Playa Lakes of the southern Llano Estacado: Southern High Plains

*Above an an aerial photo of the Southern High Plains of Eastern New Mexico and West Texas. The photo shows the typical landscape of the area which is basically featureless (lacks mountain ranges, etc).

Do you see any rivers? Streams? Lakes?

Playa lakes field surveys with the New Mexico Nature Conservancy and the USDA.

I accompanied Tish McDaniel and others from the New Mexico Nature Conservancy and the USDA to survey playas across 4 counties in Eastern New Mexico. We were looking at playas to inventory which were healthy and which were not.

We stepped over the hotwire and then had to step over the old and rusty barbed wire.

In the far background you can see the grayish "haze" lying low to the ground. That is a line of fog that marks the edge of the Llano Estacado. If we were to continue driving north another 15 miles we would be on the Llano Estacado escarpment (see picture below for aerial view) looking over the Canadian River valley. Another indicator, not shown, is the encroaching junipers and chollas that are moving up the caprock and into the high plains area of Eastern New Mexico and West Texas.

The owner of the pasture has his land in the Conservation Resource Program, CRP. He can use his land for cattle grazing and allow his cattle to graze in the playa (but not over 40% of the vegetation). The Nature Conservancy and the USDA representatives manage and maintain the grassland alongside the farmer/cattleman.

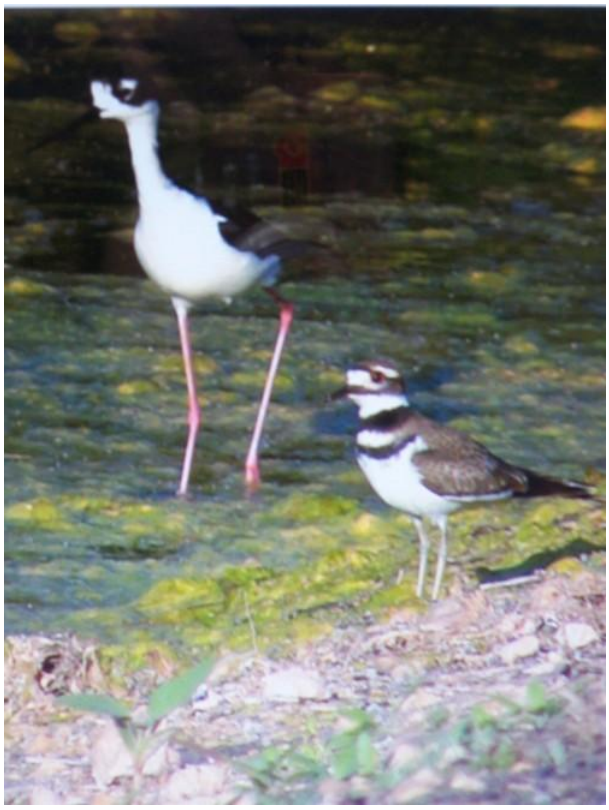
Also, having land in CRP promotes species diversity (birds, migrant and resident, deer, badgers, skunks, coyotes, etc) because the vegetation provides a polyculture "crop", not monoculture like corn or wheat, that benefits a wider range of wildlife.

Cattle grazing is actually good for the playa vegetation because it promotes healthy playa vegetation while inhibiting the growth of non-native or invasive plant species.

Playa Lakes can be found scattered across eight states with most being found in Parmer County, Texas. They are the only natural source of (surface) water during wet weather conditions that provide the ephemeral wetland habitats on the High Plains. The playa lakes are the *stepping stones* and rest stops for the migratory birds that pass through between Alaska and South America.

Playas are important to a variety of wetland birds because they are highly productive where birds find plenty to eat to "fatten" up for migration. The vegetation also provides shelter during the cold, winter months which increases survival rates.

This niche habitat provides the food and shelter necessary for the survival of the many birds that stop along the way, or for those that choose to remain to rear their young.



The Black-necked stilt and Killdear are two of the many shorebirds that can be found at playa lakes.

Great blue herons, American avocets, egrets, coots, moorhens, blue and green-winged teals, mallards, Snow/Canada/Ross geese, Sandhill cranes, Curlews, Red-winged blackbirds and many more are common inhabitants during the wet cycle of the playa lakes.

If you enjoy birding then come out to the High Plains and you'll find plenty to add to your Life List.

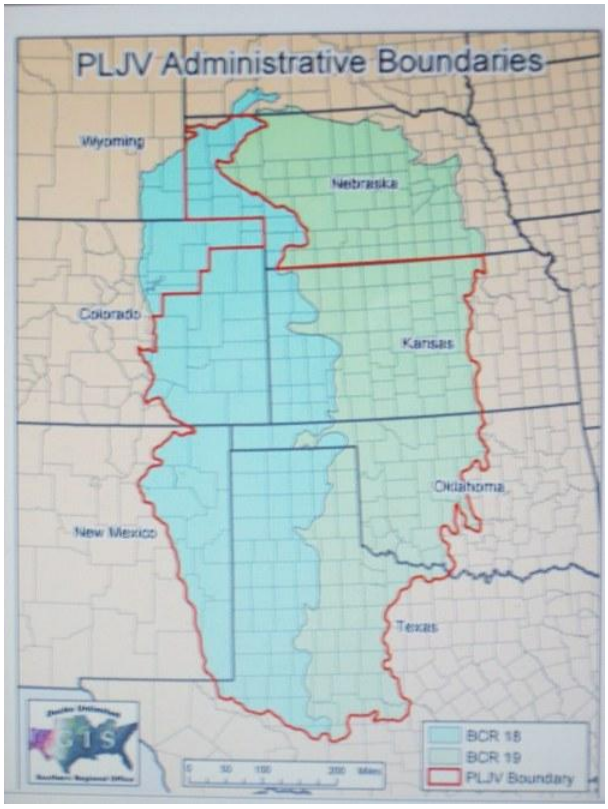
Meanwhile predators, such as the coyote and hawks, feed upon the birds and other animals that live near or in the playa lakes.

Smartweed is one of the more abundant flowering plants that can be found in and around playa lakes. These particular plants are interesting because on the stems are little "swollen" areas that are filled with air which allow the plant to float upright. The smartweed provides seeds the birds feed on during migration.

There are many other indicator plant species that can be found around playa lakes that give clues to the overall health of the playa. At other playas where overgrazing or cultivation has occurred, invasive plant species have overrun the native grasses and flowering plants.

Tadpole shrimp are common invertebrates found in healthy playa lakes. Birds feed on the fairy shrimp as a much-needed source of protein during mating season. The protein contributes to the strength of the egg shell.

The playa lakes also play an important role in recharging the nation's largest aquifer, the Ogallala. There are well over 30,000 playas that dot the High Plains landscape that are currently being studied, conserved, and destroyed by agriculture that has conservation organizations such as the Nature Conservancy and the Ogallala Commons working tirelessly with farmers to protect the jewels of the High Plains.

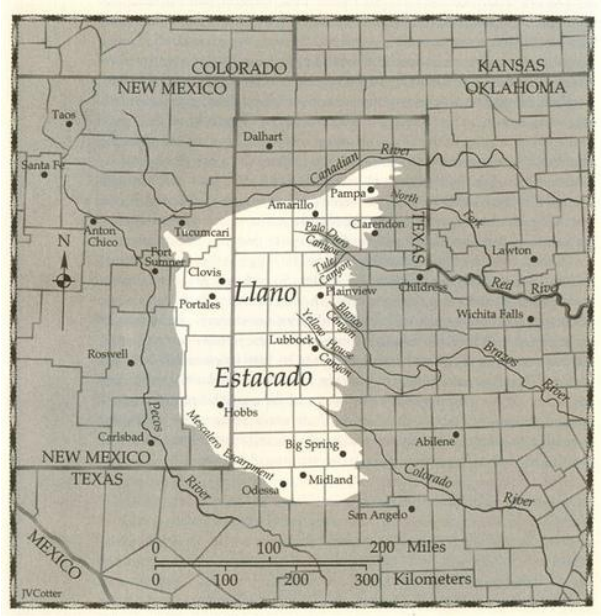


The map above comes from the Playa Lakes Joint Venture. The map shows the boundaries of the Ogallala Aquifer where all the playa lakes can be found and where the PLJV studies and documents the 30,000 (number will be adjusted) plus playas across the High Plains.

**Above is the Llano Estacado Escarpment.

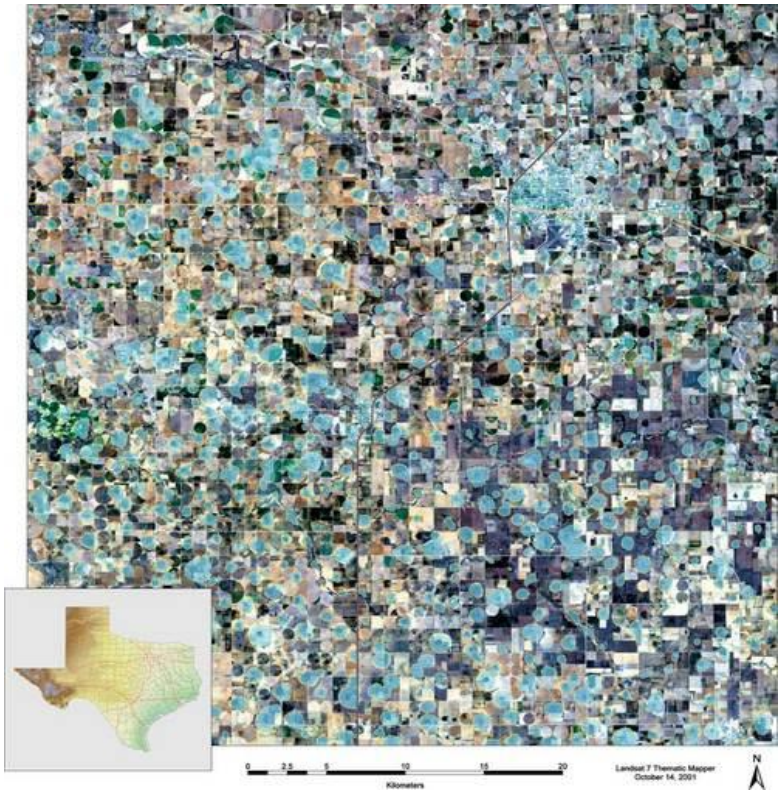
During an intensive research project about dairies and their environmental impacts I found out the name *Ogallala* was not just bottled water but an actual source of water upon which heavy demands were being placed upon it by agriculture and communities. As it turned out the Ogallala is our only source of water on the High Plains because we do not have surface water to tap into that is available year-round. Annual average precipitation is ten inches on the Southern High Plains (SHP) of eastern New Mexico. As you travel north and northeast precipitation increases considerably.

According to Dr. Haukos, "The SHP is the largest isolated plateau in the Western Hemisphere. The SHP is bounded by abrupt escarpments adjacent to the Canadian River to the north, Pecos River to the west, and the Caprock Escarpment formed by headwater erosion of the Red, Brazos, and Colorado rivers to the east, with less distinct gradation into the Permian Basin and Edwards Plateau to the south" (Personal interview). **See map below.



 **The map above shows exactly where the Llano Estacado is located in eastern New Mexico and West Texas. Note the river systems that originate (or drain) from the Llano. Palo Duro Canyon, just south of Amarillo, Texas, is considered to be the Grand Canyon of Texas. It's absolutely gorgeous and a true Texan gem.

I think of the Llano Estacado as a table that leans to one side. I can drizzle water on the surface where some of it may collect between the wood grains while the majority of the water meanders in the natural surface grooves (think draws/arroyos) where it eventually drains to form streams that contribute to the waters of the river systems located in the hill country of Central Texas, or my kitchen floor.



The Llano Estacado is characterized by thousands of emphemeral playa lakes and few streams, as shown below. Look closely. Every blue/green spot you see in the picture are playa lakes on the West Texas plains

How did playa lakes get here:

- Not formed by buffalos
- Water collects in natural depressions
- Over time the underlying caliche layer dissolves due to chemical reactions and the land surface collapsed

Playa Lakes: General Facts

- Playas receive water from rain and irrigation
- Playas have extremely high evaporation rates versus low rainfall rates
- Playas recharge the Ogallala Aquifer
- There are an estimated 20,000 in Texas, most are located in Parmer County, 455 playas
- Playas are important to migrating birds
- Soil defines location and size
- Playas are closed watershed depressions
- Not all depressions are playas
- Wet/dry cycles drives the productivity of the playa
- Playas influence species isolation: Ex. Tiger Salamander, Pink Smartweed

- Playa lakes have been altered so much that they do not function the way they used to
- Playas contain wetland plant communities with distinct surroundings
- Quality of playa determines quality of water

If two or three playas do not function over time animals cannot or will not disperse. This affects the wildlife.

The whole function of playas, from nutrient cycling to the water cycle, to the life cycles of the invertebrates (tadpole shrimp, snails, water skimmers, etc) and vertebrates, are all important to the overall health of playas as a community. What happens to one playa affects all other playas.

Let us choose wisely!