid and possibly clog the soil. Sewage will then surface or back up into the house through the plumbing fixtures. The recommended pumping frequency based on septic tank size and number of people in the household is in the table below.

For more information on maintaining your OSSF go to [http://bit.ly/AgriLifeOSSF](http://bit.ly/AgriLifeOSSF) for fact sheets on all aspects of proper maintenance.
With the recent rainfall we have started to see a little green in our pastures and in some cases a few plants that have us wondering what in the world they are. The plant is the foundation of the range ecosystem and the primary producer of foodstuffs for the range livestock and wildlife industry. Knowledge of plants is fundamental to the range and pasture manager and, when united with knowledge of soils and climatic conditions, forms the basis for the fundamental principles of range management and successful ranching. The State of Texas is large with extreme variation in environmental conditions. This variable situation provides growing conditions for about 5,000 species of flowering plants which have been named. Because of the variability in weather, past management on the ranching landscape and different goals of land ownership, no two ranches are exactly alike, have exactly the same plant species or densities of plants, or have the exact same capability for the production of plants. For many reasons, each ranch owner or manager needs to have some idea of the names of the plants growing on the land, their value and meaning in a management sense. The plant species found growing on a ranch can often indicate the success or failure of the land manager. Plants respond to our management imposed on the land. Livestock and plants belong together. Their marriage so to speak, though sometimes a little rocky, has passed the test of time. However, livestock and plants do not necessarily exist for each other’s convenience. In fact, it appears that plants will try anything to avoid being eaten. Plants will crawl under rocks, grow thorns, give off obnoxious odors, taste bad, grow inaccessibly high in the air or low to the ground, become unpalatable, change from high nutrient quality to low and even produce toxic or poisonous chemicals. With so many plants doing so many different things, why know the names of a plant? Because if you don’t know it; you can’t see it!

Some people know plants by sight or general appearance when encountered on the land. Many people have lived close to plants for a long time and have come to recognize, consciously or unconsciously, the many points that make plant species different from each other. Others have learned the value of a plant through experience with that plant. Needless to say, some plants are easier to distinguish than others. Anyone can learn to identify a good number of things, be they cars, dogs, guns, cow breeds or plants. It has always been one of our human characteristics that we name things and arrange them in some orderly fashion. The main point that stands out about this human process, is that we have always needed to name things in order to have a means of communication.

We name plants, not only so that we can communicate with one another, but we find that the plant name is the communication medium to which all information about the plant is tied or attached. Without a name, we cannot look it up in a book and find all information that others have written. Without the name and the attached information, we can only learn about plants through experience and this could be a costly or detrimental one if it is a toxic or invasive plant in question.

New plants are always arriving on our various properties through mud on tires, weeds baled in hay purchased from another area, by wind from adjoining properties and even in the fur of wildlife which cross property lines. This makes learning plants a lifelong project. Fortunately, there are several good resources available to help with plant identification. Some of those online resources can be found at http://bit.ly/PlantID.
IF YOU WOULD LIKE TO GET INVOLVED PLEASE CONTACT:

Teresa Carrillo  
Research Specialist III  
361.825.5888  
teresa.carrillo@tamucc.edu

Erin M. Hill  
Research Specialist III  
361.825.5791  
erin.hill@tamucc.edu

Brien A. Nicolau  
Assistant Director  
361.825.5807  
brien.nicolau@tamucc.edu