

THE TEXAS WATER SOURCE

UPDATING CAMP, MARION, AND UPSHUR
COUNTY LANDOWNERS ON LAND
MANAGEMENT AND WATER ISSUES

January 2020

Wild Pigs: Invasive Nuisance and Water Quality Polluter

Wild pigs (*Sus scrofa*) are an economical-ly and ecologically challenging invasive species for Texas. They threaten livestock and crop production, as well as native wildlife and their habitat. While these problems are commonly known, the impacts of wild pigs on water quality is less evident. Wild pigs frequent streams and wetlands because they do not have sweat glands. In order to cool themselves, wild pigs have adapted their behavior to frequent these areas for shade and the presence of wet areas for wallowing or covering themselves in mud. Additionally, wild pigs are typically social animals that can travel in groups. These groups of wild pigs concentrate in numbers along streams and wetlands increasing their pressure on these habitats and their water quality.

Wild pigs can impair waterways by introducing multiple pollutants. Research has shown they contribute to heightened levels of fecal coliforms (*E. coli*). *E. coli* is natural in waterways at certain levels; however, wild pigs can heighten the levels of *E. coli* to a level that can make streams bacterially impaired. Bacterial impairments are significant to humans as these water pollutants can be hazardous for aquatic recreational use and human health.

Wild pigs disturb soil and cause erosion when they wallow to cool themselves.

Erosion increases the amount of sediment entering our waterways. Unnaturally elevated levels of sediment in our waterways have a snowball effect of hurting other water quality parameters by increasing temperatures, reducing dissolved oxygen, and altering pH levels. Additionally, heightened sediment loads degrade the habitat for multiple organisms dependent on that waterway. For example, sediment can clog fish gills, reducing resistance to disease, lowering growth rates, and affecting fish egg and larvae development.

While wild pigs are not the only contributors to watershed pollution, management techniques to reduce wild pig populations remain an important practice to safeguard water quality. As of 2016, a number of waterbodies in Texas were listed as bacterially impaired. There are multiple reasons to integrate wild pig removal techniques; however, their removal also reduces pollutant loads on our streams helping Texas' water quality.

For more information:

- <https://bit.ly/2PVsvPf>
- <https://bit.ly/38GjK4e>
- <https://bit.ly/38NdW9m>

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Organization Spotlight

Texas A&M AgriLife Extension

Texas A&M AgriLife Extension is an extensive network of professional educators, trained volunteers, and county offices aimed with the goal of addressing the diverse range of current and emerging issues that are affecting local Texas communities. There is an Extension office in 250 out of 254 counties that comprise the state of Texas. AgriLife's primary focus is education by providing programs, tools, and resources on a local and statewide level that teach people how to improve agricultural productions, advance health practices, protect the environment, strengthen the economy, and enrich the youth. Their capabilities of protecting the environment encompass conserving and protecting Texas' water resources and watersheds.

Conservation of Texas' water resources is becoming increasingly more vital, as more pressure will be put on this resource from population growth, contamination issues, and potential droughts. Texas' population growth is projected to increase by 17% from 2020 to 2070, an increase of about 5 million more Texans. As of 2016, the majority of waterbodies in Texas were listed as bacterially impaired. These bacterial impairments are being addressed to find and reduce the source of the contamination by partnerships with stakeholders within the impaired watersheds community. Additionally,

droughts have been in the forefront of Texans' mind since the recent historic 2011 drought. The 2011 drought crystalizes the importance of water, especially when scarce, as most counties within Texas received less than half of their normal precipitation.

AgriLife's response to the increasing demands on our water resource involves an array of programs focused on research-based water conservation and water quality practices, onsite wastewater treatment systems, watershed protection, private water well screening, and soil nutrient management. Through 5,350 educational events, planning meetings, and workshops in 2017, AgriLife Extension achieved more than 1.3 million educational and other contacts to increase public awareness and adoption of practices that are vital to improving and sustaining the state's water demand-supply balance.

For more information:

- <https://agriflifeextension.tamu.edu/about/economic-impact-briefs/water/>

Texas Water Resource Institute (TWRI)

The Texas Water Resource Institute (TWRI) is a unit of Texas A&M AgriLife Research specifically tasked with helping solve Texas' water-related issues. TWRI provides scientific-based expertise to help communities form solutions to solve problems unique to their watershed. Additionally, TWRI provides project development and management, stakeholder engagement, watershed and aquifer assessment and planning, bacterial source tracking, water conservation research, geospatial analysis, professional training, and public outreach.

In 2014, TWRI helped in monitoring and assessing the effects of conservation practices being implemented in the Lake O' the Pines watershed. The report found that prescribed grazing practices were more beneficial to water quality standards than continuous grazing. This

outcome was expected by TWRI due previous research from AgriLife, NRCS, and academia showing the ecological benefits of prescribed grazing. Proper prescribed grazing management maintains increased ground cover on-site and promotes enhanced root growth, increased water infiltration, decreased runoff, and subsequently leads to lower overall constituent losses in runoff.

For more information:

- <https://twri.tamu.edu/>
- <https://bit.ly/2s47TMr>

The Great Raft: Part of the Historical Foundation to the Cypress River Basin



Figure 1. Shows a snag boat removing woody debris on the Great Raft. Photo Credit: *Photographic Views of Red River Raft, 1873.*

The hydrological makeup of Texas is unique and has been influenced by multiple factors such as underlying geologic material, topography, and biological activity. These and even more factors shaped the rivers and streams we have come to cherish in our state; however, they did not shape lakes for Texas. Texas is home to only one naturally formed non-oxbow lake, Caddo Lake. All the rest of the lakes present in Texas have been artificially created for benefits such as flood control, generating hydropower, securing an adequate drinking water supply, and recreation. States like Minnesota, “The land of 10,000 lakes,” have such a large number of naturally formed lakes due to glaciers advancing and retreating thousands of years ago. Caddo Lake, our only naturally formed lake, developed by curious phenomenon of a massive log jam known as the Red River Raft or Great Raft.

Log jams were prevalent in North America before European colonization. In order to navigate the waters of North America for trade and settlement, these log jams were cleared with western expansion. However, the most extensive example of a log jam was the Great Raft which was present in Northeast Texas and Northwest Louisiana on the Red River. The area affected by the Great Raft was described as being 100 miles wide and maybe 130 miles long by early explorers Peter Curtis and Thomas Freeman. The Great Raft was not stationary or stagnate. As logs began to deteriorate or decompose in one part of the raft, other parts of the raft would have new woody material and log accumulation. This made clearing or navigating the raft especially difficult.

Clearing the Great Raft was a project taken on by Captain Henry Miller Shreve. Shreve, equipped with his own designed and patented snag boat, along with 200 men, cleared the raft from 1832-1838. For thirty years, the raft was gone and the now unimpeded navigation of the Red River resulted in economic changes for the communities within Northeast Texas and Northwest Louisiana. Shreveport, named after Captain Shreve, was a new town formed with the removal of the raft. The city of Jefferson, Texas was now navigable, making it one of Texas’ most important port cities. However, by 1873 the Great Raft reformed for a second time. This time the raft was again removed with the help of a new tool unavailable to Shreve in the 1830’s, dynamite. With the raft’s removal, the main course of the Red River was opened, draining the bayous and lakes, making the trip to Jefferson difficult and undependable. This, along with the formation of a railway in 1873 that bypassed Jefferson, altered the future of the bustling port city of Jefferson. Many of the businesses within Jefferson moved to Marshall, Dallas, and Shreveport.



Figure 2. Shows a Nitroglycerin (dynamite) work tent, a new tool available for removing the Great Raft when it reformed in 1873. Photo Credit: *Photographic Views of Red River Raft, 1873.*

For more information:

- <https://bit.ly/2QtWYFV>
- <https://www.redriverhistorian.com/greatraft.html>

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Who To Contact For Wild Pig Assistance

There are multiple agencies within Texas that deal with wild pigs, due to their prevalence and their harmful capability for landowners' livelihood. There are as many as 3-5 million wild pigs distributed throughout nearly all 254 counties within Texas. Additionally, in 2007, they result in \$1.5 billion in economic impact throughout the U.S.

One group that is available for contact for assistance with wild pigs is the Texas Wildlife Services Program. Their mission statement is to conduct programs of research, technical assistance, and applied management to resolve problems that occur when human activity and wildlife conflict with one another. The contact information for the Texas Wildlife Services Program Agent for Camp, Marion, and Upshur County is:

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