Texas Agricultural Extension Service
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Rangeland Watersheds

The Major Source of Water for Texans

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Where does your drinking water come from? It is not just from the tap. The majority of the water for Texans comes from a land resource called rangeland, the State's largest watershed.

Rangelands comprise sixty percent or ninety million acres of Texas land (Fig. 1 on back). Rangelands consist of grasslands, shrublands, marsh areas, deserts, and woodlands which are not used for commercial timber production (Ragsdale 1984). Rangelands support livestock production as well as provide habitat for native wildlife, but their most important function to Texans is as the State's watershed.

The precipitation that falls on Texas rangeland is a major source of surface flow and aquifer recharge. The majority of rivers and streams in Texas originate or flow through rangeland (Fig. 2 on back). As precipitation is the ultimate source of all fresh water, it has many destinations. In an average rainfall year, it is estimated that forty-two percent of the precipitation falling on Texas is evaporated directly back into the atmosphere. An additional forty-seven percent is lost or used through transpiration (for plant growth). Only a little over one percent of the annual precipitation recharges aquifers and the remaining ten percent runs off to become stream flow (TSSWCB 1991). Thus, precipitation that is currently captured directly for human use as fresh water in aquifers and surface water represents only a small proportion of the annual precipitation received, but management of the rangeland vegetation can redirect these percentages and is very critical to sustaining ample "Water for Texans".

The use and management of rangelands can have major impacts on the water available in Texas. Rangeland in a state of good health will provide Texans with a high quality water source, promote infiltration for ground water recharge, filter overland flow of water, provide forage for livestock production, and provide wildlife habitat.

Healthy Rangeland

Rangeland that is in an unhealthy state will have increased runoff with high nutrient and sediment content, and will not maintain as much soil moisture which is needed for the production of native plants required by domestic livestock and native wildlife.

Unhealthy Rangeland

Precipitation that falls on rangeland contributes to the supply of water found in our many rivers, streams and lakes. These water resources provide Texans with opportunities for fishing, swimming, boating, and in many cases water for municipal, industrial and agricultural uses. Likewise, water that percolates through rangeland soils and geological substrata contributes to spring flow and aquifer recharge.

Comal Springs- Comal County

Is water yield from rangeland dependable? Texas rangelands do not receive a predictable amount of water for estimating aquifer recharge and surface flow. The quantity of water coming from the rangeland resource is highly variable and governed by the amount of water received in the form of precipitation. Texas rangeland is classified as a semi-arid to arid. Generally, the annual rainfall is below average with a few years providing above normal rainfall where large quantities can recharge the aquifers and fill streams and reservoirs. True drought has been defined as seventy-five percent or less of the average annual rainfall. Moving from east to far west Texas, this occurs from sixteen to forty-five percent of the time (TAEX 1996). Because of this variability the State's rangeland must be kept in a healthy condition in order to capture these periodic above normal rainfall events.

The intensity, duration, and quantity of a rainfall event along with the vegetative cover, soil type, topography, and geology of the rangeland will determine the amount of water that can be captured for human use during a rainfall event.

With an ever increasing Texas population - expected to double to thirty-six million people by 2050 (TWDB 1997) - how we use and maintain our rangeland resource will have an important impact on the availability of a high quantity and quality of water.

Texans are now faced with many decisions and issues related to capturing and using water from rangelands. A broadened public interest and understanding of Texas rangelands and their management is needed to ensure a healthy system that can continue to provide water and other uses for Texas. Water for Texans means properly maintaining and improving our rangeland resources to help ensure an adequate quantity and quality of water for all Texans for years to come.

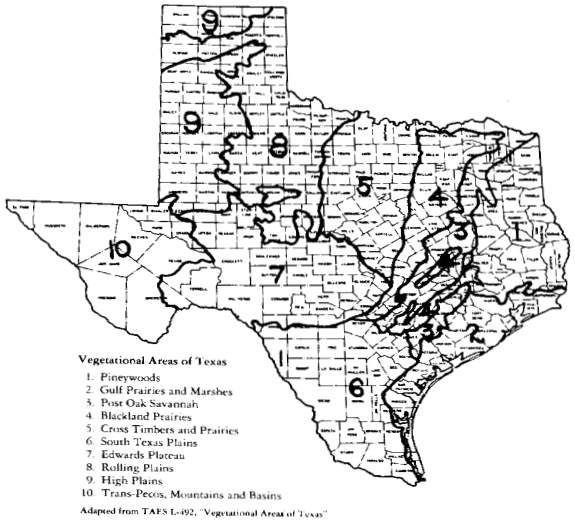

Figure 1. Vegetation Areas of Texas

Each of the vegetation areas above is or has been predominately rangeland with the exception of vegetation area number 1, the Pineywoods of east Texas.

Figure 2. Streams and Rivers in Texas(TNRIS)

Bibliography

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For additional range information see our website at http://texnat.tamu.edu

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